



## AN ABSTRACT OF THE DISSERTATION OF

Frank J. Snyder for the degree of Doctor of Philosophy in Public Health presented on April 14, 2011.

Title: Enhancing Social-Emotional and Character Development for Youths' Success: A Theoretical Orientation and an Evaluation Using a Cluster-Randomized Design.

Abstract approved:

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Brian R. Flay

Interest in social-emotional and character development (SECD) programming has intensified in recent years. SECD-related programs often seek to enhance a variety of health-related outcomes by addressing multiple influences and embracing a comprehensive approach that includes youth, school personnel, families, and communities. Alongside a comprehensive approach arises the need for a comprehensive, integrative theory. To address this need, the first manuscript serves as 1) an empirical review of the SECD-related literature and 2) a theoretical orientation whereby the Theory of Triadic Influence provides a roadmap to guide the design and evaluation of SECD-related programs.

The second and third manuscripts examine one example of a SECD program, *Positive Action (PA)*, utilizing data from the *PA* Hawai'i trial conducted from 2002-03 through 2005-06. The trial was a matched-pair, cluster-randomized, controlled trial that included 20 racially/ethnically diverse schools. Specifically, the second

manuscript builds upon previous research and examines a mechanism whereby improvements in academic-related behaviors mediated the *PA* program effects on negative behaviors. Structural equation models, with a latent academic behavior mediator, indicated that students attending program schools reported significantly better academic behavior. Program effects on student-reported substance use, violence, and sexual activity were mediated by greater academic behavior. Teacher reports corroborated these results.

The third manuscript explores the impact of the *PA* program on school-level indicators of school quality, thereby examining the ability of a SECD program to create contextual, whole-school change. Teacher, parent, and student archival school-level data were analyzed to examine indicators of school quality such as student safety and well-being, involvement, and satisfaction, as well as overall school quality. Program schools demonstrated a significant improvement in individual indicators and overall school quality compared to control schools. Therefore, consistent with theory, a SECD program demonstrated the ability to enhance school quality and facilitate whole-school change.

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Enhancing Social-Emotional and Character Development for Youths' Success:  
A Theoretical Orientation and an Evaluation Using a Cluster-Randomized Design

by  
Frank J. Snyder

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APPROVED:

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Major Professor, representing Public Health

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Chair of the Department of Public Health

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Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Frank J. Snyder, Author

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## CONTRIBUTION OF AUTHORS

Frank J. Snyder conceptualized, outlined, and performed all data analyses and completed an initial draft of the papers presented.

Dr. Brian R. Flay provided editorial comments and advice on all manuscripts and was the Principal Investigator for the National Institute on Drug Abuse grant #R01-DA13474 titled: *The Positive Action Program: Outcomes and Mediators*.

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Dr. Michael Beets provided editorial comments, analytic advice, and suggestions on the interpretation of results in the second manuscript.



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## DEDICATION

Dedicated to JoAnn and Kelly Snyder. If all parents were as thoughtful, supportive, encouraging, and caring as they are, kids everywhere would be more likely to have bright futures full of satisfaction, health, and happiness.

Enhancing Social-Emotional and Character Development for Youths' Success:  
A Theoretical Orientation and an Evaluation Using a Cluster-Randomized Design

CHAPTER 1. GENERAL INTRODUCTION

During the last two decades there has been an expanding interest in programs related to enhancing youths' social-emotional and character development (SECD; Elias, 2009). The reason for this movement is unclear, although possibilities include a) a reaction to the deterioration of ethical standards in different realms of public life (e.g., materialism and unethical corporate practices), b) publicized violent incidents perpetrated among youth, c) surveillance data related to youth health-compromising behaviors (e.g., substance use, sexual activity, violence), d) a bipartisan and ecumenical dialogue expressing acquiescence of perpetuating health-compromising behaviors (Berkowitz & Bier, 2007), e) a shift toward a focus on youth assets (Benson, 1997; J. V. Lerner, Phelps, Forman, & Bowers, 2009; R.M. Lerner, 2005, September), and f) an increase in federal support for SECD-related research and programming. Further, among researchers, there is an increasing understanding that many, if not all, health behaviors are linked (Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002; Flay, 2002), and SECD-related programs denote potential to affect multiple behavioral domains (J. A. Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011).

As a result of this SECD movement, a need has arisen for a theoretical framework to serve as a roadmap to guide a broadly defined and multidisciplinary SECD-related field. This need is vital to fulfill, as much of the SECD-related programming is implemented based on intuition or chance, with little or no empirical foundation and, hence, equivocal results. Moreover, for those SECD programs that are empirically

studied, there is a call among practitioners and researchers for a meta-theoretical framework to integrate the many SECD-related constructs and to yield consistent terminology across various fields (e.g., social-emotional learning, moral education, character education, violence prevention, substance use prevention, positive youth development (PYD), and service learning). To this end, the first manuscript titled, *“Enhancing youths’ social-emotional and character development: An empirical review and theoretical orientation,”* provides a literature review and discusses a) the field of SECD education, b) the strategies utilized to enhance youths’ SECD, c) an introduction to the Theory of Triadic Influence (TTI; Flay & Petraitis, 1994; Flay, Snyder, & Petraitis, 2009), and d) the utility of the TTI in designing and evaluating SECD-related programs.

Next, two empirical studies evaluate a school-based SECD program, *Positive Action (PA)*, using a matched-pair, cluster randomized, controlled design. The second manuscript titled, *“Preventing negative behaviors among elementary-school students through enhancing students’ social-emotional and character development,”* builds upon recent published research (see Beets et al., 2009) that reported the effects of the *PA* program on reducing substance use, violent behaviors, and sexual activity among elementary-school students. In the present study, PYD (J. V. Lerner, et al., 2009) and SECD (Elias, 2009) perspectives are utilized, thus focusing on the strengths of youth and their positive behaviors. Overall, the purpose of this study is to use structural equation modeling to examine the theory underlying *PA* (i.e., a link between increased positive behavior and reduced negative behavior; Flay & Allred, 2010) and a mechanism (i.e., mediation) regarding how the program worked. That is, if changes in positive academic

behavior mediated the program's effects on reducing substance use, violence, and sexual activity among students.

The third manuscript titled, *“Improving elementary-school quality through the use of a social-emotional and character development program: A matched-pair, cluster-randomized, controlled trial in Hawai`i,”* extends previous research (F. Snyder et al., 2010) by using archival school-level data to examine the impact of *PA* on school-level indicators of perceived school quality. School quality has been shown to affect student learning and may influence students' long-term success. School-level archival data from teachers, parents, and students, collected by the Hawai`i Department of Education (HDE), are used to examine program effects on several school quality-related outcomes (i.e., safety and well-being, involvement, satisfaction, quality student support, focused and sustained action, responsiveness of the system, standards-based learning, professionalism and capacity of the system, and coordinated team work).

### Specific Aims

Students are more disengaged and alienated from school than their counterparts from previous generations (Steinberg, 1996), and negative behaviors among youth occur at problematic levels (Eaton et al., 2006). Not only do these behaviors limit academic achievement (Flay, 2002), with the early initiation of alcohol and cigarette use associated with lower academic test scores (Fleming et al., 2005), they may also place youth at risk for future detrimental outcomes, such as depression (Hallfors, Waller, Bauer, Ford, & Halpern, 2005). Often, these behaviors are developed during childhood and adolescence and frequently proceed into adulthood (Eaton, et al., 2006).

Negative behaviors can be prevented or reduced using appropriately designed and implemented school-based prevention programs (Flay, 2002; Limbos et al., 2007; D. B. Wilson, Gottfredson, & Najaka, 2001). Those programs likely to result in the greatest opportunity for the reduction of these behaviors are ones that address multiple co-occurring negative behaviors (Catalano, et al., 2002), while simultaneously increasing social development and academic achievement (Flay, 2002). Although numerous school-based prevention programs exist, SECD programs have shown substantial promise in mitigating numerous health-compromising behaviors while increasing positive behaviors concomitantly (Berkowitz & Bier, 2004, 2007; J. A. Durlak, et al., 2011; Larson, 2000).

Despite the mounting research showing positive effects of SECD programs, there is little consistency in how programs are designed, implemented, and evaluated. To help bridge this gulf in practice, the Theory of Triadic Influence (TTI) is introduced to the field of SECD-related programming. The theory has its roots in substance use prevention and, more recently, its use has expanded to other disciplines such as the nutrition (e.g., Brug, de Vet, de Nooijer, & Verplanker, 2006; Brug, Oenema, & Campbell, 2003; Klepp et al., 2005; te Velde, Wind, van Lenthe, Klepp, & Brug, 2006) and exercise sciences (e.g., Baranowski, Anderson, & Carmack, 1998; Ferreira et al., 2007; S. P. J. Kremers et al., 2005; Wang et al., 2006). The theory is opportune for SECD-related programming and, to date, the TTI has yet to be commonly applied to this broad field. Thus, the *first aim* (Manuscript 1) of the dissertation is to conduct an empirical review of the SECD-related literature and to provide a theoretical framework for SECD-related programming; therefore, creating a lucid picture of the complex puzzle of influences that results in health-related behavior. Such a framework may facilitate consistency in the design and



evaluation of SECD programs across a broadly defined field. The *second aim* (Manuscript 2) of the dissertation is to examine a school-based SECD program, *Positive Action (PA)*, and explore if bolstering positive behavior—which is the primary concentration of many SECD-related programs—mediated the program’s effects on reducing substance use, violence, and sexual activity. The final and *third aim* (Manuscript 3) of the dissertation is to build upon prior research and study the impact of *PA* on school-level indicators of perceived school quality, thereby examining the possibility that a school-based SECD program can influence school climate and create contextual change.

### Research Questions and Hypotheses

The two empirical studies (Manuscripts 2 and 3) address the following research questions and related hypotheses:

Manuscript 2:

*“Do changes in positive behavior (i.e., academic behavior) mediate the effects of the PA program on substance use, violent behaviors, and sexual activity?”*

Based on a SECD and PYD perspectives and the theory underlying *PA* (Flay & Allred, 2010) the following hypotheses are proposed:

1) Students attending *PA* program schools will report significantly greater positive academic behavior (e.g., work hard in school, set goals, manage time wisely) as compared to those students attending control schools.

2) Positive academic behavior will partially or completely mediate the effect of the *PA* program on substance use, violent behaviors, and voluntary sexual activity.

Manuscript 3:

*“To what extent does the PA program impact school quality as measured by archival school-level data collected by the school district?”*

Based on prior studies (Flay & Allred, 2003; Flay, Allred, & Ordway, 2001; F. Snyder, et al., 2010), the following hypotheses were proposed:

- 1) *PA* program schools would demonstrate improved overall school quality as compared to controls.
- 2) Teacher, parent, and student reports would show that program schools demonstrated improvement on multiple indicators of school quality, including standards-based learning, quality student support, professionalism and system capacity, coordinated team work, focused and sustained action, involvement, satisfaction, and student safety and well being.

### Background and Significance

Although numerous types of school-based programs have been developed to target health-compromising behaviors (Battistich, Schaps, Watson, Solomon, & Lewis, 2000; Anthony Biglan, 2004; DuPaul & Stoner, 2004; Elias, Gara, Schuyler, Branden-Muller, & Sayette, 1991; Flay, 1985, 2007; Horowitz & Garber, 2006; R. D. Peters & McMahon, 1996; Sussman, Dent, Burton, Stacy, & Flay, 1995; Tolan & Guerra, 1994) they have had limited results because most have been problem-specific and tend to address proximal predictors of one behavior, not the multifaceted, ultimate and distal factors that influence many important outcomes (Flay, 2000, 2002; Flay, et al., 2009; Romer, 2003). As health behavior research has advanced, an increasing amount of evidence indicates a relationship between many behaviors (Botvin, Schinke, & Orlandi, 1995; Flay, 2002), suggesting that behaviors do not exist in isolation from each other.

Additionally, research offers empirical support that indicates both positive and negative youth outcomes are influenced by similar protective and risk factors (Catalano, et al., 2002; Flay, 2002).

With this newfound health behavior research (and in an effort to tackle the preceding program limitations) there has been a movement in recent years toward more comprehensive, integrative programs that address co-occurring behaviors and that involve families and communities. These programs generally appear to be more effective (Battistich, et al., 2000; Flay, 2000; Flay, Graumlich, Segawa, Burns, & Holliday, 2004; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; R. M. Lerner, 1995). That is, a comprehensive, integrated, promotive-preventive approach that addresses multiple determinants of behavior, not a narrow problem-specific approach, is likely to affect a wide range of behavioral outcomes, such as academic achievement, prosocial behaviors, truancy, substance use, risky sexual activity, and violent behaviors (Battistich, et al., 2000; Botvin, et al., 1995; Catalano, et al., 2002; Flay, 2002).

Overall, SECD-related programs fit into this more recent preventive approach. SECD programs tend to be implemented at schools and encompass a more integrative approach to influencing behavior by including family and community components. Such an integrative approach leads to complexity that often results in the need for continuity across practitioner and research disciplines. To help generate continuity and provide a framework that conflates many SECD-related constructs, the TTI is introduced in the first manuscript as a useful tool for SECD programs.

One of these SECD programs currently being used nationally is the *Positive Action (PA)* program. *PA* is a comprehensive school-wide SECD program that maps well

onto the TTI theoretic framework (Flay, 2002; Flay & Allred, 2003, 2010; Flay, et al., 2001). The two empirical studies (Manuscripts 2 and 3) examine 1) how (using a mediation analysis) the *PA* program reduced health-compromising behaviors as demonstrated in prior research (Beets, et al., 2009), and 2) the *PA* program's impact on overall school quality. The research furthers our understanding of the components comprising theoretically justified SECD programs and how a SECD program, *PA*, can reduce health-compromising behaviors and enhance school quality by facilitating systematic, contextual change.

#### *Prior Positive Action Studies*

Previous research has shown *PA* to positively influence school-level outcomes related to academic achievement, absenteeism and disciplinary measures (Flay & Allred, 2003; Flay, et al., 2001; F. Snyder, et al., 2010), positive behaviors associated with character (Washburn et al., 2011), and student outcomes related to substance use, violent behavior, and sexual activity (Beets, et al., 2009; Li et al., 2011). Based on quasi-experimental studies evaluating the *PA* program (Flay & Allred, 2003; Flay, et al., 2001), it has been recognized in the character-education report by the U.S. Department of Education's What Works Clearinghouse as the only "character education" program in the nation to meet the evidentiary requirements for improving both academics and behavior (What Works Clearinghouse, June, 2007).

The first preliminary studies (Flay & Allred, 2003; Flay, et al., 2001) examining the *PA* program utilized quasi-experimental designs and matched-control comparisons to investigate archival school-level data on achievement (e.g., math, reading, and science) and health-compromising behaviors (e.g., suspensions and violence rates). The first study

(Flay, et al., 2001) utilized data from two school districts that had used *PA* within a number of elementary schools in the 1990s. Results demonstrated that *PA* program schools scored significantly better than the non-*PA* schools in their percentile ranking of grade 4 achievement scores and reported significantly fewer incidences of violence and lower rates of absenteeism. In a second quasi-experimental study (Flay & Allred, 2003), results confirmed previous findings and also demonstrated that involvement in *PA* during elementary school improved academic and disciplinary outcomes at both the elementary- and secondary-school levels. Overall, the prior quasi-experimental studies provided preliminary evidence that the *PA* program can positively affect academic achievement and disciplinary outcomes.

Subsequently, to confirm these findings utilizing a randomized design (Flay, 1986; Flay et al., 2005), a necessary standard before a program is widely disseminated (Flay, et al., 2005), Snyder and colleagues (2010) utilized archival school-level data collected by the Hawai'i Department of Education (during the Hawai'i randomized trial described herein) to examine the impact of the *PA* program on school-level indicators of academic achievement, absenteeism, and disciplinary outcomes. Substantial effects were found at posttest, with improved results at follow-up. At one-year post trial, program schools scored 9.8% better on the TerraNova (2<sup>nd</sup> ed.) test for reading and 8.8% better in math; 20.7% better in Hawai'i Content and Performance Standards scores for reading and 51.4% better in math; and program schools reported 15.2% lower absenteeism and fewer suspensions (72.6%) and retentions (72.7%). Overall, effect sizes were moderate to large (range 0.5-1.1) for all of the examined outcomes.

In addition to school-level outcomes, Washburn and colleagues (2011) examined

the effects of the *PA* program on student-level positive behaviors associated with character. Utilizing data from three elementary-school-based randomized trials (i.e., the Hawai'i trial described herein, a Chicago trial, and a trial in a southeastern state) growth-curve analyses demonstrated that students in *PA* program and control schools showed a general decline in the number of positive behaviors associated with character across time; however, this decline was significantly reduced by the *PA* program in all three randomized trials. Overall, the study indicated that the *PA* program mitigated the decrease in student self-reported positive behaviors.

The effect of the *PA* program on negative behaviors has also been investigated. Li and colleagues (2011) explored preventive benefits of the *PA* program on student self-reported substance use, violence, and disruptive behaviors among elementary-aged students in Chicago. Results indicated that students attending *PA* program schools had significantly less substance use and violent behavior compared to control-school students. There was a non-significant reduction in disruptive behaviors. In sum, the study provided evidence about the effectiveness of the *PA* program in reducing substance use and violent behaviors among elementary-aged youth attending large urban school systems.

Utilizing student self-report and teachers' reports of student behavior data from the randomized trial in Hawai'i described in Manuscripts 2 and 3, Beets and colleagues (2009) examined the effects of the *PA* program on student substance use, violence, and voluntary sexual activity. Results showed significantly lower rates of substance use, violent behaviors, and voluntary sexual activity among students receiving the *PA* program. A dose-response trend for both student self-reports and teacher reports of student negative behavior was observed, with students who received 3-4 years of the *PA*

program having significantly lower negative behaviors compared to students receiving 1-2 years of program exposure. Similar to the Chicago study, this study found that the *PA* program reduced negative behaviors, with limited or no instructional time devoted to negative behaviors.

