



**Effects of a Social-Emotional and Character
Development (SECD) program, *Positive Action*,
on character and distal manifestations of
character such as positive and negative health
behaviors, emotional/mental health, and
academics**

Carol Allred

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**School of Education
University of Birmingham
Edgbaston
Birmingham**

Effects of a Social-Emotional and Character Development (SECD) program, *Positive Action*, on character and distal manifestations of character such as positive and negative health behaviors, emotional/mental health, and academics

Carol G. Allred, Ph.D.
President and Developer
Positive Action, Inc.

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Abstract

The *Positive Action* program is a comprehensive Social-Emotional and Character Development (SECD) program that includes a school-wide climate change component together with scoped and sequenced curricula that are delivered to all student levels. Thus, teacher and staff training and implementation should lead to positive changes to the classroom and school culture that encourage and reinforce positive behaviors. In turn, the content of classroom lessons should lead to positive improvements in student classroom behavior (e.g., disruptive behavior, disengagement with learning), SECD, and more distal positive and negative behaviors and academics. I will describe the program, and then present findings from three randomized trials (in elementary schools in a rural Southeastern school district, in Hawai'i elementary schools, and in Chicago K-8 schools) that have demonstrated changes in character (specifically SECD - to be reported by Dr. Flay). The program also improved positive behaviors (e.g., hygiene, healthy diet and exercise), negative behaviors (e.g., violence, bullying, substance use, early sexual behavior), emotional/mental health (e.g., anxiety, depression), and academics (e.g., absenteeism, test scores). Dr. Flay will present how researchers assessed SECD and demonstrated that changes in SECD (and character) mediated the effects of the program on some of the more distal manifestations of character.

Effects of a Social-Emotional and Character Development (SECD) program, *Positive Action*, on character and distal manifestations of character such as positive and negative health behaviors, emotional/mental health, and academics

In recent years, schools and youth-serving organizations increasingly have adopted programs based on theories of Social-Emotional Learning (SEL) (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) and Social-Emotional and Character Development (SECD) (Elias, 2009). The aims of these programs are to improve students' SEL/SECD¹ competencies in areas such as such as prosocial behavior, honesty, self-development and self-control that, in turn, prevent negative student outcomes such as violence and substance use, and promote positive student outcomes such as social competence and academic achievement (Durlak et al., 2011; Institute of Education Sciences, 2006). In this paper, I describe one such program, the *Positive Action* program, and summarize effects of this program found in three randomized trials.

The *Positive Action* Approach to Instructing Students in Character, Values or Virtues

The *Positive Action (PA)* program is an approach to teaching positive actions/behaviors for the whole self: the physical, intellectual, social and emotional. It teaches positive actions for all ages in schools—Pre kindergarten through high school—through age-appropriate curricula. It also teaches positive behaviors through curricula for families and as tools for counselors and therapists. When used in schools, it also includes a school-wide climate development program².

While teaching high school in 1977, I realized that there was a need for comprehensive, coherent, school-wide programs that recognize that students' academic performance, their learning and life skills, multiple behaviors, and character are all interrelated. Unfortunately, that need appears to be even greater today, or we run the risk of failing to reduce rates of critical negative behavioral outcomes or to increase rates of positive behavioral and academic outcomes in ways that are truly synergistic, effective, and enduring. I decided to develop such a program – little did I know that I would still be working on it over 35 years later!

In developing the program, I considered several factors to determine what positive actions to teach to address each of the physical, intellectual, social and emotional parts of the whole self. Underlying all of the strategies is the premise that you feel good about yourself when you do positive actions and there is a positive way to do everything. This premise is depicted through a Thoughts ⇒ Actions ⇒ Feelings about Self (TAF) circle: thoughts lead to actions and actions lead to feelings about yourself which lead back to more thoughts. The Circle can be



positive or negative—a positive thought leads to a positive action which leads to a positive feeling about yourself that, in turn, leads to another positive thought. The process would be similar for the negative circle.

