

LINKING PREVENTION SCIENCE AND SOCIAL AND EMOTIONAL LEARNING: THE OREGON RESILIENCY PROJECT

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This article reviews the contributions of the Oregon Resiliency Project, an effort to enhance positive social–emotional development of children and youth through social and emotional learning (SEL). The project was launched in 2001 as a collaborative effort between faculty and graduate student researchers at the University of Oregon. The primary aims have included training, outreach, and research in school-based mental health promotion. One of the major contributions has been the development of the Strong Kids programs, SEL curricula designed to be used by educators and mental health personnel at the pre-K through Grade 12 level as a brief and low-cost way to promote SEL. The Strong Kids programs and the process of developing and refining them are described. The yield of several feasibility, efficacy, and effectiveness studies are overviewed, as are the lessons learned in conducting this line of work. Additional efforts of the project are discussed. © 2009 Wiley Periodicals, Inc.

The field of prevention science provides the scientific foundation necessary for effective implementation of prevention programs. This burgeoning field is interdisciplinary, but has had a particular emphasis on prevention efforts and scientific evaluation of their outcomes related to mental health and substance abuse programming. Among the specific disciplines and professions with particular interest and influence in prevention science are public health, nursing, psychology, social work, medicine, and child and family development. The field of education may be somewhat of a latecomer to embracing prevention science, but in recent years there have been significant developments in this regard. Not only are schools frequently used as settings for efficacy and effectiveness trials of a wide array of new or adapted preventative interventions, the field of education has begun to embrace some basic prevention science tenets.

An emerging area where there is a significant opportunity to link prevention science to school-based interventions is social and emotional learning (SEL). According to Zins and Elias (2006), SEL is considered to be “the process of acquiring and effectively applying the knowledge, attitudes, and skills necessary to recognize and manage emotions; developing caring and concern for others; making responsible decisions; establishing positive relationships; and handling challenging situations capably” (p. 1). Essentially, SEL is how we learn the basic skills needed to work effectively with other people, manage our own emotional concerns, and be effective in our lives. The Collaborative for Academic, Social, and Emotional Learning (2009), the most influential organization dedicated to promoting SEL, has articulated five core areas of social and emotional competency that are considered to be its essential elements. These five areas include:

- *Self-awareness*—accurately assessing one’s feelings, interests, values, and strengths; maintaining a well-grounded sense of self-confidence
- *Self-management*—regulating one’s emotions to handle stress, control impulses, and persevere in overcoming obstacles; setting and monitoring progress toward personal and academic goals; expressing emotions appropriately
- *Social awareness*—being able to take the perspective of and empathize with others; recognizing and appreciating individual and group similarities and differences; recognizing and using family, school, and community resources

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- *Relationship skills*—establishing and maintaining healthy and rewarding relationships based on cooperation; resisting inappropriate social pressure; preventing, managing, and resolving interpersonal conflict; seeking help when needed
- *Responsible decision making*—making decisions based on consideration of ethical standards, safety concerns, appropriate social norms, respect for others, and likely consequences of various actions; applying decision-making skills to academic and social situations; contributing to the well-being of one's school and community

It is understood that our nation's children and youth face significant challenges related to acquiring these core SEL competencies and that there are tremendous concerns regarding their mental health status (e.g., Greenberg et al., 2003). There is also evidence that the increasing prevalence of students with mental health concerns has essentially turned our schools into *de facto* mental health service centers, regardless of the level of preparation and resources schools have to deal with these problems (e.g., Hoagwood & Johnson, 2003; Strein, Hoagwood, & Cohn, 2003). Thus, it is relatively easy to make a case for infusing SEL into our schools using the tools of prevention science. What seems to be less known regarding SEL is that use of effective SEL-based preventative intervention programs in schools is strongly associated with students' success in school, not only including their social-emotional competence, but also their academic success, attitudes, school behavior, and overall school performance (Merrell & Gueldner, 2010; Zins, Bloodworth, Weissberg, & Walberg, 2004). Examples of these academically related outcomes for using SEL programs and practices in schools include student motivation to perform, feelings of attachment to school, engagement, attendance, study habits, and daily grades and test scores (Zins et al., 2004). Because research has shown that SEL skills can be learned in classroom settings (e.g., Elias, 2001), many schools have begun to apply the SEL framework to integrate strategies and programs promoting these aims into the regular school curriculum

This article is focused on the linkage between prevention science and SEL in school settings. Specifically, this link is explored through a review of goals and outcomes of a specific effort related to the fusion of the two fields: The Oregon Resiliency Project.¹ This project, particularly our efforts to use the tools of prevention science to develop and research efficacy and effectiveness of the Strong Kids SEL programs²—is described in detail. First, the background, aims, evolution, and major outcomes of the project are described. Next, the bulk of this article is focused on our multiyear effort to develop the Strong Kids programs and to use the tools of prevention science to research the outcomes produced by these SEL programs. Finally, some comments and observations regarding the lessons learned through the first eight years of this effort are offered, including unexpected detours. We consider the efforts of the Oregon Resiliency Project, which include a healthy combination of successes and failures, to be an example of how prevention science may inform a specific area of school-based intervention to create a substantive body of work that has the potential to significantly impact education in a positive way. We wish to emphasize that we do not consider this project to be a reflection of “state of the art” prevention science in its purest forms, but rather to illustrate the application of prevention science to real-world challenges that are sometimes messy.