Overall, prior *PA*-related research provides support for SECD-related education and its ability to influence multiple behavioral domains concomitantly. However, to date, there is limited research examining the mechanisms regarding how SECD-related programs work to positively affect negative behaviors (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Liu, Flay, & Aban Aya Investigators, 2009; Riggs, Greenberg, Kusché, & Pentz, 2006). Furthermore, no study has examined the *PA* program's influence on overall school quality.

## CHAPTER 2. FIRST MANUSCRIPT:

Enhancing youths' social-emotional and character development:  
An empirical review and theoretical orientation

Frank J. Snyder<sup>1</sup>

<sup>1</sup>Department of Public Health, Oregon State University



### Abstract

In recent years, interest in social-emotional and character development (SECD) programs and research has intensified. Growing areas of research and practice often struggle to generate consistency among a multidisciplinary field of researchers and practitioners. This article 1) summarizes reviews of SECD-related literature and 2) recommends a theoretical orientation, the Theory of Triadic Influence (TTI), to generate consistency among related disciplines and serve as a roadmap to guide the design and evaluation of SECD-related programs. The theory, both integrative and comprehensive, fills a gap in the literature that seeks a comprehensive theoretical strategy aligned with SECD-related programs and etiology. The utility of such a theoretical framework is substantiated by empirical evidence from areas of research and programs related to a variety of health-behavior outcomes such as substance use. Applying the TTI in SECD-related work, and implications for etiology research, program design, and evaluation are discussed.

Keywords: social-emotional and character development, social and emotional learning, positive youth development, character education, emotional education

*“People grow through experience...This is how character is built.”*  
(Eleanor Roosevelt)

Social-emotional and character development (SECD; Elias, 2009) has been included in human dialogue for centuries. SECD education has historic roots at least to Socrates in the West (Berkowitz & Bier, 2004) and Confucius in the East (Park & Peterson, 2009) and has occurred in some form in the U.S. since the inception of public schooling (Howard, Berkowitz, & Schaeffer, 2004; McClellan, 1999). Interest in this topic has fluctuated across time, with public health research and psychology mostly abandoning the subject for much of the 20<sup>th</sup> century (Park & Peterson, 2009). Despite this trend, the desire and need for SECD education has never gone away, as it represents a skill set crucial to success in families, schools, workplaces, communities, and life in general (Elias, 2006). “Good character” is what parents seek for their children, what teachers and school administrators hope their students exemplify, and what communities look for in their citizenry.

Over the last 20 years, interest in SECD-related programming and research has intensified, although the reason for this movement is unclear. Possibilities for explaining this trend include public concern related to violence and substance use, a shift toward a focus on youth assets (Benson, 1997; J. V. Lerner, et al., 2009; R.M. Lerner, 2005, September), and an increase in funding for SECD-related research and programming. Further, there is growing understanding that many, if not all, health behaviors are linked (Flay, 2002) and SECD-related programs denote potential to affect multiple behavioral domains (J. A. Durlak, et al., 2011).

Additionally, numerous organizations have been established, such as the Character Education Partnership (CEP; <http://character.org>), the Collaborative for

Academic, Social, and Emotional Learning (CASEL; <http://casel.org>), Character Counts (<http://charactercounts.org>), and the European Centre for Educational Resilience (<http://www.um.edu.mt/edres>). U.S. federal, state, and local legislators have increasingly acknowledged SECD as an important component to education and civil society. The Office of Safe and Drug-Free Schools of the U.S. Department of Education has awarded Partnerships and Character Education Program grants (U.S. Department of Education, 2011). Even public figures, such as U.S. General Colin Powell, who was the first recipient of the CEP's American Patriot of Character Award, have been candid proponents for enhancing SECD among youth.

With this recent support for SECD, practitioners and researchers have noted the difficulties schools face in implementing SECD-related programming in the midst of the standards-base environment of present-day U.S. public schooling. Since the No Child Left Behind Act of 2001 passed, education has been focused on teaching to core content standards to improve academic scores, particularly in reading and mathematics, for which schools are being held accountable (Hamilton et al., 2007). Teaching to, and support for, the behavioral, social, emotional, and character domains have been relegated to limited or no dedicated instructional time (M. T. Greenberg et al., 2003). Despite this, schools are expected to prevent violence, substance use, and other health-compromising behaviors that are clearly linked to academic achievement (Fleming, et al., 2005; Malecki & Elliott, 2002; Wentzel, 1993).

Also exacerbating the challenge schools face in implementing SECD-related programming is the fact that much of what has been implemented is not evaluated or evidence-based practice (Berkowitz & Bier, 2007). Despite this, many U.S. schools

already utilize programs meant to support and develop youth's social and emotional competencies (Foster et al., 2005). Fortunately, as Berkowitz and Bier (2007) note, we are beginning to amass a scientific dossier which should act as the primary basis for selecting SECD-related strategies. Given the recent focus on SECD-related approaches, a substantial amount of empirical research is beginning to accrue. With this relatively newfound attention toward SECD, it is useful to gain a better understanding of what it is before exploring existing strategies and their effectiveness.

### *Defining Social-Emotional and Character Development*

What is SECD? The favored terminology has changed over time and remains different across related fields. The SECD-related literature is a web of semantics, and terms often overlap and intersect (Berkowitz & Bier, 2007). Examples of terminology include but are not limited to, the one used herein (SECD; Elias, 2009), social and emotional learning (J. A. Durlak, et al., 2011; Elias et al., 1997; Merrell, 2010; Payton et al., 2000; Weissberg & O'Brien, 2004; Zins & Elias, 2006; Zins, Payton, Weissberg, & O'Brien, 2007), character education (Berkowitz & Bier, 2004, 2007, February, 2005), moral education (Althof & Berkowitz, 2006; Damon, 2004; McClellan, 1999), character strengths (Park, 2004; Park & Peterson, 2009), positive youth development (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Flay, 2002; J. V. Lerner, et al., 2009; R. M. Lerner, Dowling, & Anderson, 2002; R. M. Lerner et al., 2005; Weissberg & O'Brien, 2004), prosocial behavior (Eisenberg & Fabes, 1998; Eisenberg, Fabes, & Spinrad, 2006), ethical education (Cohen, 2006), intellectual and emotional learning (Folsom, 2005, 2006), cognitive-social-emotional competencies (Linares et al., 2005), service learning (Markus, Howard, & King, 1993; Skinner & Chapman, 1999, November),

positive psychology (Flay & Allred, 2010; Miller, Nickerson, & Jimerson, 2009; Seligman, 2000) and skills for successful living and learning (Flay & Allred, 2010). SECD is of relevance and interest to theorists, researchers, practitioners, and the public, because the promotion of social and emotional related development is often linked to the promotion of positive behaviors, such as academic skills (Elias, 2009; Flay & Allred, 2003; Flay, et al., 2001; F. Snyder, et al., 2010), and the prevention of health-compromising behaviors, such as substance use (Tebe et al., 2007), violence, and risky sexual activity (Gavin, Catalano, David-Ferdon, Gloppen, & Markham, 2010). Table 1.1 includes a list of these SECD-related terms and examples of definitions that demonstrate similarities in terminology. For each term, a definition was chosen that was generally consistent with other published definitions. The definitions include a mix of developmental assets and program objectives.

--Insert Table 1.1 about here--

For the purpose of this review, SECD is defined similarly to Berkowitz and Bier's (2007) definition of character education as intending to promote student development.

The authors provide further detail:

The aspects of student development of relevance are those that enable and motivate the individual to be a moral agent (i.e., to engage in systematic, intentional prosocial behavior). Such developmental outcomes include moral values (e.g., prosocial attitudes and motives), socio-moral reasoning competencies (e.g., perspective-taking, moral reasoning), knowledge of ethical issues and considerations, moral emotional competencies (e.g., empathy, sympathy), a prosocial self-system (e.g., moral identity,

conscience), relevant behavioral competencies (e.g., ability to disagree respectfully, conflict resolution skills), and a set of characteristics that support the enactment of such prosocial motives and inclinations (e.g., perseverance, courage) (p. 30).

This definition is echoed by CASEL, a university-based scientific organization that represents an international group of researchers, policy makers, educators, and practitioners. The group has drawn from the wide range of scientific literature to identify teachable skills (see Table 1.2) that provide youth with fundamental tools for a democratic and autonomous society (Elias, 2006).

--Insert Table 1.2 about here--

Numerous SECD-related programs have endeavored to provide youth with these skills with the hope that the adeptness among youth will influence a variety of health-related domains, including academic success, community involvement, and prevention or mitigation of health-compromising behaviors such as substance use and violent acts (CASEL, 2003, March).

#### School-Based Strategies to Enhance Social-Emotional and Character Development: What Works?

SECD-related influences resonate from multiple factors, and the literature demonstrates that empirically-sound programs are often school based (Berkowitz & Bier, 2004, 2007; Payton et al., December, 2008). Thus, the focus of the current review is on school-based strategies. Although SECD-related studies are most often school based, practitioners and researchers have commonly taken a more holistic approach to behavior change, noting that schools cannot be considered fortifications that shield youth from

unpleasant external influences. That is, although programs are school based, many seek to change whole-school climate and some include components that extend to families and communities. To increase positive behaviors and reduce negative behaviors, the school setting is an ideal environment to positively influence SECD-related behaviors among youth, and school-based programs can involve the majority of the youth population. Numerous reviews (Berkowitz & Bier, 2007; Denham & Weissberg, 2004; Weissberg & O'Brien, 2004) and a recent meta-analysis (J. A. Durlak, et al., 2011) provide an overview of the SECD-related programs and their general effectiveness; the current paper presents a summary of these review findings and describes a theoretical framework with practical utility for a field with an expressed need for such a framework.

Berkowitz and Bier (2004) carefully point out that SECD-related programs can work. Although, with such a wide range of programs it is necessary to take a closer look. In a more systematic review of the literature, Berkowitz and Bier (2007) examined existing school-based strategies to determine what SECD education achieves and how, with the goal to uncover and examine empirically sound pre-K-12 outcome research. In total, they found 109 research studies and five reviews. Sixty-four research studies of 33 effective programs and the five reviews (2 literature reviews and 3 meta-analyses) were included in final data set for their review. Overall, the authors concluded that SECD-related education works when implemented broadly and with fidelity, and has a very wide-ranging impact. That is, it has the ability to affect diverse outcomes. For example, programs have demonstrated effectiveness related to sociomoral cognition, prosocial behavior and attitudes, problem solving skills, substance use, violence, sexual behavior, academic achievement, and attachment to school.

The researchers found that effective SECD programming often includes three key content elements (i.e., explicit character education programs, social and emotional curriculum, academic curriculum integration) and several key components: direct teaching strategies about character and ethics, interactive teaching/learning strategies (e.g., class meetings, cooperative learning, cross-age initiatives), classroom/behavior management strategies, integrating character education into the core academic curriculum, modeling/mentoring, professional development for program implementation, involving family and community members, community service/service learning, and school-wide or institutional organization.

Reviews conducted by CASEL support these findings, concluding that effective programs are “planned, systematic, monitored, improved, and refined over time” (Weissberg & O'Brien, 2004, p. 94). That is, effective programming 1) is grounded in theory and research, 2) teaches children to apply social and emotional learning skills and ethical values, 3) enhances school bonding, 4) provides developmentally and culturally appropriate instruction, 5) helps coordinate and unify programs, 6) enhances school performance, 7) involves families and communities, 8) establishes organizational supports and policies, 9) provides staff development and support, and 10) includes continuing evaluation and improvement (CASEL, 2003, March). The aforementioned points are echoed by other researchers (Bond & Hauf, 2004; Dusenbury & Falco, 1995; Gresham, 1995) who suggest four practices of effective programs. These include a sequenced step-by-step training approach, incorporating active forms of learning, a focus (and sufficient time) on social and personal skill development, and explicit learning goals, or SAFE practices (for sequenced, active, focused, and explicit; J. A. Durlak, et al.,



2011). The recommended SAFE practices have also been shown to affect after-school program outcomes related to enhanced personal and social skills (J.A. Durlak, Weissberg, & Pachan, 2010). Research demonstrates that for programs to maximize effects, programs should be of sufficient duration and sustained over time. Benefits will decline if SECD-enhancing efforts are not continued over time (Denham & Weissberg, 2004).

Most recently, Joseph Durlak and colleagues (2011) conducted the first large-scale meta-analysis of school-based programs that specifically included programs designed to enhance students' social and emotional development. The researchers found that students participating in programs, compared to control-group students, demonstrated improved academic performance, social and emotional learning skills, attitudes toward self and others, positive social behaviors, and reduced conduct problems (including substance use and violence) and emotional distress. Analysis of the few studies reporting follow-up data showed that effects, although reduced in magnitude (as one would expect if temporal supports are not provided), were sustained over time. Notably, the research showed that school staff can conduct successful programs and, as expected, analyses demonstrated that SAFE practices and implementation moderated program outcomes.

Paralleling these research findings, Berkowitz and Bier (2007) recommend that programs should endeavor to systematically change classrooms and the entire school culture. To do so, the authors state, "Such a comprehensive approach demands a theoretically and empirically justified pedagogical and developmental philosophy as its basis and justification. Consequently, the component strategies need to be aligned with

both the theoretical model underlying the intervention and the targeted set of outcomes for which the intervention is designed” (pg. 42-43). The TTI answers this call.

### The Theory of Triadic Influence

The TTI provides SECD researchers and practitioners with a theoretical framework to serve as a roadmap to guide the design and evaluation of SECD-related programs. Due to the multidisciplinary and often comprehensive nature of SECD, and the varying terminology, there is scant common ground across fields, and we are faced with a hazy picture of the complex puzzle of influences that result in health-related behavior. The TTI was developed to organize this puzzle and clearly focus our view of a) what causes health-related behaviors and b) how to effectively promote positive behavior, a primary goal of SECD-related programming.

Some new ideas regarding SECD can originate from the TTI (Flay & Petraitis, 1994; Flay, et al., 2009). The integrative and comprehensive theory suggests higher-order descriptions and explanations of health-related behavior, offers a detailed ecological approach to health-behavior change, and suggests that an increased focus on distal and ultimate levels (described in detail below) of influence will produce greater and more sustainable effects for SECD-related programs.

### *Origin of the Theory of Triadic Influence*

Before describing the TTI and its practical utility for SECD-related programs and research, it is useful to put it into context by covering a brief history of health-behavior theory. Health-behavior theory has developed from social psychological literature (Noar, 2005). Kurt Lewin has been recognized as the founder of social psychology and influenced the work of both Godfrey Hochbaum and Irwin Rosenstock. In the 1950s,

social psychologists sought to develop tools to understand behavior and drew from learning theories such as Stimulus Response Theory and Cognitive Theory (Janz, Champion, & Strecher, 2002). Stimulus Response Theory explains that individuals learn from events that change behavior. Cognitive Theory explains that behavior is a result of the subjective value placed on an outcome and the expectation that an action will result in a particular outcome.

Both Hochbaum and Rosenstock were social psychologists who worked for the U.S. Public Health Service during the 1950s and 60s and later pursued academic careers in the behavioral sciences. It was during their employment in the U.S. Public Health Service that the two researchers sought to explain the failure of individuals to participate in disease prevention programs, such as *Mycobacterium tuberculosis* screening programs. This work led to the development of the Health Belief Model, which includes the constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. Self-efficacy was subsequently added to the model and is an example of how theories can grow and change as they are applied to health behaviors and empirically tested. This progression also includes the development of different health-behavior theories, such as other intrapersonal theories (e.g., Theory of Planned Behavior and Theory of Reasoned Action; Ajzen, 1985; Fishbein & Ajzen, 1975) to help predict and explain behaviors.

Frequently, these theories, along with interpersonal theories such as social learning theory (Bandura, 1977) and the social development model (Catalano & Hawkins, 1996; Hawkins & Weis, 1985), share theoretical constructs and concepts. They largely focused on proximal influences (described in detail below) of health-related

behavior, such as intention to perform a behavior, and few distal factors such as interpersonal bonding. Health-behavior theories have incorporated, for example, subjective normative beliefs, values and evaluations, knowledge and expectations, and interpersonal processes such as those included in social learning theory (Bandura, 1977). Beyond the intrapersonal and interpersonal theories, ecological models (e.g., Bronfenbrenner, 1979) have attempted to acknowledge that more distal, cultural-environmental factors influence health-related behavior.

Nearly two decades ago, given the complex mass of theories and variables, particularly in the substance use dossier, Petraitis, Flay, and Miller (1995) meticulously examined the literature to find that variables can be organized along two dimensions: *levels of causation* and *streams of influence*. From these findings the TTI (Flay & Petraitis, 1994) was proposed to acknowledge numerous behavioral influences and to provide a structured and testable integrated theory. Next, the levels of causation and streams of influence are described, followed by a discussion on how the TTI extends prior ecological theory. For a more in-depth description see Flay, Snyder, and Petraitis (2009).

#### *Description of the Theory of Triadic Influence*

##### *Levels of causation.*

The TTI categorizes independent variables that predict behavior into *three levels of influence: ultimate, distal, and proximal*. *Ultimate-level causes* are broad, relatively stable, and represent factors that individuals have little control over such as their cultural environment. Their affects, however, are the most pervasive (having effects on multiple behaviors), the most mediated, and often the most difficult for any one person or program

to change but, if changed, are likely to have the greatest and longest-lasting influence on a broad array of behaviors. These factors include politics, religions, mass media, socioeconomic status, modern society's fixation on the pursuit of economic growth (as apposed to steady-state economics; cf. Daly & Farley, 2004; Egger, 2009; O'Neill, Dietz, & Jones, 2010), availability of recreational parks, age, ethnicity, and personality. More closely related to SECD, these ultimate-level causes also include the availability of good schools and after-school programs, parental values, and cultural practices. As an example, residents of a metropolitan area in the U.S. may have different ultimate levels of influence than individuals residing in a rural area.