Understanding this helps us understand the whole behavior process, how we can motivate people to do positive behaviors. It also explains the relationship between actions, behavior, character, values and virtue. I believe that all positive behaviors are good, right and virtuous, and that developing positive behaviors creates the essence of virtuous character. I recognized two major challenges to teaching students these concepts in a practical way. The first challenge was to help students – and their teachers and parents – understand this at a conscious level, and to get teachers to understand that “you do what you value.” I wanted to help students to value being a good/virtuous person and a good student. The program teaches dozens of positive actions that will help students feel good about themselves when they do them and, thus, value those actions and keep doing them. This is the essence of true intrinsic motivation (Deci, 2009) that leads to moral wisdom and happiness or flourishing (Annas, 2011).

The second challenge was to teach people how to resist their first temptations in order to do the right thing. The first reaction/response to a situation or challenge is usually to do the easiest thing, and this is often not a positive or virtuous response. For example, when faced with the choice of completing homework or playing, the first response for many students is to play some more. Or, when bumped by someone, the first reaction of many kids is to turn around and hit the person who bumped them. Most of us are aware that doing the positive/right thing is often difficult. However, when people realize that they feel good about themselves when they engage in positive actions, intrinsic motivation and happiness are enhanced.

Values are the key to everything we want to achieve. If we can get students to value being good, achieving, and contributing, then that is what they will be and do. Positive Action helps them do this by understanding that when they do good things they feel good about themselves. An important aspect of the TAF circle is whether there is a plus or a minus sign in the center that exemplifies good/right vs. bad/wrong. The way to achieve our educational goals is to help students come to value positive actions and to motivate them to engage in positive behaviors by understanding that they feel good about themselves when they do so. As USA theologian, Tryon Edwards (Edwards, 1959) suggested, cycles of positive or negative actions become habits, habits then become character, and character becomes destiny. And, according to Aristotle, when people acquire good habits of character, they are better able to regulate their emotions and their reason, which in turn, helps them reach morally correct decisions when faced with difficult choices (Anscombe, 1958; Irwin, 1999).

Many early programs developed by others tended to address the proximal, micro-level predictors of one particular problem; not the multifaceted, distal, macro-level factors that influence all behaviors and their educational, social and economic consequences (Flay, 2002; Flay & Petraitis,

1994; Flay, Snyder, & Petraitis, 2009; Power, 2003). To address the preceding limitations, there is a need for comprehensive, coherent, school-wide programs that recognize that students' academic performance, their learning and life skills, multiple behaviors, and character are all interrelated. Otherwise, we run the risk of failing to reduce rates of critical negative behavioral outcomes or to increase rates of positive behavioral and academic outcomes in ways that are truly synergistic, effective, and enduring (Flay & Allred, 2010).

The *PA* program uses direct instruction and interactive approaches that are holistic, developmentally appropriate, and culturally sensitive to teach students the values and skills, and to be intrinsically motivated, to have good physical health, learn effectively in school and life (c.f., Baehr, 2012), make responsible decisions, solve problems effectively, recognize and manage their emotions and other personal resources, appreciate the perspectives of others (e.g., empathy, tolerance), handle interpersonal situations effectively, be honest with themselves and others, establish positive goals, and engage in continuous learning and self improvement. The content of all program components is taught through six units:

- Unit 1. Self-Concept: What it is, how it is formed, and why it is important (the PA philosophy and circle).
- Unit 2. Positive actions for body (physical) and mind (intellectual): For example, nutrition (including not using harmful substances), exercise, sleep, hygiene, motivation to learn, thinking skills, problem solving, decision-making, creativity, curiosity, and study skills.
- Unit 3. Social and emotional positive actions for managing yourself responsibly: For example, self-management, self-control, managing personal resources like time, talent, energy, thoughts, actions, feelings, money, and possessions.
- Unit 4. Social and emotional positive actions for getting along with others by treating them the way you like to be treated: For example, with respect, empathy, kindness, fairness, cooperation.
- Unit 5. Social and emotional positive actions for being honest with yourself and others: For example, taking responsibility for telling self and others the truth, admitting mistakes, not blaming others or rationalizing, doing what you say you will do, knowing your strengths and weaknesses.
- Unit 6. Social and emotional positive actions for improving yourself continually: For example, setting and achieving goals, believing in potential, having the courage to try, turning problems into opportunities, persisting, and broadening horizons.