¹ More details regarding the Oregon Resiliency Project are located on the project's Web site at <http://orp.uoregon.edu>

² More information on the Strong Start, Strong Kids, and Strong Teens programs, including full reports of the 15 research studies noted in this article, is available on the Strong Kids Web site at <http://strongkids.uoregon.edu>

THE OREGON RESILIENCY PROJECT

The Oregon Resiliency Project was launched in 2001, as a student–faculty research team based in the school psychology training program at the University of Oregon. A particular emphasis of this project has been the fusion of prevention science and SEL. This section provides some brief background information on the aims and development of this effort.

Project Aims and Evolution

Formation of the Oregon Resiliency Project was initially instigated to promote research, training, and outreach efforts in the broad area of social–emotional assessment and intervention in schools, with a particular emphasis on mental health promotion efforts. One premise for this effort has been development and maintenance of a system of support for Ph.D. students as they propose and conduct dissertation research. The team serves as a catalyst for developing new research ideas, as a sounding board for refining and articulating those ideas, and as a source of support in carrying out research projects. New student team members are expected to serve as data collectors on research projects of advanced students, and they in turn have the expectation that the team will support their own future research efforts in this manner.

The team leader (the author) and first cohort of team members quickly realized the natural linkage of our efforts with the areas of prevention science and SEL, and the literature in these areas has formed the foundation of much of our work. The basic structure of the project has been similar since its formation: full team meetings occurring every other week, with smaller work-group meetings and consultation by the project director with work groups and individual team members as needed. Our full team meetings typically include discussion of selected readings, updates and new assignments from work groups and individual team members, reports on ongoing efforts, setting goals and establishing timelines for new efforts, and invited guest presentations from research scientists whose work is consistent with our own aims.

Participation is open to graduate students in the University of Oregon’s College of Education. Numbers of participants have varied year to year, ranging from 7 to 16, as students come and go. We have also established linkages with associates at other academic and research institutions and in school and mental health agency settings. Our associates have played critical roles in fostering access to research sites or in independently conducting research on innovations developed through our team. To date, more than 40 graduate students have participated in this effort, with some staying for a year or two and then moving on to other efforts, but most involved in the project for the duration of their studies, and using it as a foundation for their own dissertation research. Graduates of the project are working in a variety of academic, practice, and leadership positions, with several of our alumna now independently pursuing their own research efforts that were incubated in the project.

Major Outcomes

The first major effort to be addressed by the Oregon Resiliency Project team was development and refinement of the Strong Kids SEL programs, which are the major focus of this article and are detailed in the next section. In addition to our work on Strong Kids and SEL in general, team members and work groups have pursued a variety of other projects related to the general aims of the project, including several efforts that have ultimately been published in peer-reviewed journals. Among the more high-profile published projects in this regard are a meta-analysis of bullying prevention and intervention programs in schools (Merrell, Gueldner, Ross, & Isava, 2008), a critical review and synthesis of the literature on relational aggression in school settings (Merrell, Buchanan, & Tran, 2006), a survey of teachers’ perceptions and practices regarding SEL (Buchanan, Gueldner, Tran, & Merrell, 2009), a synthesis article on the role of school psychology in preventing and treating

depression (Herman, Merrell, Reinke, & Tucker, 2004), and a study of the impact of a classwide teacher consultation model on students' outcomes (Reinke, Lewis-Palmer, & Merrell, 2008). As is discussed at the end of the next section, the process of systematically pursuing intervention efficacy and effectiveness research with the Strong Kids programs has led our team efforts in directions that were not originally anticipated, such as development of a new cross-informant social-emotional assessment system.