--Insert Figure 1.1 about here--

*Distal-level influences* are variables affecting behavior that individuals are likely to wield some control over. The first level of distal causes is at the *social-personal nexus* (e.g., general self-control, bonding to parents or deviant role models, religious participation), variables that reflect the quality and quantity of contact between individuals and their cultural-environments and social situations. Second-order distal influences, another step closer to behavior, are a set of affective/cognitive influences termed *evaluations and expectancies*. They are general values and behavior-specific evaluations as well as general knowledge and specific expectations/beliefs that arise out of the contact between individuals and their surroundings. For example, the expectations of working hard at school, combined with associating with peers who make academic success a priority, can influence attitudes and normative beliefs.

*Proximal-level* predictor variables are more immediate precursors to a specific behavior and are under the control of an individual, although influenced by the distal and

ultimate factors described above. Decisions, intentions, and experiences are thought to have a direct effect on a particular behavior. Research has consistently shown that proximal variables included in the TTI are robust predictors of behavior (Flay, et al., 2009).

Each level is equally important, although the proximal level is usually more directly predictive of behavior. For example, a decision or intention to perform a behavior, such as studying, is highly predictive of the actual performance of behavior. If an adolescent intends to assist a younger sibling in learning a new skill, the adolescent may predictably perform that behavior. As a more detailed example, if an adolescent purchases a bicycle and helmet because she intends to bike to school, she is more likely to ride a bike to school. Many factors may play a role in influencing the decision to perform and continue biking. These can be more proximal, such as experiences while initially biking to school. Being constantly harassed by motorists who are aggravated with her presence may act as a negative social reinforcement to discontinue bicycling. Other factors may be more distal, such as perceived norms. If she believes that bicycling is economical and a way to conserve valuable nonrenewable resources, she may be more likely to bike. Conversely, believing that only individuals who had their driving privileges legally annulled ride a bike, she may be less likely to perform the behavior. Ultimate levels of influence may include the quality (e.g., safety) of the community where she resides and whether the area accommodates bicyclists with bike lanes and established recreational bike paths.

*Streams of influence.*

*Intrapersonal influences.* Figure 1.1 shows that causal effects flow primarily within

three streams of influence, converging on behavioral intentions and behaviors. The intrapersonal stream of the TTI (towards the left on Figure 1.1) begins at the ultimate level with relatively stable biological predispositions (e.g., testosterone levels) and personality characteristics (e.g., the Big 5: openness to experience, consciousness, extraversion, agreeableness, and neuroticism). The TTI predicts that these ultimate-level intrapersonal causes have direct effects on social/personal nexus variables in the intrapersonal stream, including views of one's self (e.g., self-esteem), and one's general competencies (e.g., locus of control). These variables then have, according to the TTI, direct effects on variables such as self-determination and general skills. These variables are more targeted to a specific behavior (e.g., academic-related behavior), and include one's will or determination to engage in the behavior and one's perceived skills to succeed in the behavior. Finally, the TTI predicts that the evaluation/expectancy variables converge on one's sense of self-efficacy regarding a particular behavior, such as completing homework after school.

*Social influences.* A similar flow exists within the interpersonal stream of the TTI. The interpersonal stream begins with ultimate-level characteristics of one's immediate social surroundings that are largely outside the control of individuals (e.g., school and teacher quality, parenting practices during one's childhood). It continues through social/personal nexus variables in one's immediate social surroundings, including the strength of the interpersonal bonds with immediate role models, such as teachers and parents, and the relevant behaviors of those role models (e.g., whether family members are life-long learners). The flow then continues through variables that include one's motivation to comply with various role models (e.g., whether to comply more with family

members and/or teachers and/or peers), and perceptions of what behaviors those role models are encouraging. Finally, social influences converge on one's social normative beliefs regarding the specific behavior, that is, the perceptions of social pressures to engage in a particular behavior.

*Cultural-environmental influences.* The third stream of the TTI, the cultural-environmental stream, follows the same pattern as the previous two streams. It begins with characteristics of one's broader culture that are largely beyond one's personal control such as political, economic, religious, legal, mass media, and policy environments (Minkler, Wallace, & McDonald, 1995). The third stream flows into variables including the nature of the interactions people have with social institutions (e.g., the nature of their relationship with political, legal, religious, and governing systems) and the information they glean from their culture (e.g., what they learn from exposure to mass media). The stream then flows through variables related to the consequences one expects from a behavior (e.g., whether going to college is useful, how much it will cost, etc.) and how one evaluates, favorably or unfavorably, the various consequences of a behavior. Finally, these influences converge on one's attitudes toward a specific behavior, such as civic engagement.

#### *Cognitive and affective sub-streams and their interactions*

In addition to the three major streams, each stream contains two sub-streams. One sub-stream is more *cognitive and rational* in nature, based on an objective weighing of the perceived pros and cons concerning a given behavior. The other sub-stream that influences behavior is more *affective* or emotional and less rational. Thus, decisions are not always entirely rational; they may include an affective or emotional component (i.e.,



hot cognition) as well as a cognitive or rational component.

For some readers, the proximal levels of all streams (self-efficacy, social normative beliefs and attitudes) may seem like they are intrapersonal factors. However, these affective/cognitive factors that originate from interpersonal (social situation → social normative beliefs) or cultural-environmental (cultural environment → attitudes) factors are distinguished from those that originate within the person (biology/personality → self-efficacy). Within the TTI, each and every stream ends in affective/cognitive factors (self-efficacy, social normative beliefs, and attitudes) that, in turn, influence the most proximal affective/cognitive predictor of behavior, intentions.

The theory also recognizes that influences in one path are often mediated by or moderate (or interact with) influences in another path. Further, the TTI recognizes that engaging in a behavior may have influences that feed back and alter the original causes of the behavior.

#### *An ecological view of the TTI.*

Figure 1.2 illustrates that the TTI emphasizes both ecological rings and levels of causation. The three streams of influence in the TTI and the notion of inter-related influences are similar to the rings of influence in Bronfrenbrenner's (1979, 1986, 2005) ecology systems theory or social ecology model. However, most conceptions of the social ecology model do not consider the levels/tiers of influence within its rings. In the TTI, intrapersonal factors are seen as nested within social factors that, in turn, are nested within broader socio-cultural environmental factors, just as in the basic ecological models. Within the TTI, all three rings/streams also have causal influences at multiple levels, including ultimate/underlying, distal/predisposing, and proximal/immediate.

Further, as Figure 1.2 shows, time does influence levels of causation, whereby lower levels often incorporate faster processes. Time also influences program effects; for example, effective SECD-related programs that are not sustained or followed-up by continuous supports will likely have less impact over time (Denham & Weissberg, 2004).

--Insert Figure 1.2 about here--

In sum, the TTI consists of multiple tiers/levels of influence, three major streams each with two sub-streams of influence, dozens of predictions about direct and indirect (mediated) pathways and interactions (moderation) between SECD-related variables, and feedback loops.

#### Extant Application of the Theory of Triadic Influence

Researchers frequently acknowledge the TTI as a way to address the proximal predictors, distal influences, and ultimate causes that influence behavior. Additionally, researchers from a growing number of disciplines recognize the importance of the intrapersonal, interpersonal, and cultural-environmental streams of influence. The majority of articles that reference the TTI have focused on the etiology of several behavioral domains and, most frequently, studies come from the substance use domain (see Table 1.3). This is not a surprise as the genesis of the TTI occurred after a thoughtful review of the substance use literature. Many recent studies concede the importance of the TTI in integrating the variety of variables influencing health-related behavior.

In reference to the SECD domain literature (see Table 1.3), one review has recognized the utility of the TTI in explaining the causes of behaviors, and one explicit SECD program, *Positive Action* (7 studies), has used the TTI as a guiding framework. Thus,

there is much room for expansion of utilizing the TTI among SECD-related researchers and practitioners.

--Insert Table 1.3 about here--

#### Utility of the TTI and Implications for SECD-Related Etiology Research, Program Design, and Evaluation

By integrating and organizing so many risk and protective factors, hierarchical tiers, streams, sub-streams, mediated and moderated paths and feedback loops, the TTI has utility for researchers who are studying the etiology of health-related behavior. The theory helps address a need for homogeneity in definitions and consistency among theoretical and measurement models related to youth social competence (Dirks, Treat, & Robin Weersing, 2007). Further, the TTI can help organize and map conceptual rationales regarding SECD-related programming's impact on school attitudes and academic performance (J. A. Durlak, et al., 2011).

It is apparent that etiology researchers, particularly those interested in SECD who follow a more integrative and comprehensive approach, have much to gain by empirically testing the TTI. Subsequently, this would allow scientists and practitioners to translate research into practice by identifying predisposing, enabling, and reinforcing factors that influence SECD-related behavior (Green & Kreuter, 2005) and tailoring programs to address these factors. Therefore, the TTI also has much utility for SECD-related program planners and researchers who are designing and evaluating programs. Specifically, the TTI is helpful in selecting strategies to include in a SECD-related program and predicting, evaluating, and understanding a SECD program's impact.

The comprehensiveness of the TTI explains the limited impact of informational approaches that have solely focused on didactic education (i.e., knowledge, in the middle of the TTI's cultural-environmental stream). Value-based approaches have also failed as they typically focus only on the lower half of the cultural-environmental stream. More recent approaches have addressed the need for social skills and self-efficacy, although, these programs may have limited results if they 1) have limited program components related to knowledge and values, and 2) fail to focus on and alter social normative beliefs. The TTI clarifies that SECD-related programs should address the intrapersonal, interpersonal, and cultural-environmental streams. For example, programs should incorporate skill-, social-normative-, knowledge-, and value-based components to enhance social and emotional skills, attitudes, prosocial behaviors, and academic achievement, and reduce conduct problems and emotional distress.

Further, the TTI suggest that, given adequate practices, resources, and implementation, SECD-related programs should be comprehensive to generate increased success. This recommendation parallels empirical reviews that suggest comprehensive programs that include classroom, school-wide, family, and community components are likely to generate greater effects than classroom-only approaches (Catalano, et al., 2004; M.T. Greenberg, Domitrovich, & Bumbarger, 2001; Tobler et al., 2000).

### Assumptions and Limitations

Like the interpersonal health-behavior theories, the TTI includes the assumption that health-related behaviors are directly influenced by decisions/intentions and that this is a function of an individual's attitudes toward a particular behavior, social normative beliefs, and self-efficacy. Further, and very notable, the TTI and any integrated theory of

behavior share common limitations. These limitations often relate to the complexity of the models and the difficulty of empirically testing them given current analytic techniques. A complex framework of variables does not easily lend itself to analysis. Researchers must often weigh parsimony against model misspecification (Dirks, et al., 2007). Advances in research methods and statistical approaches, such as advancing structural equation modeling techniques, may accommodate the complexities of the TTI.

### Paths for Future Research and Conclusions

SECD-related research and practice has shown progress over recent years, yet more work is needed. The TTI provides a useful tool in the process of advancing this work. The theory has utility for work that should be conducted related to understanding mediating and moderating mechanisms of SECD-related programs. Some program practices and components may be more important than others, and moderation and mediation analyses would assist with our understanding. Further, researchers and practitioners can relate program components and influences to the TTI in an effort to help generate more homogeneity in terminology and measures as the SECD field progresses. Recognizing the complexities of comprehensive programs, more work should be done to examine the effects of programs that involve families and communities, and the impact of including these added components. Although examining the effects of added components has been done (Flay, et al., 2004), few studies have examined this. Lastly, application of SECD-related research and programs addressing additional behavioral domains, such as dietary behaviors and physical activity, can be explored. There is evidence that SECD-related constructs, such as executive cognitive function, relate to youth food intake and physical activity (Riggs, Chou, Spruijt-Metz, & Pentz, 2010; Riggs, Spruijt-Metz,

Sakuma, Chou, & Pentz, 2010). Moreover, some work has been done regarding the modification of existing, evidence-based SECD programs to address child obesity (Riggs, Sakuma, & Pentz, 2007).

In sum, behavior has many determinants, and integrated theoretical approaches are needed. There is increasing evidence that appropriately designed SECD-related programs are generally effective when carefully implemented. A growing number of these programs often seek to influence the multiple determinants of behavior. The TTI is a practical tool for SECD-related programming, and researchers have much to gain by exploring the ability of the theory to explain and predict behavior. Further, program implementers can use the TTI to better understand the design of their program, how to evaluate it, and what results to expect. Overall, the practical utility of the TTI can enhance the effectiveness of SECD-related programs and generate consistency in a relatively new, multidisciplinary area of research and programming.

Table 1.1. Examples of terms and definitions related to social-emotional and character development.

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
Character education	Intended to promote student development	Berkowitz & Bier, 2007, pg. 30
Character strengths	A family of positive traits reflected in thoughts, feelings, and behaviors	Park, 2004, pg. 40
Cognitive-social-emotional competencies	Self-efficacy, problem solving, and social-emotional functioning	Linares et al., 2005, pg. 406
Social, emotional, ethical, and academic education (SEEAE)	Sustained pre-K-12 programmatic efforts that integrate and coordinate these [promoting children's social-emotional competencies and ethical dispositions; and creating safe, caring participatory, and responsive school systems and homes] pedagogic and systemic dimensions	Cohen, 2006, pg. 202
Intellectual and emotional learning	Connects five thinking operations [cognition, memory, evaluation, convergent production, and divergent production] and five qualities of character [appreciation, mastery, ethical reasoning, empathy, and reflection].	Folsom, 2005, pg. 75
Moral education	Cognitive-developmental approaches to moral education	Althof and Berkowitz, 2006, pg. 499
Positive psychology	Involves a change of focus from repairing what is worst in life to creating what is best	Seligman, 2000, pg. 418
Positive youth development	The Six Cs: competence, confidence, connection, character, caring, and contribution	J. V. Lerner 2009, pg. 545
Prosocial behavior	Voluntary behavior intended to benefit another	Eisenberg & Fabes, 1998, pg. 701
Service learning	Curriculum-based community service that integrates classroom instruction with community service activities	Skinner and Chapman 1999, November, pg. 3
Skills for successful living and learning	The skills for learning and living in the physical, intellectual, social and emotional domains.	Flay & Allred, 2010, pg. 472
Social-emotional and character development (SECD)	Highlight[s] the formative role of emotion, the integrating role of character, the actualizing role of skills, and the sustaining role of context	Elias, 2009, pg. 838
Social and emotional learning (SEL)	The ability to understand, manage, and express the social and emotional aspects of one's life in ways that enable the successful management of life tasks such as learning, forming relationships, solving everyday problems, and adapting to the complex demands of growth and development	Elias et al., 1997, pg. 2

Table 1.2. The Collaborative for Academic, Social, and Emotional Learning's essential skills (as cited in Elias, 2006).

**Know Yourself and Others**

- Identify feelings—recognizing and labeling one's feelings
- Be responsible—understanding one's obligation to engage in ethical, safe, legal behaviors
- Recognize strengths—identifying and cultivating one's positive qualities

**Make Responsible Decisions**

- Manage emotions—regulating feelings so that they aid rather than impede the handling of situations
- Understand situations—accurately understanding the circumstances one is in
- Set goals and plans—establishing and working toward achievement of specific short- and long-term outcomes
- Solve problems creatively—engaging in a creative, disciplined process of exploring alternative possibilities that leads to responsible, goal-directed action, including overcoming obstacles to plans

**Care for Others**

- Show empathy—identifying and understanding the thoughts and feelings of others
- Respect others—believing that others deserve to be treated with kindness and compassion as part of our shared humanity
- Appreciate diversity—understanding that individual and group differences complement one another and add strength and adaptability to the world around us

**Know How to Act**

- Communicate effectively—using verbal and nonverbal skills to express oneself and promote effective exchanges with others
- Build relationships—establishing and maintaining healthy and rewarding connections with individuals and groups
- Negotiate fairly—achieving mutually satisfactory resolutions to conflict by addressing the needs of all concerned
- Refuse provocations—conveying and following through effectively with one's decision not to engage in unwanted, unsafe, unethical behavior
- Seek help—identifying the need for and accessing appropriate assistance and support in pursuit of needs and goals
- Act ethically—guiding decisions and actions by a set of principles or standards derived from recognized legal and professional codes or moral or faith-based systems of conduct



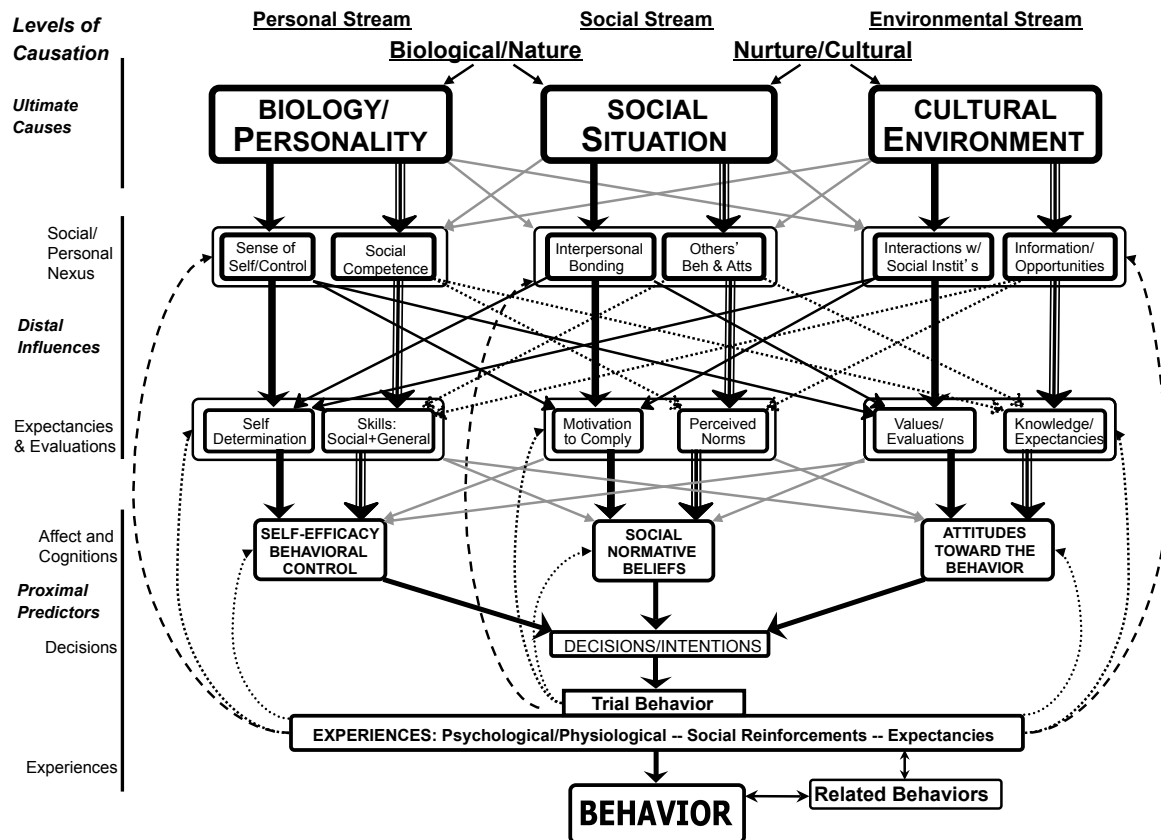
Table 1.3. Literature referring to the TTI by behavioral domain and type of study.