I will present more detail about the program in my oral presentation. Please also see Chapter 28 in the *International Research Handbook on Values Education and Student Wellbeing* (Flay & Allred, 2010) for more detail. I now summarize the effects of the *Positive Action* program found in three randomized trials.

Research Context

The results I will report come from three randomized trials of *PA*, one in 8 rural schools in a Southeastern state, one in 20 Hawai'i elementary schools and one in 14 K-6 and K-8 schools in the Chicago Public Schools system³. Hawai'i consists of eight islands, three of which (Oahu, Maui and Molokai) included schools in the trial. They represented high-risk (high disciplinary referrals and low achievement) schools from a mix of urban, suburban and rural settings. Chicago is a very large city, large sections of which are low-income, disadvantaged, primarily minority. Schools selected for the Chicago trial came from these high-risk settings in which students are generally low performing⁴. The methods for the latter two trials were similar so I will describe them together.

For the Hawai'i and Chicago trials, researchers⁵ matched schools on a range of demographic and performance variables such as school size, teacher qualifications/experience, ethnic composition, grade range, poverty (%age of students receiving free or reduced price lunch), student turnover/mobility, attendance/absenteeism, disciplinary referrals/suspensions and standardized test scores^{6,7}. Schools were then randomly assigned from the matched sets or pairs to get *PA* or be a wait-listed control school for the duration of the study (after which they were offered the program). In Hawai'i, schools were recruited after assignment (and pairs or sets discarded if one member was not interested in participating) (Beets et al., 2008). In Chicago, schools were assigned to condition after agreeing to be in the study on the understanding that they had to be matched with another school and then randomly assigned to condition (Ji, DuBois, Flay, & Brechling, 2008).

In the Southeastern trial, five age cohorts that ranged from kindergarten to fourth grade at wave 1 were followed for three academic years. In Hawai'i, a cohort of 1784 students, who were approximately 26% Hawaiian or part-Hawaiian, 9% White, 21% Asian, 23% multi-ethnic, 5% other Pacific Islander, and 16% Other or unknown (Beets et al., 2009) and of whom about 55% received free or reduced price lunches (Snyder et al., 2010), were followed from grades 2/3 to 5/6. In Chicago, a cohort of 1170 students, who were approximately 54% African American, 31% Hispanic, 8% Caucasian, 4% Asian-American and 3% Other or unknown, and of whom 90% received free or reduced-price lunches (Lewis, Schure, et al., 2013), were followed from grade 3 to grade 8. One of the major challenges of conducting trials in high-risk schools is the high turnover or mobility of students. Given that we deliberately selected high-risk (low-performing) schools, this was a major issue for these trials, especially the Chicago trial. Due to a) the high student mobility in this low-income, urban setting, b) decreasing student population in Chicago schools during the time of this study and c) lower rates of parental consent as students advance, only 363 students participated at the end of grade 8 (W8), and only 131 of these were from the original 624 grade 3 students (Lewis, DuBois, et al., under review). Because the trial was cluster-focused, we assessed students who entered schools after the beginning of the trial (joiners), but did not follow individual students who stopped attending the study schools

(leavers)⁸.

Measures in the small Southeastern trial were limited to an early version of the Social-Emotional and Character Development Scale (SECDs; Flay, 2014; Ji, DuBois, & Flay, in press) that Dr. Flay will describe later today. Student-level measures in the Hawai'i trial were also limited to the SECDs, but school-level archival data on attendance/absenteeism, disciplinary referrals, achievement test scores and school quality were also made available. For the Chicago trial, researchers were able to include a wider range of student-level measures, including the SECDs, and a wide range of outcomes related to positive behaviors (diet, physical activity, hygiene, sleep), negative behaviors (substance use, bullying, violence), emotional/mental health (anxiety, depression), as well as school-level attendance/absenteeism, disciplinary referrals, achievement test scores. The student-reported measures also included established measures of engagement with school (Furrer & Skinner, 2003), negative school orientation (Furrer & Skinner, 2003), peer group affiliation behaviors (Elliott et al., 1996), positive and negative values (Arthur, Hawkins, Catalano, & Pollard, 2000), social problem solving skills (Aber, Brown, Jones, & Samples, 1995), altruistic behavior (Solomon, Battistich, Watson, Schaps, & Lewis, 2000), positive and negative affect (Laurent et al., 1999), self-esteem (DuBois, Felner, Brand, Phillips, & Lease, 1996), life satisfaction (Huebner, 1991a, 1991b), positive health behaviors (Bavarian et al., under review), grades, depression and anxiety (Reynolds & Kamphaus, 2002), and risk behavior (CDC, 2004)⁹. All measures were scored by averaging responses across items, with items scored such that higher scores indicated greater levels of the construct.