STRONG KIDS: AN SEL PROGRAM

The Strong Kids SEL programs have been the major innovation of the Oregon Resiliency Project to date. We use the term "Strong Kids" somewhat generically, to refer to the entire collection—which currently includes five separate curricular components—of SEL programs that we have developed. These five components have some conceptual similarities, but are each focused on a specific developmental period, and thus have unique characteristics to make them developmentally appropriate. From the younger to older ranges of the intended developmental targets, the five Strong Kids programs include:

- *Strong Start for Pre-K* (Merrell, Whitcomb, & Parisi, 2009), a 10-lesson program intended for use with children ages 3–5 who attend preschool programs, Head Start classrooms, and other types of early childhood education programs;
- *Strong Start for Grades K–2* (Merrell, Parisi, & Whitcomb, 2007), a 10-lesson program intended for use with children in Kindergarten through Grade 2, or approximately ages 6–8;
- *Strong Kids for Grades 3–5* (Merrell, Carrizales, Feuerborn, Gueldner, & Tran, 2007a), a 12-lesson program intended for use with students in Grades 3–5, or approximately ages 9–11, the intermediate elementary school years;
- *Strong Kids for Grades 6–8* (Merrell, Carrizales, Feuerborn, Gueldner, & Tran, 2007b), a 12-lesson program intended for use with middle-school-age students, those in Grades 6–8, or approximately ages 11 or 12 through approximately 14; and
- *Strong Teens for Grades 9–12* (Merrell, Carrizales, Feuerborn, Gueldner, & Tran, 2007c), a 12-lesson program intended for use with high school students—those in Grades 9–12, or approximately ages 14–18.

Obviously, the wide age span that is covered across the five curricular components of Strong Kids required that we approach each developmental target with a somewhat unique approach. To that end, each component has unique elements, as well as many common threads. The two Strong Start programs—the components for ages 3–6 and Grades K–2—do not require child participants to do any reading or fill in any structured worksheets, and we also greatly reduced the complexity of cognitive demands that are made in the core activities for these components. Early literacy development is supported through the use of various books that we selected from popular children's literature from which the teacher or group leader may choose to read stories to the children. A suggested list of supplemental books for each lesson was carefully developed to link explicitly to the topic of that lesson. For example, both versions of Strong Start include a focus on six universal emotions that are woven throughout the lessons and that are the object of specific lessons: *happy, sad, angry, afraid, surprised, and disgusted*. Lesson 6 of Strong Start, "When You're Worried," focuses on learning to understand and manage fear, worry, and anxiety. Among the book possibilities from which the teacher selects for this lesson are several titles that are focused explicitly on stories of children or animals that learn to deal successfully with fear- or worry-related situations. Strong Kids for Grades 3–5, in contrast, assumes that students are learning to read, and includes activities for

Table 1

Structure and Lesson Content of the Strong Start SEL Curricula (Merrell, Parisi, & Whitcomb, 2007; Merrell, Whitcomb, & Parisi, 2009)

Lesson	Title	Description
1	The Feelings Exercise Group	Introduce students to Strong Start curriculum
2	Understanding Your Feelings 1	Teach students to name basic feelings/emotions
3	Understanding Your Feelings 2	Teach students appropriate ways to express feelings
4	When You're Angry	Teach students about anger and helpful ways of managing it
5	When You're Happy	Teach students about happiness and basic strategies for using positive thinking
6	When You're Worried	Teach students to identify and manage worry, fear, anxiety
7	Understanding Other People's Feelings	Teach students ways to identify other people's feelings
8	Being A Good Friend	Teach students basic interpersonal communication and friendship-making skills
9	Solving People Problems	Teach students ways of managing conflicts with other people
10	Finishing Up!	Review of basic concepts and selected activities in Strong Start curriculum

each lesson (such as introduction of new vocabulary words and student activities or worksheets that require them to read and write) that are specifically designed to support literacy skills.

The 12-lesson sequencing of the two Strong Kids (for Grades 3–5 and 6–8) and Strong Teens (for Grades 9–12) is actually quite similar in terms of concepts and general lesson structure, but differs across the three versions with respect to the language and examples that are used, as well as the cognitive and social sophistication of concepts of required activities. For example, the middle-school component includes examples and activities that are designed to be inclusive of the broadening social sphere and autonomy with which children of this age must learn to cope, whereas the high-school component is more infused with examples, problem scenarios, and language that are consistent with the developmental tasks typical of adolescence: increased autonomy, increased influence of the peer group, romantic attraction, work skills, and school–career transitions, and so forth. Table 1 includes a brief outline of the lesson structure and major components of the two Strong Start programs, and Table 2 includes the structure and components of the two Strong Kids programs and the Strong Teens version of the program. Note that the lessons across program components are designed to be taught once per week, and that they range in length from 35 minutes (for the Strong Start lessons) to 50 minutes (for the Strong Kids and Strong Teen lessons).

Conceptual Model, Underlying Assumptions, and Parameters

The conceptual model underlying the creation of the Strong Kids programs was straightforward. We hypothesized that an instructionally sound and developmentally appropriate focus on teaching and learning the essential elements of emotional education, cognitive restructuring, interpersonal problem solving, social skills training, empathy training, problem solving, stress reduction and relaxation, and behavioral change would lead to improved outcomes for student participants. Each of these elements has been shown to be effective in their own right in producing positive youth development outcomes. It was our view that combining brief doses of each of these core elements in an instructionally sound manner would lead to the types of outcomes in which we were interested.