Behavioral Domain	Etiology	Intervention
Dietary Behaviors	Brug, de Vet et al., 2006; Kamphuis et al., 2006	Brug et al., 2003; Klepp et al., 2005; McCall et al., 2005; Sandvik et al., 2005; Schols & Brug, 2003; te Velde et al., 2006; Wind, 2006; Wind et al., 2006
Dietary Behaviors and Physical Activity	Brug, van Lenthe et al., 2006; de Bruijn et al., 2005; de Bruijn et al., 2005; Kremers et al., 2005	Wang et al., 2006
Health-Related Behaviors	Flay & Petraitis, 1994; Freudenberg et al., 1995; Perry, 2004	Brug et al., 2005
Mental Health	Bell et al., 2009; Fuemmeler, 2004; Mann et al., 2004	Bell & McKay, 2004; Breland-Noble et al., 2006
Multiple Risk Behaviors	Busseri et al., 2007; Hirschberger et al., 2002; Willoughby et al., 2011	Browne et al., 2001; Flay & Collins, 2005; Flay et al., 2004; Fagen & Flay, 2009; Li et al., 2011
Physical Activity	Baranowski et al., 1998; Ferreira et al., 2007	
Social-Emotional and Character Development	Flay, 2002	Beets et al., 2009; Flay & Allred, 2003; Flay et al., 2001; Ji et al., 2005; Li et al., 2011, Snyder et al., 2010, Snyder et al., in press
Sexual Behaviors	Bearinger & Resnick, 2003; Hellerstedt et al., 2006; Kocken et al., 2006; Sieving et al., 2006; Sieving et al., 2000	Bell et al., 2007; Kugler et al., 2007; Tortolero et al., 2005; Tortolero et al., 2009; Weeks et al., 1995
Substance Use	Abrams, 1999; Anderson, 1998; Berg et al., 2009; Brinker et al., 2009; Carvajal & Granillo, 2006; Carvajal et al., 2002; Carvajal et al., 2004; Christophi et al., 2009; Connell et al., 2010; Dal Cin et al., 2009; DiRocco et al., 2007; Drobles, 2002; Ertas, 2007; Flay, 1993; Flay, 1999; Flay, 2000; Flay & Petraitis, 1991; Flay & Petraitis, 2003; Flay et al., 1994; Flay et al., 1995; Flay et al., 1999; Ford et al., 2009; Foshee et al., 2007; Giovino et al., 2009; Haug, 2001; Huang et al., 2008; Huang, Chen et al., 2009; Huang, Lee et al., 2009b; Holder et al., 1999; Hover et al., 2000; Karlsson, 2006; Kear, 2002; Kleinjan et al., 2009; Kobus, 2003; Komro & Toomey, 2002; Kumar et al., 2002; Leatherdale & Manske, 2005; Leatherdale & Strath, 2007; Liu et al., 2009; Mohatt et al., 2004; Murnaghan, 2007; Myers et al., 2009; Nierkens et al., 2006; Peters et al., 2009; Petersen et al., 2005; Petraitis et al., 1995; Petraitis et al., 1998; Schofield et al., 2003; Schulenberg et al., 2001; Shadel et al., 2004a; Shadel et al., 2004b; Shadel et al., 2009; Sieving et al.,	Fogg & Borody, 2001; Komro et al., 2004; Midford et al., 2005; Perry et al., 2006; Perry et al., 2002; Scheier, 2001; Stigler et al., 2006; Teasdale et al., 2009

	2000; Sussman et al., 2000; Thorner et al., 2007; Turner et al., 2004; Victoir et al., 2007; Wiefferink et al., 2006; Wiefferink et al., 2007	
Violence	Botvin et al., 2006; Graves et al., 2009	Jagers et al., 2007; Komro et al., 2004
Other: (e.g., gambling, skin cancer protection, colorectal cancer screening, community enhancement)	Biglan, 2003; Biglan, 2004; Biglan & Hinds, 2009; Commers et al., 2007; Chalmers & Willoughby 2006; de Vries & Lechner, 2000; DuBois & Flay, 2004; Kremers et al., 2000; Lechner et al., 2004; Lechner et al., 1997; Stanton et al., 2005; Wolf, 2002	Freudenberg et al., 2000

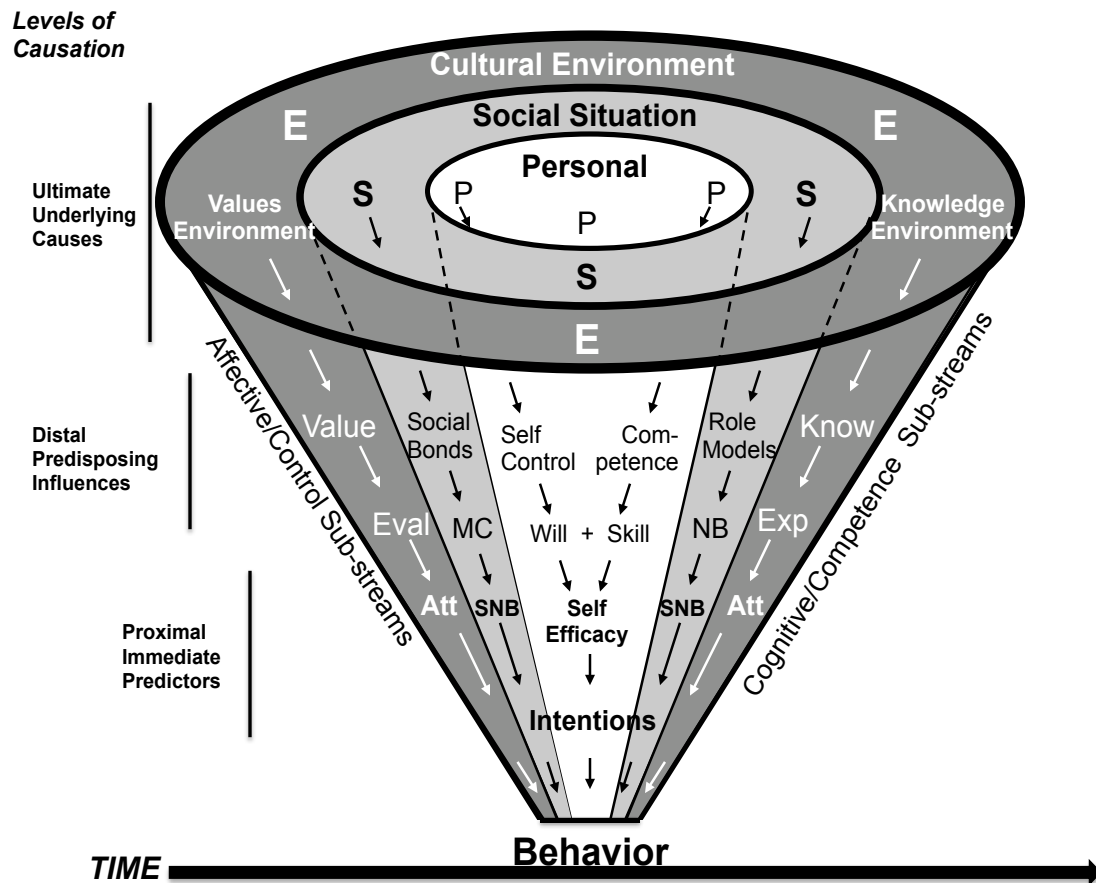
Adapted and updated from Flay, Snyder, and Petraitis (2009).

Figure 1.1. The Theory of Triadic Influence



Adapted from Flay, Snyder, and Petraitis (2009).

Figure 1.2. The Theory of Triadic Influence Ecological System



Adapted from Flay, Snyder, and Petraitis (2009). Note: Eval = Evaluation, Att = Attitude towards the behavior, MC = Motivation to comply, SNB = Social Normative Beliefs, Know = Knowledge, Exp = Expectancies.

Adapted from Flay, Snyder, and Petraitis (2009).

## CHAPTER 3. SECOND MANUSCRIPT:

Preventing negative behaviors among elementary-school students through enhancing students' social-emotional and character development

Frank J. Snyder<sup>1</sup>, Alan C. Acock<sup>2</sup>, Samuel Vuchinich<sup>2</sup>, Michael W. Beets<sup>3</sup>, Isaac J. Washburn<sup>4</sup>, and Brian R. Flay<sup>1</sup>

<sup>1</sup>Department of Public Health, Oregon State University

<sup>2</sup>Department of Human Development and Family Sciences, Oregon State University

<sup>3</sup>Department of Exercise Science, University of South Carolina

<sup>4</sup>Oregon Social Learning Center

### Abstract

A positive youth development perspective focuses on promoting the strengths of youth and their positive behaviors, moving away from the negative perspective that has been predominant in scientific thinking for decades. Recent published research has reported the effects of a comprehensive, school-wide social-emotional and character development program, *Positive Action*, on reducing substance use, violent behaviors, and sexual activity among elementary-school students. The purpose of this study was to build upon that research to examine the mechanisms, whereby improvements in academic-related behaviors mediated the intervention effects on negative behaviors. We utilized a matched-pair, cluster-randomized, controlled design, with 20 (10 intervention and 10 control) racially/ethnically diverse schools. Fifth-grade students self-reported their academic behaviors, together with their substance use, violence, and voluntary sexual activity; teachers rated students' academic behaviors, substance use, and violence. Structural equation models, with a latent academic behavior mediator, indicated that students attending intervention schools reported significantly better academic behavior. Intervention effects on student-reported substance use, violence, and sexual activity were mediated by greater academic behavior. Consistent with previous research, students attending intervention schools reported significantly less substance use, violence, and sexual activity; boys reported more negative behaviors than girls. Teacher reports corroborated these results, with rated academic behavior partially mediating the effects of the intervention on rated negative behaviors. This study 1) provides evidence that adds insight into the mechanisms through which a social-emotional and character development program affects negative outcomes and 2) supports social-emotional and character

development and positive youth development perspectives which posit that focusing on youths' assets can reduce negative behaviors.

Keywords:

school-based prevention, randomized trial, social-emotional and character development, positive youth development, mediation

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### INTRODUCTION

Negative behaviors among youth, such as substance use, violence, and sexual activity continue to be notable public health concerns in the United States (Centers for Disease Control and Prevention, 2009). These behaviors place youth at increased risk for the development of problems, including future violence (Herrenkohl et al., 2000), school

drop out (Ellickson, Saner, & McGuigan, 1997; Fagan & Pabon, 1990) and depression (Mason et al., 2004).

In an endeavor to reduce negative behaviors and undesirable outcomes, a positive youth development (PYD) perspective has emerged in recent years that focuses on the strengths of youth and their positive behaviors, moving away from the negative perspective that has been predominant in scientific thinking for decades (J. V. Lerner, et al., 2009). The perspective has gained acceptance among researchers, practitioners and policy makers, and involves viewing youth as resources to be developed (R. M. Lerner, Brentano, Dowling, & Anderson, 2002). Personal and social assets that promote PYD include physical, intellectual, psychological and emotional, and social development (J. V. Lerner, et al., 2009). For optimal personal growth, youth require access to environments that enhance their development, such as positive and safe school settings that increase school involvement and motivation to learn academic and life skills.

Accompanying this rising interest in PYD, recent decades have also seen an increase in social-emotional and character development (SECD; Elias, 2009), which seeks to foster an improvement in numerous behavioral domains, such as pro-social skills, self-control and academic achievement, and corresponding reductions in negative behaviors. These programs are often comprehensive (i.e., involve students, teachers, whole-schools, families, and communities), attempt to bolster youths' positive behaviors, and have been shown to improve multiple indicators of SECD (J. A. Durlak, et al., 2011) and reduce negative behaviors when implemented comprehensively and with fidelity (Berkowitz & Bier, 2004, 2007); however, we do not fully understand the mechanisms through which SECD efforts affect youth outcomes.



The content of PYD and SECD programs overlap considerably. The *Positive Action* (*PA*) program is one example of a program that reflects both the PYD and SECD perspectives. The present study builds upon recent research (see Beets, et al., 2009) that reported the effects of *PA* on reducing substance use, violent behaviors, and sexual activity among elementary-school students. The purpose of the present study is to examine the mechanism through which the *PA* intervention worked and, specifically, if bolstering positive behavior – which is the primary concentration of many PYD/SECD programs, including *PA* – mediated the intervention effects on reducing substance use, violence, and sexual activity. Based on the PYD and SECD perspectives and the theory underlying the *PA* program (that includes a link between increased positive behavior and reduced negative behavior; Flay & Allred, 2010), we hypothesized that 1) student self-reports and teacher reports on students attending *PA* intervention schools would show significantly more positive academic behaviors (AB) as compared to those students attending control schools and 2) AB would partially or completely mediate the effect of the *PA* intervention on substance use, violent behaviors, and voluntary sexual activity.

This is the first study to examine a mechanism through which the *PA* program can influence negative behaviors by improving positive behaviors without including detailed instructional time devoted to the negative behaviors. Substance use and violence behaviors (harassment, bullying, fighting, etc.) are mentioned, but they are not the main focus anywhere in the curriculum and are used only as example behaviors (sexual activity is never mentioned). Furthermore, to date, scant research has examined mechanisms regarding how PYD/SECD-related interventions, with their focus on development of

children's assets, can reduce negative behaviors (Bierman, et al., 2008; Liu, et al., 2009; Riggs, et al., 2006).

### *Prior Positive Action Studies*

Previous research has shown *PA* to positively influence school-level outcomes related to academic achievement, absenteeism and disciplinary measures (Flay & Allred, 2003; Flay, et al., 2001; F. Snyder, et al., 2010), student-level positive behaviors associated with character (Washburn, et al., 2011), and student substance use, violent behavior, and sexual activity (Beets, et al., 2009; Li, et al., 2011). More specifically, using data from the randomized trial described herein, Beets and colleagues (2009) showed significantly lower substance use, violent behaviors, and voluntary sexual activity among students receiving the *PA* intervention. A dose-response trend was also observed, with students who received 3-4 years of the *PA* program reporting significantly fewer negative behaviors than students who received 1-2 years of program exposure. Indeed, this study found that the *PA* program can alter negative behaviors, with minimal or no inclusion of instructional time devoted to negative behaviors.

Overall, prior *PA*-related research provides support for PYD/SECD-related education and its ability to influence multiple behavioral domains concomitantly. Research suggests a mechanism that leads *PA* to reduce negative behaviors, such as substance use, violent behaviors, and voluntary sexual activity. Prior *PA* studies have explored the program's beneficial impact on positive and negative outcomes, yet have not examined a theoretical link between positive and negative behaviors (Flay & Allred, 2010).

## METHODS

### Description of the *PA* Program and the Hawai'i Trail

The *PA* program (<http://www.positiveaction.net>) is a comprehensive, school-wide PYD/SECD program designed to positively influence multiple behavioral domains such as student academic achievement and substance use. First developed in 1977 by Carol Gerber Allred, Ph.D. and revised since then, the program is grounded in a broad theory of self-concept (D. L. DuBois, Flay, & Fagen, 2009; Purkey, 1970; Purkey & Novak, 1970), and is consistent with integrative, ecological theories of health behavior such as the Theory of Triadic Influence (Flay & Petraitis, 1994; Flay, et al., 2009). The program posits a theoretical link between positive and negative behaviors, whereby a focus on positive actions leads to a cycle of positive outcomes and, therefore, a reduction in negative behaviors (Flay & Allred, 2010).

The full *PA* program consists of K-12 classroom curricula, of which the elementary curriculum was used in the Hawai'i randomized trial; a school-wide climate development component, including teacher/staff training by the developer, a *PA* coordinator's (principal's) manual, school counselor's program, and *PA* coordinator/committee guide; and family- and community-involvement programs. The family-involvement program is available in various levels of involvement and is designed for parents to use at home to promote the core elements of the classroom curriculum and reinforces school-wide positive actions. The Hawai'i randomized trial did not include the more intensive family component or the community-development component.

The sequenced elementary curriculum consists of 140 lessons per grade, per academic year, offered in 15-20 minute lessons by classroom teachers. The total time

students are exposed to the fully implemented program during a 35-week academic year is approximately 35 hours. Lessons cover six major units on topics related to self-concept (i.e., the relationship of thoughts, feelings, and actions), physical and intellectual actions (e.g., nutrition, physical activity, learning skills, decision-making skills, creative thinking), social/emotional actions for managing oneself responsibly (e.g., self-control, time management), getting along with others (e.g., empathy, altruism, respect, conflict resolution), being honest with yourself and others (e.g., self-honesty, integrity, self-appraisal) and continuous self-improvement (e.g., goal setting, problem solving, persistence). The classroom curricula utilize an interactive approach, whereby interaction between teacher and student is encouraged through the use of structured discussions and activities, and interaction between students is encouraged through, for example, structured or semi-structured small group activities, including games, role plays and practice of skills.

The school-climate kit coordinates school-wide implementation and consists of materials to encourage and reinforce the six units of *PA*. The *PA* coordinator's (principal's) manual directs the use of materials such as posters, music, tokens, and certificates. It also includes information on planning and conducting assemblies, creating a *PA* newsletter, and establishing a *PA* committee to create a school-wide *PA* culture. Additionally, a counselor's program, implemented by school counselors, focuses on developing positive actions with students at higher risk and their classrooms, families, and the school as a whole.