For end-point only analyses of problem behavior outcomes at grade 5 in both Hawai'i and Chicago, and grade 8 in Chicago, we used 2-level over-dispersion random-effects Poisson models to model program effects (student self-reports and teacher reports of student behavior) for the substance use and violent behaviors count scales. We included predictors to test for treatment effects, for variations in effects by gender or ethnic group (treatment x gender or treatment x ethnic group interactions). For the Chicago trial, we also tested for variations in effects by mobility pattern. For data collected over multiple waves, we used three-level (occasions of measurement nested within students nested within schools) growth-curve models for analyzing treatment effects on various student-level outcomes, using Stata's "xt" commands. These models account for all observations and model school differences (Rabe-Hesketh & Skrondal, 2008). This approach allows for a complete analysis of the multiple waves of available data and takes into account the patterns of change over time¹⁰.

Program Effects

In previous quasi-experimental evaluations in Nevada, Hawai'i, and Florida, schools implementing *PA* had higher achievement scores and fewer violent incidents, disciplinary

referrals, and suspensions than schools not implementing *PA* (Flay & Allred, 2003; Flay, Allred, & Ordway, 2001). Here, I will focus on results from the three randomized trials.

Changes in SECD and other social-emotional outcomes

Results all from all three randomized trials demonstrated that the *PA* program mitigated the normal decline in social-emotional and character development as students advanced through grades 2-8 (Flay, 2014; Washburn et al., 2011). The improvement index (percentile gain for the average student) was 16% for the Southeastern schools, 18% for Hawai'i, and 22% for Chicago. That is, on average, the SECD scores decreased about 19% less for students in *PA* than students in control schools.

Lewis and colleagues have reported outcomes on a range of other social-emotional and positive youth development outcomes (Lewis, Vuchinich, et al., under review). First, considering the subscales of the SECDs, the difference in change between *PA* and control group 8th grade students was greatest for the two respect scales (relative reductions of 28% for respect for teachers and 24% for respect for parents) and smallest for self-development (13%). For the key constructs of self-control, honesty and prosocial interactions, the relative reductions were 23%, 17% and 19%, respectively. Honesty, self-development and respect for teachers were the only measures across these studies for which the program effects were moderated by gender, with effects being larger for girls than boys. In addition, compared with control schools, the 8th grade students in *PA* schools reported 13% more affiliation with well-behaving peers and 26% less affiliation with deviant peers, and their scores on the empathy and altruism scales improved by 10% and 8%, respectively.

In a another recent paper, Lewis and colleagues reported on the effects of *PA* on several indicators of emotional and mental health (Lewis, DuBois, et al., 2013). They found that, compared with students in control schools, 8th grade students in *PA* schools scored marginally higher (Improvement Index = 7%) on the positive affect scale and significantly higher (5%) on the life satisfaction scale. They also scored lower on the BASC anxiety and depression scales (relative reductions of 18% and 17%, respectively).

School Climate

There has been a recent resurgence of interest, particularly in Britain, in the influence of school climate/culture/ethos on student health (Bonell et al., 2012; Jamal et al., 2013) and performance (Pedder & MacBeath, 2008; Scheerens, 2013). We believe that a second mechanism through which *PA* has its effects is by improving school climate. School-level archival data allowed researchers to determine if the program successfully changed school climate. Hawai'i schools survey their parents, students and teachers about school quality every two years. Data showed

that parents, students and teachers from *PA* schools rated their schools significantly higher on a range of indicators of school quality (Snyder, Vuchinich, Acock, Washburn, & Flay, 2012). On average, parents, students and teachers rated their schools 13%, 16% and 21% better, respectively.