Prior to the beginning of each academic year, teachers, administrators, and support staff (e.g., counselors) attended *PA* program training sessions conducted by the

program developer. The training sessions lasted approximately 3-4 hours in the initial year, and 1-2 hours the following years. Booster sessions, conducted by a project coordinator and lasting approximately 30-50 minutes, were provided an average of once per academic year for each school and intended to increase implementation fidelity.

Several measures of fidelity of implementation were collected during the *PA* Hawai'i trail and are described in more detail elsewhere (Beets et al., 2008; F. Snyder, et al., 2010). Results showed that there was some variability in implementation between intervention schools with slight gains across years. Although implementation was good for each indicator, results showed that *PA* intervention schools could have implemented the program with greater fidelity. Additionally, control schools reported devoting instructional time toward SECD-related activities and implemented more SECD-related programs (other than *PA*) than intervention schools.

### Design

The *PA* Hawai'i trail was a matched-pair, cluster randomized, controlled trial, conducted in Hawai'i elementary schools during the 2002-03 through 2005-06 school years and is described in detail elsewhere (Beets, et al., 2009; F. Snyder, et al., 2010). The state is one large school district with diverse ethnic groups and a recognized need for improvement (i.e., low standardized test scores and a high percentage of students receiving free or reduced-price lunch). The trial took place in 20 public elementary (K-5<sup>th</sup> or K-6<sup>th</sup>) schools (10 matched-pairs) on three Hawai'ian islands. To ensure comparability of the intervention and control schools with respect to baseline measures, archival school report card data were used to stratify schools into strata ranked on an index "risk score" based on demographic variables (Dent, Sussman, & Flay, 1993; Flay, et al., 2004;

Graham, Flay, Johnson, Hansen, & Collins, 1984). Schools were randomly selected from within strata and randomly assigned to intervention or control conditions before recruitment. Intervention schools were offered the complete *PA* program free of charge and control schools were offered a monetary incentive during the randomized trial and the *PA* program upon completion of the trial. At baseline, intervention and control schools were similar on matching indicators (Table 2.1).

-- Insert Table 2.1 about here--

### Sample

Due to Institutional Review Board requirements, students must have entered grade 5 to become eligible to answer questions related to substance use, violent behaviors, and sexual activity; thus, data from the final wave of the longitudinal study were utilized in the present research. After students entered grade 5 they were asked to procure active parental consent and give verbal assent to respond to 11 items querying about substance use (five items), violent behavior (five items), and sexual activity (one item). Among treatment and control schools, nearly 1800 students (50% female) gained permission to participate, a consent rate of over 85%. The final sample of students' self-identified ethnicity was primarily Hawai`ian or part Hawai`ian (26.1%) or they reported multiple ethnic backgrounds (22.6%). The others' self-identified as White non-Hispanic (8.6%), African American (1.6%), Native American (1.7%), other Pacific Islander (4.7%), Japanese (4.6%), other Asian (20.6%), other (7.8%) and unknown (1.6%).

Differential selection bias was assessed to compare students whose parents provided active consent and students who did not receive consent, with no significant ( $p \geq .05$ ) differences observed between the two groups (see Beets, et al., 2009 for more

detail). To determine whether students who dropped out of the study were different at baseline from those who remained in the study after baseline, demographic characteristics (e.g., ethnicity and gender) were analyzed for intervention and control groups, separately. Further, intervention- and control-group students who dropped out of the study after baseline were compared. Additionally, at year 5, control-group students were assessed to examine whether those control-group students who were surveyed at each of the five years were significantly different from those control-group students who entered the study after baseline. No significant differences were found for these analyses (Beets, et al., 2009).

## Measures

### *Academic Behavior*

*Student self-reports.* In grade 5, academic behavior (AB) was measured by five experimenter-developed items to measure behaviors related to student involvement in school and motivation to learn. Grade 5 students were asked how much of the time they 1) work hard in school 2) set goals, 3) manage time wisely, 4) try to be their best, and 5) solve problems well; and to respond on a scale of 1 to 4 (1= none of the time, 2 = some of the time, 3 = most of the time, 4 = all of the time). The alpha was 0.725. In a principal component (PC) analysis, all 5 items loaded over .660 on the first PC and this component explained 48.4% of the variance in the set of items. These 5 items relating to AB were chosen for the reported analysis because they were answered by both students and teachers.

*Teacher reports of student behavior.* Teachers were asked to rate how well each of the 5 aforementioned items described the student and to respond on a scale of 1 to 3 (1 = not at

all, 2 = moderately well, 3 = very well). All of the items loaded at least .766 on the first PC and this component explained 64.8 % of the variance in the item set ( $\alpha = .863$ ).

### *Negative Behaviors*

*Student self-reports.* Fifth-grade respondents answered survey questions adapted from Monitoring the Future (Johnston, O'Malley, Bachman, & Schulenberg, 2009) and the Aban Aya Youth Project (Flay, et al., 2004) regarding lifetime substance use (5 items [ $\alpha = .856$ ]: smoked a cigarette, drank alcohol, gotten drunk on alcohol, used an illegal drug like marijuana or cocaine, gotten high on drugs), violent behaviors (5 items [ $\alpha = .794$ ]: carried a knife or razor to use to hurt someone, threatened to cut or stab someone, cut or stabbed someone on purpose to hurt them, carried a gun, shot at someone), and 1 item querying voluntary sexual activity (i.e., voluntary sex with someone of the opposite gender). Students were asked to respond on a scale of 0 to 2 (0 = no, never; 1 = yes, once; and 2 = yes, more than once). A PC analysis revealed that the substance use and violent behavior items loaded at least .741 and .646, respectively, on their first PC, and the component explained 73.7% and 59.9% of the variance in the item sets, respectively. Because of the small occurrence of the affirmative ratings, each of the 11 items were dichotomized (0 = no, never; 1 = ever) and, for the substance use and violent behavior indicators, items were summed to generate a count variable (0-5) reflecting how many of the 5 behaviors the student had ever performed. Extant research has shown that self-reports of substance use and violent behavior can provide valid measures of student behavior (Hawkins, et al., 1999; Herrenkohl, Kosterman, Mason, & Hawkins, 2007; Mason, et al., 2004; Pechacek et al., 1984; Single, Kandel, & Johnson, 1975).



*Teacher reports of student behavior.* Teachers were asked to rate how well each of 3 substance use-related items ( $\alpha = .803$ ; smokes or may smoke cigarettes or uses other forms of tobacco, drinks or may drink alcohol, uses drugs like marijuana or cocaine) and 4 violent behavior-related items ( $\alpha = .804$ ; gets into a lot of fights, physically hurts others, threatens others, destroys things belonging to others) described the student and to respond on a scale of 1 to 3 (1 = not at all, 2 = moderately well, 3 = very well). A PC analysis showed that the substance use and violent behavior items loaded at least .789 and .626, respectively, on their first PC, and the component explained 75.1% and 63.1% of the variance in the item sets, respectively. As with the student items, the affirmative ratings of 2 and 3 items were combined and each item was dichotomized (0 = does not describe child at all, or 1 = describes child well) and, in turn, the items were summed to generate a count of substance use (0-3) and observed violent behavior (0-4).

#### Analytic Strategy

To test for mediation, we used a framework described by Baron and Kenny (1986) and MacKinnon (2008; 2000; 2002). Figure 2.1 displays a simple model (Model 1) relating an independent variable (X) to a dependent variable (Y) and a traditional mediation model (Model 2) where the mediator (M) mediates the effect of X on Y. Model 1 estimates the bivariate effect ( $c$ ) without the mediator included in the model.

-- Insert Figure 2.1 about here--

Model 2 simultaneously estimates the direct effect ( $c'$ ) of X on Y (with the mediator in the model) and the indirect effect ( $ab$ ), which comprises the effect of X on M ( $a$ ) and the effect of M on Y ( $b$ ) (MacKinnon, 2008). Mediation can be classified into one of three categories: 1) *complete mediation* when the pathway from intervention X to outcome Y is

significantly mediated by M, with no significant direct effect from X to Y remaining; 2) *partial mediation* when the pathway from X to Y is significantly mediated by M, with a significant, but reduced, direct effect remaining from X to Y; and *non-significant mediation* when mediation was tested for and found to be non-significant (Baron & Kenny, 1986; MacKinnon, et al., 2002). In the present study, we hypothesized that both the student and teacher models would demonstrate partial or complete mediation.

Using structural equation modeling (SEM; performed with *Mplus* v5.1), a conceptual model (Figure 2.2) was specified based on the hypothesis that the latent construct, AB, mediated the effect of the *PA* intervention on the observed negative-outcome variables. Student and teacher data were utilized independently to fit two separate conceptual models (n.b., the sexual activity variable is not included in the teacher model). Because of the age of the students and seriousness of the outcomes, the distribution of the scales were skewed, as expected, with the majority of students and teachers (range = 85.1% to 97.8% across behaviors) reporting zero. Accordingly, the variance of the outcome scales was larger than the mean and we accounted for this overdispersion by estimating a negative binomial model for the count outcomes.

--Insert Figure 2.2 about here--

A full information maximum likelihood estimator was used for model estimates. Standard error computation was adjusted with the Huber-White procedure (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999) to account for the non-independence of students and teachers within schools. Low intra-class correlations (ICC; Student Median = 0.05; Teacher Median = 0.03) and a small number of clusters (i.e., 20) precluded a multi-level

SEM analysis (Hox & Maas, 2001; Marsh et al., 2009; Muthén, 1994; Preacher, Zyphur, & Zhang, 2010; Zhang, Zyphur, & Preacher, 2009).

In our models, the AB construct represents a continuous latent variable and, as mentioned previously, the student model was specified using count outcome variables (i.e., substance use and violent behavior) and the dichotomized sexual activity variable; the teacher model included only the count outcomes, as teacher data on student sexual activity were not collected. To test for differences among boys and girls, a binary gender variable was included in the models (boys = 1, girls = 0). Further, in both student and teacher models, we tested an interaction term (intervention  $\times$  gender) to explore whether the treatment effect differed between boys and girls. Results showed a non-significant interaction term; therefore, the term was removed for parsimony.

We implemented a two-stage process to examine mediation. First, we calculated the bivariate effect ( $c$ ) of the *PA* intervention on the outcomes without the AB mediator present. Second, we included the AB mediator in the model to calculate direct ( $c'$ ) and indirect effects ( $ab$ ). The indirect effects were computed by calculating the product of the unstandardized regression coefficients (i.e.,  $a \times b$ ), and we used the delta method (MacKinnon, 2008) to calculate the corresponding standard errors. In turn, for all of our outcomes, we exponentiated unstandardized estimates (Long & Freese, 2006) to produce more interpretable results.

## RESULTS

Following the two-stage process described above, Table 2.2 displays the estimated effects of the *PA* intervention on the negative behavioral outcomes (i.e., bivariate effect) and the results of the measurement and SEMs estimated (i.e., direct and

indirect effects) for student self-report and teacher reports of student behavior.

Examination of the fit statistics suggested that the measurement model fit the data well (Student: CFI = 0.99, TLI = 0.99, RMSEA = 0.016; Teacher: CFI = 0.99, TLI = 0.98, RMSEA = 0.052). Fit indices for the overall structure of the mediation models were unavailable, as there is no model estimated variance for count variables (Agresti, 2002).

--Insert 2.2 about here--

#### *Effects of Positive Action on AB Mediator*

The *PA* intervention had a significant direct effect on AB in both the student and teacher models (Student:  $B = 0.273$ ,  $SE = 0.039$ ,  $p < .001$ ; Teacher:  $B = 0.125$ ,  $SE = 0.045$ ,  $p < .01$ ). Boys performed significantly lower on AB compared to girls (Student:  $B = -0.117$ ,  $SE = 0.024$ ,  $p < .001$ ; Teacher:  $B = -0.239$ ,  $SE = 0.025$ ,  $p < .001$ ).

#### *Effects of Positive Action on Negative Behaviors*

*Substance use.* The student model without the AB mediator (i.e., bivariate effect) indicated that the *PA* intervention decreased the expected count of student self-report substance use by 62.1% ( $B = -0.970$ ,  $SE = 0.292$ ,  $p < .01$ , incidence-rate ratio [IRR] = 0.379), holding all other factors constant. After inclusion of the latent mediator, the direct effect of AB on substance use showed that a one-unit increase in AB decreased the expected count of substance use by 88.5% ( $B = -2.161$ ,  $SE = 0.473$ ,  $p < .001$ , IRR = 0.115), holding all other factors constant. There was a significant indirect effect mediated by AB ( $B = -0.590$ ,  $SE = 0.154$ ,  $p < .001$ , IRR = 0.554); thus, the expected count of youth engaging in substance use was reduced by 44.6% due to the indirect effect of *PA* as mediated by AB. After controlling for the indirect effect of AB, the direct effect of the *PA* intervention on substance use was non-significant, demonstrating complete

mediation. Teacher reports of student behavior corroborated these results, although the teacher model demonstrated partial mediation.

*Violent behaviors.* Without taking the AB mediator into account, the student model demonstrated that being in the *PA* intervention decreased the expected count of violent behaviors by 75.6% ( $B = -1.410$ ,  $SE = 0.296$ ,  $p < .001$ ,  $IRR = 0.244$ ), holding all other factors constant. With the inclusion of the latent mediator, the direct effect of AB on violent behavior showed that a one-unit increase in AB decreased the expected count of violent behavior by 86.6% ( $B = -2.013$ ,  $SE = 0.620$ ,  $p < .001$ ,  $IRR = 0.134$ ), holding all other factors constant. There was a significant indirect effect mediated by AB; thus, the expected count of youth engaging in violent behavior was reduced by 42.3% ( $B = -0.550$ ,  $SE = 0.187$ ,  $p < .01$ ,  $IRR = 0.557$ ) due to the indirect effect. After controlling for the indirect effect of AB, the direct effect of the intervention on violent behavior was significant ( $B = -0.856$ ,  $SE = 0.362$ ,  $p < .05$ ,  $IRR = 0.425$ ) and, therefore, demonstrated partial mediation. Teacher reports of student violent behavior substantiated these results.

*Voluntary sexual activity.* The student model without the AB mediator indicated that being in the *PA* intervention decreased the odds of reporting voluntary sexual activity by 91.1% ( $B = -2.415$ ,  $SE = 0.608$ ,  $p < .001$ ,  $OR = 0.089$ ), holding all other factors constant. After controlling for the mediated effect of AB, the odds ratio reflects an 85.2% ( $B = -1.908$ ,  $SE = 0.667$ ,  $p < .01$ ,  $OR = 0.148$ ) reduction in the odds of reporting voluntary sexual activity among youth in the *PA* intervention, with a significant direct effect remaining, demonstrating partial mediation. The odds of a student reporting voluntary sexual activity were reduced by 92.1% ( $B = -2.536$ ,  $SE = 0.714$ ,  $p < .001$ ,  $OR = 0.079$ ) due to the effect as mediated by AB. There was a significant indirect effect

mediated by AB ( $B = -0.692$ ,  $SE = 0.219$ ,  $p < .01$ ,  $OR = 0.500$ ); thus, the odds of students engaging in voluntary sexual activity were reduced by half due to the indirect effect of *PA* as mediated by AB.

#### *Gender differences in Negative Behaviors*

Student and teacher bivariate-effect models demonstrated that boys had significantly higher substance use (Student:  $B = 0.481$ ,  $SE = 0.202$ ,  $p < .05$ ,  $IRR = 1.618$ ; Teacher:  $B = 0.390$ ,  $SE = 0.124$ ,  $p < .01$ ,  $IRR = 1.477$ ) and violent behavior (Student:  $B = 0.962$ ,  $SE = 0.245$ ,  $p < .001$ ,  $IRR = 2.617$ ; Teacher:  $B = 0.521$ ,  $SE = 0.095$ ,  $p < .001$ ,  $IRR = 1.684$ ) than girls. Boys also had greater odds of reporting voluntary sexual activity ( $B = 0.728$ ,  $SE = 0.245$ ,  $p < .01$ ,  $OR = 2.071$ ) than girls. These effects were mediated by AB.

### DISCUSSION

Results from this matched-pair, cluster randomized, controlled study are consistent with previous research demonstrating that students attending *PA* intervention schools reported significantly more positive behaviors (Washburn, et al., 2011) and less substance use, violent behaviors, and voluntary sexual activity (Beets, et al., 2009; Li, et al., 2011) than students in control schools. Overall, similar to previous research, boys reported more negative behaviors than girls. We have built upon previous work (Beets, et al., 2009) by utilizing the PYD and SECD perspectives to examine a mechanism regarding how the *PA* program can reduce negative behaviors. The present study provides empirical support for the theory that underlies the *PA* program (Flay & Allred, 2010), whereby a link exists between positive and negative behaviors (Flay, 2002; Jessor & Jessor, 1977). Students who received the *PA* intervention reported significantly greater ABs related to student involvement in school and motivation to learn. Further, this increase in AB led to a

reduction in student self-report and teacher report of negative behaviors. Specifically, we found that student and teacher SEM models indicated that the effect of the *PA* intervention on reducing substance use, violent behaviors, and voluntary sexual activity was partially or completely mediated by academic behaviors. The present research adds to the limited amount of research examining mechanisms through which PYD/SECD-related programs work (Bierman, et al., 2008; Liu, et al., 2009; Riggs, et al., 2006) and represents the first effort to assess how the *PA* intervention reduces negative behaviors by bolstering academic behaviors.

These results may be explained by several key features of the *PA* program (Flay & Allred, 2010). The *PA* program uses interactive approaches and direct instruction that are developmentally appropriate to teach students, for example, values and skills to make responsible decisions; and how to learn effectively, establish goals, handle interpersonal situations, and solve problems appropriately. The approach is complemented holistically by incorporating classroom, school-wide, and parent involvement (and community involvement when fully implemented). The overall goal is for students to gain improved self-efficacy, norms, attitudes, knowledge, values and skills, and to enhance distally influential factors (i.e., factors that are more likely to influence multiple behaviors and have more extensive effects) such as self-concept, family bonding, peer selection, and positive interactions with school. An improvement in a wide range of both positive and negative behaviors is the expected result.

With the expected outcome of influencing many behaviors arises the complexity of evaluating the overall impact of the *PA* program. Future research should examine other possible mediation and moderating factors that lead to the *PA* program's beneficial

effects. This may provide a more detailed understanding of the mechanism(s) through which the *PA* program positively influences health-related outcomes. Further, doing so would allow researchers and practitioners to gain a more thorough understanding regarding how PYD/SECD-related programming affects outcomes. In turn, practitioners might gain insight regarding what program components are most crucial in PYD/SECD-related interventions and how these components relate to one another.

The current findings should be viewed in the context of some limitations. Due to the Institutional Review Board requirements for the *PA* Hawai'i trial, students must have entered grade 5 to be eligible to answer questions related to the present study's outcomes; thus, this mediation analysis was not longitudinal and care should be taken when making causal inferences. Future research could provide increased evidence through longitudinal analysis. Also, possible common method bias (e.g., self-report predicting self-report) can influence observed relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), and the study of the *PA* intervention's impact on voluntary sexual activity could be enhanced with the inclusion of more than a single item querying about sexual activity. Additionally, the study's generalizability is limited to elementary-aged students and future studies could examine the *PA* program's impact among secondary-school students. Further, various cultural and communal values and factors exist in different geographic areas, and future work could examine mediation pathways in dissimilar contexts. Lastly, as with any similar study, results are only generalizable to students attending schools willing to conduct such a school-wide, comprehensive program.

In sum, the present research demonstrated that the *PA* intervention reduced negative behaviors without including detailed instructional time devoted to substance use



and violent behavior, and no mention of sexual activity. Overall, the PYD and SECD perspectives were supported. The *PA* intervention effects on negative behaviors were partially or completely mediated by increased academic-related behaviors.

Table 2.1. Characteristics of study schools at baseline.

	2002 (Baseline)				
	Control		<i>Positive Action</i>		
	Mean	SD	Mean	SD	$p^{\dagger}$
Enrollment	478.80	207.06	609.40	330.07	0.303
Racial/Ethnic Distribution (%)					
African American	1.79	3.20	1.66	2.03	0.915
Chinese	2.05	3.66	1.88	2.75	0.908
Filipino	11.61	14.20	15.83	9.75	0.449
Hawai`ian	5.61	5.98	5.74	4.16	0.956
Hispanic	2.45	2.35	3.28	3.11	0.510
Indochinese	2.02	5.62	0.34	0.69	0.361
Japanese	4.26	3.57	6.50	6.16	0.333
Korean	1.19	2.12	1.71	3.50	0.692
Native American	0.44	0.37	0.47	0.47	0.876
Part-Hawai`ian	31.86	28.37	28.81	21.61	0.790
Portuguese	1.41	1.94	1.99	1.77	0.494
Samoan	3.11	4.83	5.23	8.78	0.512
White	17.52	18.05	13.05	10.81	0.510
Other	14.69	14.01	13.48	8.61	0.879
Stability (%)	90.82	2.36	91.71	3.18	0.487
Free/reduced lunch (%)	54.32	26.40	59.78	22.95	0.628
Limited English Proficiency (%)	11.83	15.30	15.58	14.10	0.576
Special Education (%)	10.56	5.41	9.76	2.99	0.687

$^{\dagger}$  2-tailed  $t$  test; 18  $df$

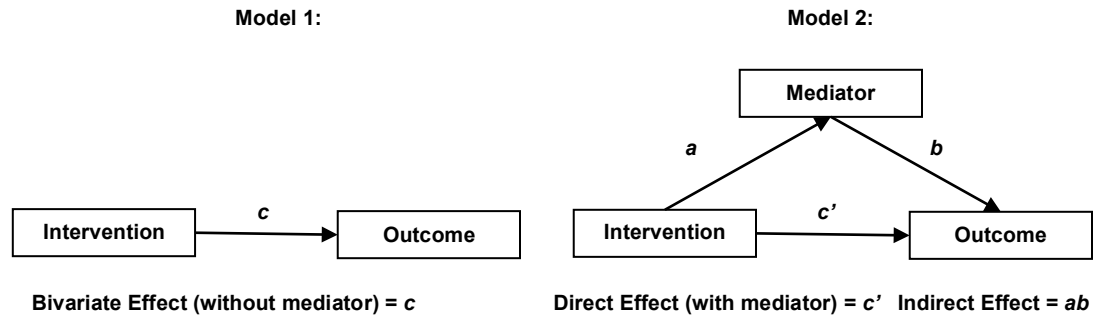
Adapted from Snyder et al., 2010.

Table 2.2. Summary of the effects of *Positive Action* on academic behavior (AB), substance use (SU), violent behaviors (VB), and sexual activity (SA).

	Student self-report			Teacher report of student behavior		
Sample size	N = 1784			N = 1351		
AB factor loadings	Estimate	SE		Estimate	SE	
P1: Work hard at school	1.000	0.000		1.000	0.000	
P2: Set goals for yourself	1.242	0.119		0.927	0.093	
P3: Use or manage your time wisely	1.163	0.075		1.056	0.067	
P4: Try to be your best	1.052	0.079		0.991	0.095	
P5: Solve problems well	1.119	0.099		0.808	0.047	
Effects						
Academic Behavior (AB)	B <sup>a</sup>	SE <sup>b</sup>		B <sup>a</sup>	SE <sup>b</sup>	
Direct Effects						
PA intervention → AB	0.273***	0.039		0.125**	0.045	
Boy → AB	-0.117***	0.024		-0.239***	0.025	
Substance Use (SU)						
			IRR <sup>c</sup>			IRR <sup>c</sup>
Bivariate Effect without Mediator <sup>c</sup>						
PA intervention→ SU	-0.970**	0.292	0.379	-1.055**	0.340	0.348
Boy → SU	0.481*	0.202	1.618	0.390**	0.124	1.477
Direct Effects with Mediator						
PA intervention → SU	-0.364	0.324	0.695	-0.954**	0.345	0.385
Boy → SU	0.334 <sup>†</sup>	0.199	1.397	0.107	0.138	1.113
AB → SU	-2.161***	0.473	0.115	-1.290***	0.249	0.275
Indirect Effect						
PA → AB → SU	-0.590***	0.154	0.554	-0.161*	0.066	0.851
Violent Behavior (VB)						
			IRR <sup>c</sup>			IRR <sup>c</sup>
Bivariate Effect without Mediator <sup>c</sup>						
PA intervention → VB	-1.410***	0.296	0.244	-0.810***	0.147	0.445
Boy → VB	0.962***	0.245	2.617	0.521***	0.095	1.684
Direct Effects with Mediator						
PA intervention → VB	-0.856*	0.362	0.425	-0.711***	0.165	0.491
Boy → VB	0.867***	0.248	2.380	0.172*	0.078	1.188
AB → VB	-2.013***	0.620	0.134	-1.390***	0.241	0.249
Indirect Effect						
PA → AB → VB	-0.550**	0.187	0.577	-0.174*	0.069	0.840
Sexual Activity (SA)						
			OR <sup>d</sup>			
Bivariate Effect without Mediator <sup>c</sup>						
PA intervention → SA	-2.415***	0.608	0.089			
Boy → SA	0.728**	0.245	2.071			
Direct Effects with Mediator						
PA intervention → SA	-1.908**	0.667	0.148			
Boy → SA	0.541*	0.229	1.718			
AB → SA	-2.536***	0.714	0.079			
Indirect Effect						
PA → AB → SA	-0.692**	0.219	0.500			

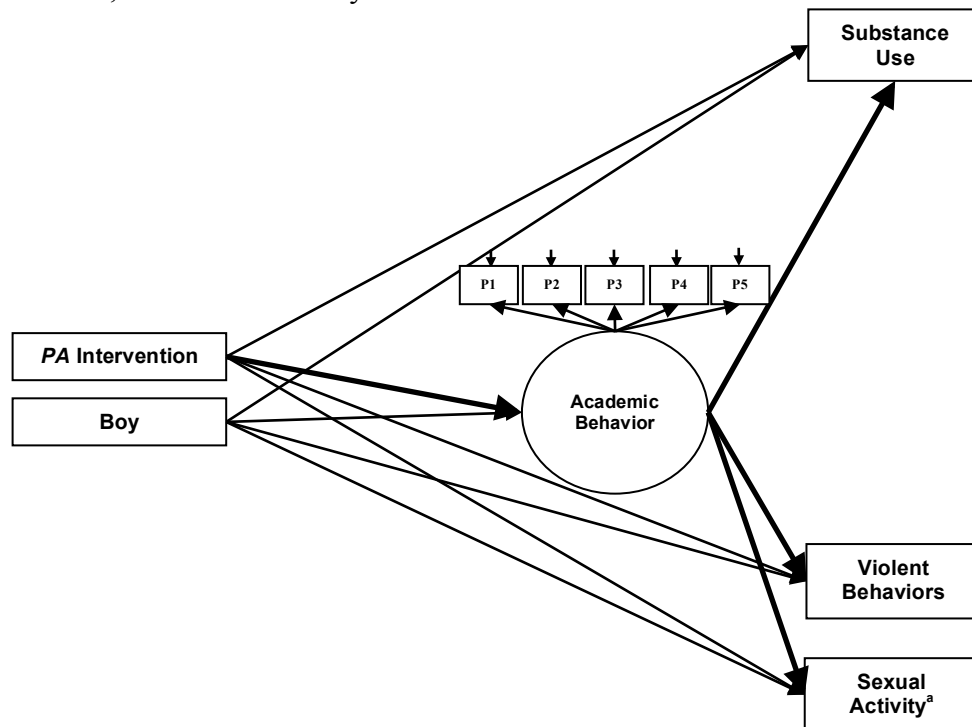
Note: *PA* = *Positive Action*. <sup>†</sup>*p* < .10; \* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001; all 2-tail. AB Measurement Model Fit Indices: Student: CFI = 0.99, TLI = 0.99, RMSEA = 0.016; Teacher: CFI = 0.99, TLI = 0.98, RMSEA = 0.052. <sup>a</sup>Unstandardized *B* estimate based on negative-binomial model. <sup>b</sup>Standard error of the indirect effect estimated using the delta method. <sup>c</sup>Incidence-rate ratio for count outcomes. <sup>d</sup>OR for dichotomous sexual activity variable. <sup>e</sup>Bivariate effect of the intervention on the outcome included the gender variable, without inclusion of the mediator in the model.

Figure 2.1: Terminology for the mediation model.



*Note:* Adapted from MacKinnon (2008)

Figure 2.2. A mediation model of the effects of *Positive Action* on substance use, violent behaviors, and sexual activity<sup>a</sup>.



*Note:* PA = Positive Action. Bolded lines indicate mediation pathways. A Condition  $\times$  Gender effect was nonsignificant and was not included in the model in the interest of parsimony. <sup>a</sup>Teacher data regarding student sexual activity were not collected; thus, sexual activity is included only in the student model.

## CHAPTER 4. THIRD MANUSCRIPT:

Improving elementary-school quality through the use of a social-emotional and character development program: A matched-pair, cluster-randomized, controlled trial in Hawai'i.

Frank J. Snyder<sup>1</sup>, Samuel Vuchinich<sup>2</sup>, Alan C. Acock<sup>2</sup>, Isaac J. Washburn<sup>3</sup>,  
and Brian R. Flay<sup>1</sup>

<sup>1</sup>Department of Public Health, Oregon State University

<sup>2</sup>Department of Human Development and Family Sciences, Oregon State University

<sup>3</sup>Oregon Social Learning Center

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Address: Kelli R. McCormack Brown, Ph.D., Editor  
University of Florida  
College of Health & Human Performance  
PO Box 808211  
Gainesville, FL 32563

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## Abstract

### Background:

School safety and quality affect student learning and success. The purpose of this study was to examine the effects of a comprehensive elementary school-wide social-emotional and character education program, *Positive Action*, on teacher, parent, and student perceptions of school safety and quality utilizing a matched-pair, cluster randomized, controlled design. The *Positive Action* Hawai'i trial included 20 racially/ethnically diverse schools and was conducted from 2002-03 through 2005-06.

### Methods:

School-level archival data, collected by the Hawai'i Department of Education, were used to examine program effects at one-year post trial. Teacher, parent, and student data were analyzed to examine indicators of school quality such as student safety and well-being, involvement, and satisfaction, as well as overall school quality. Matched-paired *t*-tests were used for the primary analysis, and sensitivity analyses included permutation tests and random-intercept growth curve models.

### Results:

Analyses comparing change from baseline to one-year post trial revealed that intervention schools demonstrated significantly improved school quality compared to control schools, with 21%, 13%, and 16% better overall school quality scores as reported by teachers, parents, and students, respectively. Teacher, parent, and student reports on individual school-quality indicators showed improvement in student safety and well-being, involvement, satisfaction, quality student support, focused and sustained action,

standards-based learning, professionalism and system capacity, and coordinated team work. Teacher reports also showed an improvement in the responsiveness of the system.

#### Conclusions:

School quality was substantially improved, providing evidence that a school-wide social-emotional and character education program can enhance school quality and facilitate whole-school change.

Keywords: school quality, school climate, social and emotional learning, character education, randomized experiment, matched-pair

#### Acknowledgments

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Notice of potential conflict of interest: The research described herein was done using the program and the training and technical support of Positive Action, Inc. Dr. Flay's spouse holds a significant financial interest in Positive Action, Inc. This potential conflict of interest was managed by the OSU Conflict of Interest Committee.



## INTRODUCTION

A safe, healthy learning environment promotes student success, and quality schools generally deliver more admirable citizenry. A healthy school environment is a productive, nurturing, supportive and positive climate (Schultz & et al., 1987).

Unfortunately, all too often students are exposed to unsafe learning environments (Shelton, Owens, & Song, 2009), and school quality could be enhanced. For example, many schools could do more to increase family and community involvement (Michael, Dittus, & Epstein, 2007) and promote a positive school climate (Jones, Fisher, Greene, Hertz, & Pritzl, 2007). To solve these and related burgeoning problems, policy makers, practitioners, and researchers have sought to develop strategies for strengthening school quality to positively impact student outcomes.

School quality includes a safe environment, involvement and satisfaction among individuals, student support, continuous improvement, open communication, standards-based learning, professionalism and teamwork. Policy makers have made numerous efforts to affect school quality and mitigate problem behaviors, such as substance use and violent behaviors. During the last two decades, for example, the Safe and Drug-Free Schools and Communities Act and the Gun-Free Schools Act have been enacted to attempt to prevent violence in and around schools (Jones, et al., 2007). Although many policies mandate school-level plans and programs, many other policies provide only guidelines, and schools may have limited resources and personnel to adequately improve school quality. Further, reform efforts that have confined themselves to the school have reported few results (Steinberg, 1996), and policies may have limited influence when they focus only on specific problem behaviors and do not address other multifaceted,

underlying influences such as students' sense of self and social attachment (Flay, et al., 2009).

Beyond policy, practitioners and researchers have used additional approaches seeking to increase school quality. Although some programs have shown promise, similar to policy approaches they have often focused on specific problem behaviors and have had limited results (Catalano, et al., 2002; Flay, 2002). During more recent years, a movement has occurred toward more integrative, comprehensive programs that address co-occurring behaviors and involve families and communities (Catalano, et al., 2004; R. M. Lerner, 1995), such as some social-emotional and character development (SECD) programs (Berkowitz & Bier, 2007).

SECD programs, comparable to social and emotional learning (Elias & Weissberg, 2000; Payton, et al., 2000), can be effective when implemented comprehensively and with fidelity (Berkowitz & Bier, 2007; J. A. Durlak, et al., 2011). Some SECD programs coincide with a trend towards facilitating whole-school change and improving entire school quality. One example of such a program currently being used nationally is the *Positive Action (PA)* program. The *PA* program is a comprehensive, school-wide SECD program designed to improve academics, student behavior and character (Flay & Allred, 2010).

#### *Extant Positive Action Empirical Studies*

Two of the first studies (Flay & Allred, 2003; Flay, et al., 2001) that examined *PA* utilized quasi-experimental designs and matched-control comparisons to examine archival School Report Card (SRC) data on achievement and disciplinary outcomes. Overall, the studies reported beneficial effects on student achievement (e.g., math,

reading, science) and problem behaviors (e.g., suspensions, violence rates) and provided preliminary evidence regarding the effects of *PA* on school-level outcomes.

Subsequently, to increase the likelihood that observed posttest differences were due to the intervention, Snyder and colleagues (F. Snyder, et al., 2010) utilized a randomized design (i.e., the randomized trial described herein) to examine SRC data, collected by the Hawai'i Department of Education (HDE), on academic achievement, absenteeism, and disciplinary outcomes. Substantial effects were found at posttest, with improved results at follow-up. At one-year post trial, intervention schools scored better on standardized tests for reading and math; better in state test scores for reading and math; and intervention schools reported lower absenteeism and fewer suspensions and retentions. Overall, the research demonstrates that *PA* can concomitantly and positively affect school-level outcomes of achievement and negative behaviors.

Utilizing student and teacher self-report data from two randomized trials (Hawai'i and Chicago), Beets and colleagues (2009) and Li and colleagues (2011) examined the preventive benefits of *PA* on rates of student self-report and teacher reports of student substance use, violence, and voluntary sexual activity. Overall, results indicated lower rates of substance use, violence, and sexual activity among students attending *PA* schools. In sum, the prior *PA*-related research provides substantial support for SECD education and its ability to improve multiple behavioral domains. However, to date, no study has examined the *PA* program's influence on overall school quality.

The purpose of the current research is to 1) build upon previous work (Beets, et al., 2009) by using archival school-level data and a randomized design and 2) be the first study investigating the impact of *PA* on school-level indicators of school quality, thereby

examining the ability of a SECD program to create contextual, whole-school change. The following hypotheses were proposed: 1) intervention schools would demonstrate improved overall school quality as compared to controls, and 2) teacher, parent, and student reports on school quality would show that intervention schools demonstrated improvements on multiple indicators of school quality, such as safety and well-being, involvement, and satisfaction.