Using student level data from the Chicago trial, preliminary analyses suggest that student reports of attachment to their school and teachers declined significantly less (40%) in *PA* schools than in control schools between grade 3 and grade 8 (paper in preparation). On a scale measuring disaffection with learning, the scores of students in *PA* schools declined 9.5% less than those for students in control schools (Bavarian et al., 2013). In addition, teacher ratings of student academic motivation improved by 15% in *PA* schools relative to control schools (Bavarian et al., 2013).

Positive health behaviors

Although the *PA* program contains very little content on physical health, we believe that this content, together with the other changes brought about by the program, should lead to improvements in positive health behaviors. In a paper under review, Bavarian and colleagues (Bavarian et al., under review) reported that, compared with students in control schools, reports of 8th grade students in *PA* schools reflected significant relative improvements in personal hygiene (18%), and marginally significant improvements in consumption of junk food (-8%), healthy food and exercise (8%), and BMI z-scores (-23%).

Problem/negative behaviors

From the Hawai'i randomized trial, grade 5 students in *PA* schools were significantly less likely to engage in substance use, violence, or sexual activity (Beets et al., 2009). Specifically, grade 5 students from *PA* schools were 44% less likely to have engaged in substance use (47% less smoking, 46% less alcohol use, 70% less drunkenness, 37% less marijuana use, and 73% less other illegal drug use), 52% less likely to have engaged in serious violence, and 83% less likely to have engaged in sexual intercourse. Teacher ratings of student behaviors also showed significant prevention of substance use and violence in *PA* schools.

From the Chicago trial, grade 5 students were significantly less likely to engage in substance use and violence¹¹. Li and colleagues (Li et al., 2011) found that at the end of 5th grade, compared with students in control schools, students in *PA* schools were 31% less likely to engage in substance use. By the end of 8th grade, compared with students in control schools, students in *PA* schools were 11% less likely to engage in any substance use (31%, 28%, 41%, 37% for smoking, drinking, getting drunk, and marijuana use respectively) (Lewis, Bavarian, Acock, et al., 2012).

With respect to violence, compared with their counterparts in control schools, 5th grade students in Chicago *PA* schools were less likely to engage in disruptive behavior (27%), bullying (41%), and serious violence (36%) (Li et al., 2011). By 8th grade *PA* students were 72% less likely to engage in disruptive behavior, 51% less likely to engage in bullying, and 42% less likely to engage in serious violence (Lewis, Schure, et al., 2013).

Disciplinary referrals/suspensions are indicators of student behavior that are collected by schools independently of researchers; thus, findings of effects on such indicators would validate the researchers' findings. By the end of the Hawai'i trial, *PA* schools reported 69% fewer disciplinary referrals than control schools and 73% fewer one year later (Snyder et al., 2010). By the end of the Chicago trial, *PA* schools reported 46% fewer disciplinary referrals and 24% fewer suspensions than control schools (Lewis, Schure, et al., 2013).

School performance

From the Hawai'i trial, students in *PA* schools performed significantly better on a range of indicators of school performance (Snyder et al., 2010). Specifically, *PA* schools had 24% less absenteeism, 60% fewer students retained in grade, and higher academic achievement (22% and 19% better on Standardized reading and math scores, respectively, and 26% and 25% better on Hawai'i state reading and math tests, respectively (Snyder et al., 2010).

From the Chicago trial, *PA* schools reported significantly less absenteeism (28%) and significantly better improvement (30%) on a value-added metric of reading that reflected the improvement between 7th grade and 8th grade for our study cohort (Bavarian et al., 2013). For most other indicators, however, although students in *PA* schools performed better than students in control schools, the findings were of only marginal significance, although of substantial magnitude. For example, composite scores of reading and math results for all students (grades 3-8) improved by 9% (not significant) and 15% ($p < .15$), respectively. However, reading scores for African American students improved by 19% ($p < .20$) and for African American boys by 43% ($p < .05$).

Conclusions

I have described how the *Positive Action* program is a comprehensive Social-Emotional and Character Development (SECD) program that includes a school-wide climate change component together with scoped and sequenced curricula that are delivered to all student levels. Thus, teacher and staff training and implementation should lead to positive changes to the classroom and school culture that encourage and reinforce positive behaviors. In turn, the content of classroom lessons should lead to positive improvements in student classroom behavior (e.g.,

disruptive behavior, disengagement with learning), SECD, and more distal positive and negative behaviors and academics.