## METHODS

### Sample and Design

The *PA* Hawai'i trial was a matched-pair, cluster randomized, controlled trial, conducted in Hawai'i elementary schools during 2002-03 through 2005-06, with a one-year follow-up in 2007. The trial took place in 20 public elementary (K-5<sup>th</sup> or K-6<sup>th</sup>) schools (10 matched-pairs based on characteristics such as percentage free or reduced-price lunch, school size, ethnic distribution, and standardized test scores) on three Hawai'ian islands and is described in more detail elsewhere (F. Snyder, et al., 2010). The state is one large school district with a recognized need for improvement (i.e., low standardized test scores and a high percentage of students receiving free or reduced-price lunch).

Intervention and control schools were similar on matching indicators at baseline, with a racially/ethnically diverse student population and mean enrollment of 544 students ( $SD = 276.4$ ). Intervention schools were offered the *PA* program free of charge and control schools were offered a monetary incentive during the randomized trial and the program upon completion of the trial. Three of the 10 control schools chose to receive the program after the formal trial; they were treated as controls at the follow-up to the present

study, as anecdotal evidence suggests that they did not fully implement the program, and it is likely that schools need several years to fully implement a comprehensive program to see substantial benefits (Beets, et al., 2009; Li, et al., 2011).

### Program Description

The *PA* program (<http://www.positiveaction.net>), first developed in 1977 and revised since then as a result of process and outcome evaluations, is grounded in a broad theory of self-concept (D. L. DuBois, et al., 2009; Purkey, 1970; Purkey & Novak, 1970), is consistent with ecological theories such as the Theory of Triadic Influence (Flay, et al., 2009), and is described in detail elsewhere (Flay & Allred, 2003, 2010; Flay, et al., 2001). The full *PA* program consists of K-12 classroom curricula, of which only the elementary curriculum was used in the present randomized trial; a school-wide climate development component, including teacher/staff training by the developer, a *PA* coordinator's (principal's) manual, school counselor's program, and *PA* coordinator/committee guide; and family- and community-involvement programs. The present study did not include the more intensive family kit or the community-development component of *PA*.

The sequenced elementary curriculum consists of 140 15-20 minute lessons per grade, per academic year, provided by classroom teachers. When fully implemented, the total time students are exposed to the program during a 35-week academic year is approximately 35 hours. Lessons cover six major units on topics related to self-concept, physical and intellectual actions, social/emotional actions for managing oneself responsibly, getting along with others, being honest with yourself and others, and

continuous self-improvement. The classroom curricula, school-climate kit, and other components of the program each encourage and reinforce the six units of *PA*.

Prior to the beginning of each academic year, teachers, administrators, and support staff (e.g., counselors) attended *PA* training sessions conducted by the program developer. The training sessions lasted approximately 3-4 hours for the initial year, and 1-2 hours for each successive year. Booster sessions, conducted by a project coordinator and lasting approximately 30-50 minutes, were provided an average of once per academic year for each school, and were intended to increase implementation fidelity.

Multiple measures of program implementation in the *PA* Hawai'i trial suggested that there was some variability in school-level implementation between intervention schools, with small improvements across years. Implementation was adequate for each indicator; however, results indicated that intervention schools could have implemented *PA* with greater fidelity (for more detail see Beets, et al., 2008; F. Snyder, et al., 2010). Further, control schools reported implementing more types of SECD-related programs than intervention schools, and control schools reported offering ample instructional time devoted toward SECD-related activities.

### Data and Measures

#### *Archival School-Level Indicators*

Archival school-level data were obtained from the HDE Accountability Resource Center Hawai'i as part of the state's school quality survey (SQS) accountability system (HDE Systems Accountability Office, 2006), which is intended to support schools in generating their self-reports for accreditation and standards implementation (HDE, October, 2001). Data were collected from teachers, parents, and students every two years,

starting the Spring of the 2000-01 academic year (i.e., the academic year prior to the *PA* Hawai'i trial) to 2006-07 (i.e., at one-year post trial), as *PA* schools continued to implement the program. Specifically, the SQS was designed to provide information on indicators of schools' performance and the survey queried teachers, parents, and students for their opinions of school quality. The nine SQS school-level indicators included 1) safety and well-being, 2) involvement of parents, students, and teachers, 3) satisfaction of parents, students, and teachers, 4) quality student support, 5) focused and sustained action, 6) responsiveness of the system, 7) standards-based learning, 8) professionalism and capacity of the system, and 9) coordinated team work. Corresponding classroom- and student-level data were unavailable. School-level quality is an appropriate measure of program effectiveness because the *PA* Hawai'i trial tested a school-wide implementation of the program, whole schools were randomized to condition (Stuart, 2007), and the program was expected to improve school climate (Flay & Allred, 2010).

Each indicator was comprised of one or more sets of questions (HDE, October, 2007) as shown in Table 3.1. Each question set contained individual items (up to 12 items per question set), with answers ranging from "strongly agree" to "strongly disagree." The items in each question set were similar for teacher, parent, and student surveys, with the wording of items varying slightly as appropriate for each respondent group. Sometimes the number of items in each question set differed by respondent group. For example, in the Safety question set, in addition to the three teacher items, students were asked two extra items, and parents were asked three extra. Occasionally, a particular item was included in more than one question set; therefore, two indicators subsume the same item. The school-level indicator outcome units were "percent positive response"; that is, the

school-level percent of responses that were either “strongly agree” or “agree.” Alpha reliabilities for the overall score of the nine indicators were 0.93, 0.95, and 0.91, for teachers, parents, and students, respectively. There were no missing data for any of the school-level SQS indicators. Average individual response rates across years as reported by the HDE were 78.7% ( $SD = 9.8$ ), 20.8% ( $SD = 4.6$ ), and 91.3% ( $SD = 5.0$ ) for teachers, parents, and students, respectively.

--Insert Table 3.1 about here--

The archival SQS data utilized in the present analysis were collected from schools with a different student body each academic year, and intervention schools, over time, had increasing exposure to *PA*. For example, the archival school-level SQS data collected for *PA* schools during the 2006-07 academic year represented schools with students who were exposed to the intervention for up to 4 years compared to none during the 2000-01 academic year.

### Analyses

To address the multiple testing problem (Schochet, 2009) attributable to multiple hypothesis tests, and to control for Type I error, school-quality composite (SQC) scores were created for teachers, parents, and students by calculating the average of all SQS indicators for each respondent group. Analyses were conducted utilizing a similar approach to previous research (F. Snyder, et al., 2010); the primary analysis included matched-paired *t*-tests, Hedges’ adjusted *g* as a measure of effect size (Grissom & Kim, 2005; Hedges & Olkin, 1985), and percent relative improvement (RI). As an exploratory analysis, these analyses were conducted for each of the nine indicators for teacher, parent, and student data. To assess the resiliency of results, permutation tests and random-



intercept growth curve analyses were performed using the SQC score outcomes for teachers, parents and students, and these served as sensitivity analyses. The random-effects growth curve models provide statistical control beyond randomization for potentially confounding, unmeasured variables.

### *Primary Analysis*

First, matched-paired *t*-tests of difference scores were calculated to examine change in SQC score by condition for teachers, parents and students. For each school-level outcome, a difference score [one-year post trial (2007) – baseline (2001)] was calculated for each pair of intervention and control schools and a paired *t*-test was performed. The difference in means affords an unbiased estimate of the true average intervention effect in a randomized trial (Stuart, 2007). As an exploratory analysis, this technique was also performed for each of the nine indicators for each respondent group.

Next, effect sizes were calculated for the three SQC score outcomes by subtracting the mean difference of control schools from the mean difference of *PA* schools and dividing by the pooled one-year post trial standard deviation. Again, as an exploratory analysis, this was calculated for each of the nine indicators. Hedges' *g* has some positive bias; therefore, Hedges' approximately unbiased adjusted *g* was calculated. The adjusted *g* is an appropriate effect size calculation when the sample size is small.<sup>31</sup> Effect sizes were examined at posttest and at one-year post trial and were interpreted as small (0.2), moderate (0.5), or large (0.8) (Cohen, 1977).

In addition, the RI was calculated as an indicator of effect size that may be more interpretable and understandable to practitioners. RI is the posttest difference between groups minus the baseline difference between groups, divided by the control group

posttest level; that is,  $[(PA_{mean} - C_{mean})_{posttest} - (PA_{mean} - C_{mean})_{baseline}] / C_{mean posttest}$  expressed as a percentage.

### *Sensitivity Analysis*

Subsequently, for each of the SQC score respondent groups, to avoid reliance on *t*-test assumptions alone, permutation tests were conducted with Stata v11 `permute`, which estimates *p*-values based on Monte Carlo simulations (Stata Corp., College Station, TX). Both paired *t*-tests of differences and permutation models have demonstrated good performance in randomized trials when the number of pairs is small (Brookmeyer & Chen, 1998).

Last, random-intercept growth curve models were conducted with Stata v11 `xtmixed` (Rabe-Hesketh & Skrondal, 2008) to represent all observations and to model school differences. The random-intercept mixed linear models can be expressed as follows:

$$Y_{ij} = \beta_{0j} + \beta_1(\text{condition}_j) + \beta_2(\text{year}_{ij}) + \beta_3(\text{year}_{ij} \times \text{condition}_j) + \zeta_j + \varepsilon_{ij}$$

where  $Y_{ij}$  is the estimated SQC score outcome; the  $\beta_{0j}$  represents the fixed effect, or mean intercept for schools; the  $\zeta_j$  represents the random effect; and the  $\varepsilon_{ij}$  represents the level-1 residual. This statistical approach provides a more complete analysis of the four waves of available data and takes into account the pattern of change over time. The random-intercept model allows the intercept to vary between schools, and can indicate whether some schools tend to have, on average, better performance at baseline while other schools fare worse. The random coefficient was fixed, reflecting similar intervention effects for all schools. Each growth curve involved 80 observations (4 waves  $\times$  20 schools at posttest). Although this sample size is at the lower end of some suggested guidelines, it is

adequate as a sensitivity analysis, as different views exist regarding appropriate sample size (Singer & Willett, 2003). For each respondent group, from baseline through one-year post trial, a likelihood-ratio (LR) test was performed to test whether a quadratic term for time was significant. The LR test results showed that a quadratic model did not provide a significantly better fit for the data for any respondent group; thus, a linear model was utilized.

## RESULTS

### *School-Level Raw Means*

No significant differences ( $p \leq .05$ ) existed between intervention and control schools on SQC scores at baseline. Raw means for the SQC scores are shown in Figure 3.1 with state averages reported for comparison. Among all respondent groups, study schools were below state averages at baseline. At one-year post trial, as *PA* schools continued to implement the program, *PA* schools exceeded control schools and state averages. Thus, although all SQC score differences between *PA* and control schools favored controls at baseline, a cross-over occurred, with *PA* schools outperforming control schools at one-year post trial.

--Insert Figure 3.1 about here--

### *Matched-Paired *t*-Tests and Effect Sizes*

Between baseline and one-year post trial, intervention schools' SQC scores increased among all respondent groups, while control schools exhibited a decrease (see Table 3.2). At one-year post trial, teacher, parent, and student reports indicated that *PA* schools had significantly higher SQC scores as compared to control schools. The permutation models corroborated the results of the matched-paired *t*-tests, with *PA*

schools demonstrating significantly higher ( $p < .001$ ) SQC scores as reported by teachers, parents, and students. Effect size calculations demonstrated large treatment effects.

--Insert Table 3.2 about here--

The exploratory analysis for each of the nine indicators for teacher, parent, and student data revealed that intervention schools consistently outperformed control schools on nearly all the nine indicators of school quality (the only exception was teacher reports of standards-based learning; see Table 3.2).

--Insert Table 3.2 about here--

Mean differences between baseline and one-year post trial indicated that *PA* schools exceeded control schools on all outcomes among all respondent groups, demonstrating that *PA* schools had greater improvement than control schools in school quality. Overall, at one-year post trial, intervention schools had significantly better outcomes on the majority of respondent indicators of school quality. Nearly all effect sizes were moderate to large.

#### *Random-Intercept Growth Curve Models*

The intraclass correlation coefficient (i.e., proportion of the total outcome variation that is attributable to differences between schools) for the unconditional means models (Singer & Willett, 2003) were .48, .54, and .30 for teacher, parent, and student SQC scores, respectively. From baseline through one-year post trial, the random-intercept models' Year  $\times$  Condition interactions for all respondent groups substantiated results of the matched-paired *t*-tests and permutation models, indicating higher SQC scores in *PA* schools (see Table 3.4). The interactions for the teacher ( $B = 2.63, p < .001$ ), parent ( $B = 1.52, p < .001$ ), and student ( $B = 1.78, p < .001$ ) models were all statistically significant.

--Insert Table 3.4 about here--

The results indicate about a 2-percentage point superiority per year for the *PA* group compared to control schools due to the intervention, or a 14% advantage across the 7-year period.

## DISCUSSION

This research, using a matched-pair, cluster-randomized, controlled trial, builds upon previous studies on the ability of a SECD program to positively improve a variety of outcomes, including academic achievement and negative behaviors (Beets, et al., 2009; Flay & Allred, 2003; Flay, et al., 2001; Li, et al., 2011; F. Snyder, et al., 2010). The study is the first to demonstrate that *PA* can enhance school quality. More exactly, as demonstrated by matched-paired *t*-test and permutation models, *PA* schools outperformed control schools in SQC scores and most individual indicators of school quality as reported by teachers, parents, and students. Further, random-intercept growth models substantiated these results and indicated that *PA* schools demonstrated significantly greater growth in SQC scores. In fact, school-level means of SQC scores for all respondent groups showed that *PA* schools, which were below state averages at baseline, exceeded state averages at one-year post trial.

These results are noteworthy as many of the schools had lower academic achievement at baseline and were in low-income areas with high racial/ethnic diversity. Additionally, the current research indicated large effect sizes on the SQC scores reported by teachers, parents, and students, which were likely the result of several important characteristics of *PA* (see Flay & Allred, 2010 for more detail) such as the program's comprehensive approach and ability to assist students and adults to gain not only the

knowledge, attitudes, norms and skills that they might gain from other programs but also improved values, self-concept, family bonding, peer selection, communication, and appreciation of school.

### *Limitations*

This study has some limitations. First, after completion of the randomized trial, SQS data were only procurable at one-year post trial as *PA* schools continued to implement the program; therefore, effects were not examined at posttest, immediately after the formal trial. Second, only 20 schools participated in the study; however a successful matched-pair design can improve statistical power (Raudenbush, Martinez, & Spybrook, 2007), and statistically significant differences between treatment and control schools were detected. Third, a limited number of observations were available for the growth curve models, whereas a large sample is desirable (Hayes, 2006) to strengthen the accuracy of the estimates, although various points of view exist as to what represents an adequate sample size (Singer & Willett, 2003). The current sample was large enough to compare these models as a sensitivity analysis to the primary analyses. Fourth, data regarding the school-quality indicators used were not available to the researchers at the student or classroom level, which precluded the ability to explore variation in reports of school quality between students within schools or within students across years. Although, with random assignment, student characteristics should be about the same in the intervention and control groups, and because every student's score is utilized to calculate a school's mean score, the study's design and analysis provide a good test for intervention effects (Stuart, 2007). With a larger sample of schools or with school-quality reports available from individual teachers, parents, and students, future research could

examine school quality as a specific mechanism to explain the effects of *PA*, for example, as a mediator for positive student outcomes. Fifth, although the randomized trial included adequate implementation of *PA* (F. Snyder, et al., 2010), insufficient cases prohibited the examination of implementation as a covariate. Sixth, although the school-quality indicators utilized in the current research were quite inclusive, other indicators may be used to measure school safety and quality and, if available, can inform results (D. Wilson, 2004). Seventh, as is typical regarding parent surveys, response rates were poor; however, teacher and student response rates were good and corroborate results. Lastly, as with all other similar studies, results are generalizable only to schools willing to implement a comprehensive SECD program.

### *Conclusion*

Despite these limitations, this study adds to the extant literature on SECD programming by being the first to examine the influence of *PA* on school safety and quality. Schools, facing increasing concern about safe and healthy learning environments, are often expected to shield students from nefarious outside forces. Although *PA* has a strong classroom-based program, it also seeks to facilitate school-climate change by including components that extend to the whole school, families and communities. The current study elucidates the ability of a comprehensive, school-wide SECD program to enhance school safety and quality as reported by teachers, parents and students.

### IMPLICATIONS FOR SCHOOL HEALTH

Learning and success take place in safe, quality schools. As schools continue to address unsafe settings, the current study lends insight regarding how SECD-related programs may be used as a tool by school health professionals to facilitate safer learning

environments with more involved families and students. Although more research is needed to examine SECD-related programs' effects on school quality, the current research supports the hypothesis that these programs can generate whole-school change and improve school safety and quality. The present study shows improvements in school quality were made by relatively underperforming schools. Implementing programs in such settings, with sustained efforts, can lead to substantial improvements in the areas with the greatest need for progress. Further, given the intensive nature of the intervention in the current study, the research suggests that programs should be long-lasting and comprehensive, involving all stakeholders including school leaders, teachers, students, families and communities.

The current research, along with the increasing related empirical evidence, suggests that students, families, schools, and communities would benefit from increasing concentration on enhancing youths' social learning skills and character development. The present findings add to the literature that demonstrates SECD programs can improve academic achievement and an array of positive behaviors. These findings also suggest that schools, districts, states, and the federal government should consider policies directed toward, and allocating funding for, effective, research-based SECD-related programs.

#### Human Subjects Approval Statement:

The research presented herein was approved by the Oregon State University and University of Illinois at Chicago institutional review boards.



Table 3.1. School Quality Survey indicators, question sets, and example items.

Indicator (% positive response)	Question set	T Number of items	P	S	Item examples
1. Safety and well-being	1A. Safety	3	6	5	“I feel free from threats, bullying and harassment at school.” “Most of the students in our school follow the school rules.”
	1B. Well-being	4	4	6	“Students get along with each other at my school.” “My teachers care about me and treat me with respect.”
2. Involvement of parents, students, and teachers		4	8	3	“At my school, I have opportunities to help make decisions that affect me (for example, school rules, student activities).” “Someone in my family helps me check my homework regularly.”
3. Satisfaction of parents, students, and teachers		6	10	10	“Overall, I am satisfied with the quality of this school.” “I like the kinds of things I am learning at school.”
4. Quality student support	4A. Environment that promotes high expectations for student learning and behavior	11	12	11	“Our school environment promotes learning.” “Someone takes care of me if I get hurt or sick at school.”
5. Focused and sustained action	5A. Vision, school purpose (mission)	4	4	3	“I know what my school’s goals are.” “My teachers expect me to do quality work.”
	5B. Culture of continuous improvement process	3	2	0	“The school continually seeks ways to improve teaching and learning to promote student achievement.” “I am involved in the school improvement process.”
6. Responsiveness of the system	6A. Parent and community engagement	5	7	0	“There is open communication among administrators, teachers, other school staff, and parents.” “I encourage and welcome parents to visit my classroom.”
	6B. Public responsibility and accountability	1	1	0	“The school keeps our community stakeholders informed about what goes on at the school.”
7. Standards-based learning	7A. Curriculum (what is being taught)	6	5	7	“Our school has high standards-based performance expectations for all students.” “My teachers help me to understand what I am expected to know and be able to do.”
	7B. Instruction (how it is taught)	5	1	5	“My teachers teach me how to think and solve problems.” “My teachers make learning interesting in different ways.”
	7C. Assessment (how assessment is used)	5	2	4	“I can show what I have learned in different ways (for example, projects, portfolios, presentations).” I have learned to evaluate my own work

8. Professionalism and capacity of the system	8A. Staff	1	1	1	and keep track of my progress.”
	8B. Professional development	1	0	0	“My teachers are well prepared and know what they are doing.”
	9A. Leadership	5	3	3	“Staff are encouraged to enhance their personal and professional skills.”
	9B. Resource management and development	2	3	1	“I can freely express my opinions or concerns to the school staff.”
9. Coordinated team work					“At my school, I have opportunities to help make decisions that affect me (for example, school rules, student activities).”
					“There are enough resources available to the school to sustain its educational programs (for example, money, equipment, staff).”
					“At school, students have access to computers for their school work.”

Note: T = Teacher survey, P = Parent survey, S = Student survey. Adapted from the Hawai'i Department of Education<sup>25, 26</sup>. Responsiveness of the System student data were not collected. One item example was provided if a question set included two or more items; two examples were provided if a question set included two or more items.

Table 3.2. Baseline measures, matched-paired *t*-tests of difference scores, effect sizes, and relative improvements for teacher, parent, and student school-quality composite scores.

Outcome (% positive responses)	2001 (Baseline)									
	Control		PA							
	Mean	SD	Mean	SD	<i>p</i> <sup>a</sup>					
<b>Teacher Reports</b>										
School quality composite score	77.63	12.05	70.52	9.61	0.162					
<b>Parent Reports</b>										
School quality composite score	70.48	9.17	68.36	6.91	0.566					
<b>Student Reports</b>										
School quality composite score	68.35	3.70	66.44	6.36	0.421					
	2007 (One-year post trial)									
	Control		PA							
	Mean	SD	M <sub>diff</sub> <sup>b</sup>	Mean	SD	M <sub>diff</sub> <sup>b</sup>	<i>p</i> <sup>c</sup>	ES <sup>d</sup>	RI <sup>e</sup>	
<b>Teacher Reports</b>										
School quality composite score	73.99	11.98	-3.65	82.47	5.40	11.95	0.006	1.61	21.1%	
<b>Parent Reports</b>										
School quality composite score	67.76	6.92	-2.71	74.51	6.60	6.15	0.007	1.26	13.1%	
<b>Student Reports</b>										
School quality composite score	65.13	5.77	-3.23	73.76	9.21	7.32	0.015	1.31	16.2%	

Note: PA = Positive Action. <sup>a</sup> 2-tail *t*-test; 18 degrees of freedom. <sup>b</sup> Mean difference = one-year post trial – baseline. <sup>c</sup> 2-tail paired *t*-test difference of differences score; 9 degrees of freedom. <sup>d</sup> Hedges' *g* effect size (unbiased adjusted *g*) of mean difference. <sup>e</sup> Relative Improvement =  $[(PA_{mean} - C_{mean})_{posttest} - (PA_{mean} - C_{mean})_{baseline}] / C_{mean posttest} = (M_{diff} PA - M_{diff} C) / C_{mean posttest}$

Table 3.3. Baseline measures, matched-paired *t*-tests of difference scores, effect sizes, and relative improvements for teacher, parent, and student reports of school-quality outcomes.

Outcome (% positive responses)	2001 (Baseline)								
	Control		PA						
	Mean	SD	Mean	SD	<i>p</i> <sup>a</sup>				
<b>Teacher Reports</b>									
Student safety & well being	84.30	12.74	76.40	11.03	0.155				
Involvement	85.30	10.56	79.20	9.14	0.184				
Satisfaction	64.30	25.97	50.20	21.99	0.207				
Quality student support	78.80	14.01	67.40	9.83	0.050				
Focused & sustained action	74.10	13.10	70.10	12.07	0.487				
Responsiveness of the system	83.20	13.43	73.90	10.05	0.097				
Standards-based learning	85.80	6.61	83.70	4.98	0.471				
Professionalism & system capacity	65.20	12.12	62.20	12.20	0.588				
Coordinated team work	77.70	14.62	71.60	10.38	0.296				
<b>Parent Reports</b>									
Student safety & well being	74.00	9.44	70.00	7.26	0.302				
Involvement	68.40	6.79	68.80	3.05	0.867				
Satisfaction	70.80	13.52	66.00	13.00	0.429				
Quality student support	72.80	9.70	68.10	7.71	0.246				
Focused & sustained action	57.70	10.17	55.30	9.88	0.599				
Responsiveness of the system	72.60	6.90	71.30	7.01	0.681				
Standards-based learning	77.40	8.96	76.90	6.61	0.889				
Professionalism & system capacity	81.10	10.93	81.70	9.27	0.896				
Coordinated team work	59.50	12.85	57.10	8.60	0.629				
<b>Student Reports</b>									
Student safety & well being	64.30	5.10	63.20	6.00	0.664				
Involvement	58.20	8.99	56.70	12.76	0.764				
Satisfaction	74.01	8.62	70.90	6.45	0.373				
Quality student support	66.10	4.33	63.30	6.27	0.261				
Focused & sustained action	58.10	8.54	60.90	13.31	0.583				
Standards-based learning	74.70	5.12	73.90	4.18	0.706				
Professionalism & system capacity	84.80	6.55	82.50	6.69	0.447				
Coordinated team work	66.60	8.25	60.10	9.42	0.118				
	2007 (One-year post trial)								
	Control		PA						
	Mean	SD	M <sub>diff</sub> <sup>b</sup>	Mean	SD	M <sub>diff</sub> <sup>b</sup>	<i>p</i> <sup>c</sup>	ES <sup>d</sup>	RI <sup>e</sup>
<b>Teacher Reports</b>									
Student safety & well being	75.16	13.16	-9.14	85.98	8.88	9.58	0.003	1.60	24.9%
Involvement	81.36	9.61	-3.94	90.94	7.43	11.74	0.005	1.75	19.3%
Satisfaction	56.70	24.34	-7.60	70.32	11.09	20.12	0.011	1.40	48.9%
Quality student support	70.34	12.70	-8.46	79.78	7.53	12.38	0.001	1.91	29.6%
Focused & sustained action	74.04	14.81	-0.06	81.78	6.06	11.68	0.108	0.99	15.9%

Responsiveness of the system	76.19	13.65	-7.01	85.70	5.87	11.80	0.001	1.71	24.7%
Standards-based learning	88.37	3.56	2.57	88.07	4.99	4.37	0.563	0.42	2.0%
Professionalism & system capacity	73.18	13.98	7.98	77.11	6.40	14.91	0.324	0.61	9.5%
Coordinated team work	70.55	11.20	-7.15	82.59	7.25	10.99	0.007	1.84	25.7%
<b>Parent Reports</b>									
Student safety & well being	70.76	7.94	-3.24	78.08	4.74	8.08	0.001	1.66	16.0%
Involvement	65.35	6.91	-3.05	72.95	5.68	4.15	0.020	1.09	11.0%
Satisfaction	65.60	12.00	-5.20	74.97	9.64	8.97	0.014	1.25	21.6%
Quality student support	69.09	7.94	-3.71	75.68	6.82	7.58	0.004	1.46	16.3%
Focused & sustained action	54.81	10.16	-2.89	64.40	10.33	6.70	0.008	0.90	21.9%
Responsiveness of the system	69.35	7.30	-3.25	72.57	7.93	1.27	0.253	0.57	6.5%
Standards-based learning	74.99	6.71	-2.41	80.80	8.08	3.90	0.013	0.81	8.4%
Professionalism & system capacity	85.17	6.22	4.07	86.97	6.12	5.27	0.694	0.19	1.4%
Coordinated team work	54.76	10.60	-4.74	64.14	10.30	7.04	0.021	1.08	21.5%
<b>Student Reports</b>									
Student safety & well being	60.28	7.98	-4.02	70.17	9.90	6.97	0.016	1.17	18.2%
Involvement	50.60	8.03	-7.60	68.65	16.42	11.95	0.021	1.45	38.6%
Satisfaction	69.20	7.79	-4.81	71.27	10.74	0.37	0.409	0.53	7.5%
Quality student support	60.74	8.18	-5.36	69.45	9.91	6.15	0.019	1.21	18.9%
Focused & sustained action	67.19	6.81	9.09	75.69	9.80	14.79	0.326	0.65	8.5%
Standards-based learning	72.67	6.51	-2.03	78.39	8.90	4.49	0.111	0.80	9.0%
Professionalism & system capacity	80.53	5.73	-4.27	87.72	6.06	5.22	0.026	1.54	11.8%
Coordinated team work	59.79	9.05	-6.81	68.75	8.99	8.65	0.019	1.64	25.9%

Note: PA = Positive Action. <sup>a</sup> 2-tail *t*-test; 18 degrees of freedom. <sup>b</sup> Mean difference = one-year post trial – baseline. <sup>c</sup> 2-tail paired *t*-test difference of differences score; 9 degrees of freedom. <sup>d</sup> Hedges' *g* effect size (unbiased adjusted *g*) of mean difference. <sup>e</sup> Relative Improvement =  $[(PA_{mean} - C_{mean})_{posttest} - (PA_{mean} - C_{mean})_{baseline}] / C_{mean posttest} = (M_{diff} PA - M_{diff} C) / C_{mean posttest}$

Table 3.4. Random-intercept growth model estimates for teacher, parent, and student school-quality composite scores.

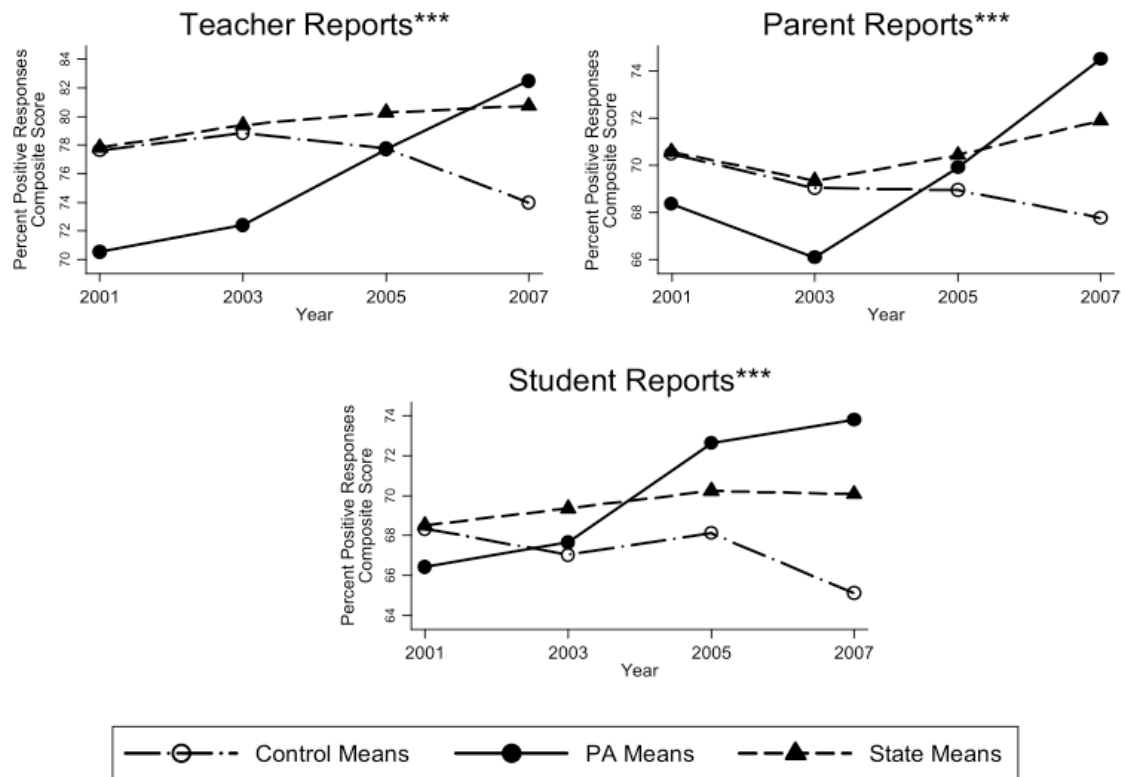
	<b>Teacher Reports</b> School quality composite score		<b>Parent Reports</b> School quality composite score		<b>Student Reports</b> School quality composite score	
	<i>B</i>	(SE)	<i>B</i>	(SE)	<i>B</i>	(SE)
<i>Fixed effects</i>						
Intercept	79.14 <sup>***</sup>	3.07	70.71 <sup>***</sup>	2.15	68.88 <sup>***</sup>	1.96
Year	-0.57	0.45	-0.41	0.30	-0.43	0.35
Condition (0=C; 1=PA)	-11.60 <sup>**</sup>	4.33	-5.44 <sup>†</sup>	3.04	-4.15	2.77
<b>Year x Condition</b>	2.63 <sup>***</sup>	0.63	1.52 <sup>***</sup>	0.43	1.78 <sup>***</sup>	0.50
<i>Random effects</i>						
School-level variance	51.74	19.61	26.83	9.98	12.04	5.91
Residual variance	39.56	7.28	18.50	3.38	25.14	4.59

Abbreviations: C= Control; PA= *Positive Action*

<sup>†</sup> $p < .10$ ; \*  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; all 2-tail

Figure 3.1. School-level means for teacher, parent and student school-quality composite scores.

Hawai'i Randomized Trial occurred 2002-03 to 2005-06.



Random-intercept growth curve models: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; all 2-tailed tests of significance

## CHAPTER 5. GENERAL CONCLUSIONS

SECD-related programs have gained increasing attention in recent years, and the growing empirical evidence demonstrates their ability to positively impact a variety of health-related outcomes. The work presented in the current manuscripts builds upon and adds to this growing literature in three important ways.

First, Manuscript 1 seeks to generate greater consistency in this relatively new, multidisciplinary field of research and practice. Theory, when practical and explicit, can lend practitioners and researchers a tool to guide program development and evaluation. The Theory of Triadic influence—an integrative and comprehensive theory—offers a detailed, clear picture of a complicated web of influences on behavior. Such a picture fills a gulf in the SECD-related literature that requires a comprehensive theoretical strategy aligned with SECD interventions and etiology. Indeed, the theory has been empirically evaluated, and it maps well onto SECD-related programs such as *Positive Action (PA)*.

Second, Manuscript 2 offers insight into how a SECD program works. Consistent with SECD and positive youth development perspectives, the research demonstrated that a focus on youth assets generated greater academic-related behaviors that mediated the intervention effects on decreasing negative behaviors such as substance use, violence, and sexual activity among elementary-school students. The research is the first to test a theoretical mechanism, whereby the *PA* program can reduce negative behaviors with minimal or no instructional time devoted directly toward those behaviors. This supports an increasingly empirically-supported perspective; that is, enhancing youth assets and focusing on youth as a resource to be developed can positively impact youth and society.



Third, Manuscript 3 is the first study to examine the ability of the *PA* program to create whole-school, contextual change, which is a primary objective of a school-wide SECD program. Teacher, parent, and student reports showed that individual indicators of school quality (such as student safety and well-being) and overall school quality increased.

#### Future Directions

Several key points regarding future work will help generate more insight related to social, emotional, and character development. Recognizing the difficulties of research branching across several disciplines and many SECD-related programs, an increased effort should be made to generate consistency in research and evaluation. Ideally over time, this relatively newly-recognized area of research and practice will generate a more uniform terminology and approach to intervention and etiology research. Consistency in theoretical understanding is one way of achieving this. Interconnected with a need for theory, there is a need for an increased effort in SECD-related research regarding measurement models to help define and delineate constructs.

Further, increased efforts related to mediation analysis will help inform theory and assist practitioners and researchers to better understand how SECD-related programming works and its key components. To reduce Type I error, mediation analysis should include comprehensive models that examine numerous components of a program in one theoretically-justified model. Moreover, longitudinal mediation analysis will increase the ability to make causal inferences.

From an applied perspective, SECD-related research, programming, and the public would benefit from cost-effectiveness analysis of evidence-based SECD-related

programs. Such an undertaking would generate a better understanding about how limited financial resources should be allocated.

Lastly, more behavioral outcomes related to social, emotional, and character development can be explored. For example, what role can SECD-related research and interventions play in encouraging healthy dietary and physical activity behaviors? Given the promising results of appropriately designed and implemented SECD-related interventions, it is likely these programs (perhaps modified) can affect behavioral outcomes that have not been examined to date.

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