I then summarized findings from three randomized trials (in elementary schools in a rural Southeastern school district, in Hawai'i elementary schools, and in Chicago K-8 schools) that demonstrated changes in character and other aspects of SECD. The program also improved other indicators of emotional/mental health (e.g., anxiety, depression), improved health-related behaviors (e.g., hygiene, healthy diet and exercise) and BMI, reduced negative behaviors (e.g., violence, bullying, substance use, early sexual behavior, disciplinary referrals/suspensions), and improved school performance (e.g., absenteeism, test scores)¹².

I believe that these trials demonstrate that the range of outcomes, and their size, indicates that *Positive Action* has the effects I have always believed in and hoped for. Some of the outcomes are of great importance in students' ability to learn (e.g., improved school climate/culture and personal self-control). Some findings demonstrate that the program (and the changes in school culture that it creates) can lead to improved health; for example, although of marginal significance, the effects on BMI are remarkable. Finally, the effects of the program on the academic achievement of students in low-performing schools from high-risk regions, especially for the lowest performing among them (e.g., African American boys), are of great practical significance.

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Footnotes

¹ From here on, I will use SECD to refer to the broad set of both SEL, SECD, Positive Youth Development (PYD) (Lerner, Phelps, Forman, & Bowers, 2009), the Search Institute's Developmental Assets (Benson, 2002; Benson, Leffert, Scales, & Blyth, 2012), and what we have previously called Skills for Successful Learning and Living (SSLL) (Flay & Allred, 2010).

² There is also a community component that was not included in the trials to be reported here.

³ Evaluators in a small school district conducted the Southeastern trial and then sent de-identified data to D. Flay. The Hawai'i trial was funded by the National Institute on Drug Abuse grants DA13474 and DA018760 to Dr. Brian R. Flay at the University of Illinois at Chicago. The Chicago trial was funded by the Institute of Educational Sciences (IES) of the U.S. Department of Education grants R305L030072, R305L030004 and R305A080253 to Dr. Brian R. Flay at the University of Illinois at Chicago (2003-05) and Oregon State University (2005-12). Institutional Review Boards at the University of Illinois at Chicago and Oregon State University, the Research Review Board at Chicago Public Schools, and the Public/Private Ventures Institutional Review Board for Mathematica Policy Research (MPR; a subcontractor who collects some of the data from Chicago schools as well as schools involved in evaluations of 6 other programs at 6 other sites) approved all research procedures.

⁴ The Chicago trial was a component of the Social And Character Development (SACD) Research Program, which was a collaboration among IES, the Centers for Disease Control and Prevention's (CDC) Division of Violence Prevention, Mathematica Policy Research Inc. (MPR), and of SACD cooperative agreements (Children's Institute, New York University, Oregon State University, University at Buffalo-SUNY, University of Maryland, University of North Carolina-Chapel Hill, and Vanderbilt University). The SACD research program included multi-program evaluation data collected by MPR and complementary research study data collected by each grantee. The findings reported here are based only on the Chicago portion of the multi-program and complementary data collected by the University of Illinois at Chicago and Oregon State University (Brian Flay, Principle Investigator) under the SACD program.

⁵ Full disclosure: I am married to Dr. Brian R. Flay, the Principle Investigator of the Hawai'i and Chicago trials. The potential conflict of interest was disclosed to the funding agencies and managed by UIC and OSU. The avoidance of possible biases was managed primarily by the involvement of other rigorous investigators. I thank my Dr. Flay and his Co-investigators, Professors Alan Acock (OSU), Michael Berbaum (UIC), Richard Campbell (UIC), David DuBois (UIC), Joseph Durlak (Loyola University, Chicago), Naida Silverthorn (UIC), Sam Vuchinich (OSU); their ex-students Drs Niloo Bavarian (Postdoctoral Fellow, UC Berkeley), Michael Beets (Associate Professor, University of South Carolina), Dan Cantillon, Research Associate, ICF International, VA), Joseph Day (Assistant Professor, Governors State University, Chicago), Michael Fagan (Clinical Assistant Professor, UIC), Peter Ji (Assistant Professor, Adler School of Professional Psychology, Chicago), Kin-Kit Li (Associate Professor, City University of Hong Kong), Marc Schure (Postdoctoral Fellow, Puget Sound Healthcare System-Health Services Research & Development, Seattle),

Frank Snyder (Assistant Professor, Purdue University), Isaac Washburn (Research Scientist, Oregon Social Learning Center); research staff Vanessa Brechling and Kate Burns (UIC), Howard Humphries and Jonathan Wong (Hawai'i); and the Hawai'i School Board, the Chicago Public Schools system, and the participating schools and their Principals, staff, students and parents.

⁶ 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. Nevertheless, PA and control schools were not significantly different at baseline on seven available variables (see Table 2 in Washburn et al., 2011).

⁷ To ensure selection of high-risk schools, schools were excluded if they 1) were non-community schools (e.g., charter and magnet schools), 2) already had PA or a similar SEL/SECD intervention (so that the PA program effects would not be confounded with other programs), 3) had an enrollment too small for study or too large for cost and management reasons, 4) had annual student mobility rates too high to ensure that some students remained for the duration of the study, 5) had too many students who met or exceeded grade-level standards on the State achievement tests, and 6) had too few students who received free or reduced-price lunch.

⁸ For both trials, we used several methods to deal with student mobility. First, at each time of assessment, we attempted to collect data from all students in the grade cohort being followed, including those who had transferred into schools since the inception of the research – but we did not follow those students in the study cohort who had left the study schools (Brown et al., 2008; Vuchinich, Flay, Aber, & Bickman, 2012). Across time, then, the student cohort (total Ns = 1784 in Hawai'i and 1170 in Chicago) could be considered “dynamic” (i.e., changing) because of student mobility. Second, for the Chicago trial, we considered patterns of mobility – in Lewis et al. (2012) we considered stayers, leavers and joiners, while in later papers, we utilized results from a Latent Class Analysis to define 5 classes of student mobility – stayers, joiners, temporary participants, early leavers, late leavers (Lewis, Bavarian, Duncan, et al., 2012). Third, for our outcome analyses we utilized cluster-focused intent-to-treat (ITT) analysis (Vuchinich et al., 2012). It acknowledges the focus on schools and follows all schools randomized to condition to trial endpoint, regardless of whether the school continues the PA intervention or how well it is implemented. It also involves collecting data from all students who are in the appropriate grade cohort in the schools when the assessments occur.

⁹ The last three administered grade 5 onwards only.

¹⁰ When outcomes consisted of more than one item, an average of the scores was used to create a composite score, with higher scores reflecting having more of an outcome. The distribution of each measure was then examined in order to determine the most appropriate model. Each outcome was assessed using the most appropriate estimator to fit the distribution. Outcomes may have a normal distribution (“xtmixed”), be censored (skewed right or left, indicative of floor or ceiling effects; “xttobit”), be a count (“xtpoisson”), or be bimodal, or a dichotomy. Bimodal outcomes were transformed into a dichotomy (“xtmelogit”).

¹¹ At the time of this trial, the Chicago Public Schools system would not allow us to ask about sexual activity.

¹² As with all research, there are some limitations to these trials, all of which have been acknowledged in the publications cited. I note some of them here. All studies were small for cluster-randomized trials; nevertheless, careful matching and analysis of multiple waves of data appears to have provided sufficient statistical power to detect many effects. Potential conflicts of interest and the lack of independence of the principle investigator from the program developer were addressed in footnote # 4. Reliance on student self-reports for many outcomes is a potential concern that is, however, mitigated by finding effects using archival data collected by schools for other purposes. Strictly speaking, the effects obtained cannot be generalized beyond schools like those that agreed to participate in these trials; however, replication of results across three very different school districts provides some confidence of greater generalizability. The controls were not pure controls (there is no such thing these days), but they did not use any one kind of SECD program or strategy; and the lack of purity leads to the size of the effects we observed probably being underestimated (Hulleman & Cordray, 2009). Implementation of the program was not complete in most study schools, which also leads to underestimation of possible effects. These latter two concerns do however, mean that the estimated effects obtained in these trials are probably representative of what would happen in many other schools – that is, these were closer to being effectiveness trials rather than efficacy trials. The use of random assignment was the greatest strength of these trials, giving us considerable confidence that the observed effects were due to the PA program rather than to other events.