Although our interest in prevention science and the name of our research group may suggest traditional definitions of resiliency, our goal was broader. Not only did we consider that the Strong

Table 2

Structure and Lesson Content of the Strong Kids and Strong Teens SEL Curricula (Merrell, Carrizales, Feuerborn, Gueldner, & Tran, 2007a, 2007b, 2007c)

Lesson	Title	Description
1	About Strong Kids (Emotional Strength Training)	Overview of the curriculum
2	Understanding Your Feelings: Part 1	Introduction to emotions Identify emotions as comfortable or uncomfortable
3	Understanding Your Feelings: Part 2	Discussion of appropriate and inappropriate ways of expressing emotions
4	Dealing With Anger	Recognizing triggers to anger Practicing ways to change inappropriate responses
5	Understanding Other People's Feelings	Identifying others emotions by using clues
6	Clear Thinking: Part 1	Recognizing negative thought patterns
7	Clear Thinking: Part 2	Challenging these thought patterns to think more positively
8	The Power of Positive Thinking	Promoting optimistic thinking
9	Solving People Problems	Conflict resolution strategies
10	Letting Go of Stress	Stress reduction and relaxation exercises
11	Behavior Change: Setting Goals and Staying Active	Increasing time spent in enjoyable activities and meeting goals
12	Finishing Up!	Review of major concepts and selected activities in curriculum

Kids programs could be used to promote resiliency and enhance social–emotional outcomes for at-risk children and youth, we also posited that these programs could be used for universal mental health promotion. Thus, our efforts focused not only on resiliency for at-risk students, but on the idea that universal primary prevention and health promotion could also be simultaneously addressed within the context of a brief and cost-effective SEL curriculum. Our comprehensive view of the potential purposes of Strong Kids is supported by the Institute of Medicine's (IOM) notion of a *continuum of care* or interventions (e.g., Springer & Philips, 2006). The IOM continuum includes three levels of intervention intensity and three levels of risk, each associated with one of the three traditional populations of interest within the prevention science framework: *Universal* interventions are associated with low-intensity interventions and low levels of risk. *Selected* interventions are associated with moderate-intensity interventions and moderate levels of risk. *Indicated* interventions are associated with high-intensity interventions and are focused on populations with a high degree of risk. From a pragmatic standpoint, although our research has shown that the Strong Kids programs may provide benefits at each level of care and concern, we have always maintained that they are most appropriate as universal and selected interventions, and that their use with high-risk indicated populations should be only in adjunct with a comprehensive treatment program.

It was our intent to create SEL programs that were brief, easy to use, and low cost. It was our explicit intent to create programs that had at least satisfactory efficacy or potency, but perhaps more importantly, were designed to maximize the *reach, adoption, and implementation* of the SEL intervention (see Merrell & Buchanan, 2006, for a discussion of the “RE-AIM framework” public health approach to maximizing outcomes in this manner). In other words, we did not set out to create the most powerful or potent SEL intervention possible. Rather, we were guided by the notion that “bigger is not always better,” given that there are many highly complex evidence-based interventions available that are seldom used outside of the world of federally funded scientific research because

they require more time, training, and resources than the typical school district or agency can afford. Thus, in creating the contents and initial lesson outlines, we focused on what we viewed as only the most essential instructional and SEL skill components that were necessary to produce important changes in affect, cognition, and behavior. We also were continually mindful of the charge to create an SEL curriculum that could be taught and monitored by a broad sector of professionals (and paraprofessionals), with only minimum training required.

We aimed to use the yield of research on effective instructional practices to inform the scripted Strong Kids user's guides. Each of the five lesson manuals was written to include brisk pacing, numerous opportunities for student response with immediate feedback from teachers or group leaders, a high ratio of positive to negative statements, high expectations for students, active instruction that is explicitly directed by teachers, structured review of newly taught concepts and content, scaffolding of new material and skills, opportunities to increase "think time" when students are given questions, a high level of student engagement, and classwide (or small group) instructional delivery. Given that these instructional elements have been shown to maximize academic learning (e.g., Coyne, Kame'enui, & Carnine, 2006; Carnine, Silbert, Kame'enui, & Tarver, 2009), it was our intent to use them to the greatest extent possible to maximize SEL with Strong Kids.

Another underlying assumption in developing Strong Kids had to do with the core content and aims of what the SEL curriculum would target. In this regard we were influenced greatly by the work of Cowen (e.g., 1994), a pioneering prevention science researcher. Specifically, we sought to construct the lesson contents of Strong Kids in a way that not only connected to the core elements of SEL, but directly addressed Cowen's five proposed "Pathways to Wellness," which include: (1) forming wholesome early attachments, (2) acquiring age-appropriate competencies, (3) being exposed to settings that favor wellness outcomes, (4) having the empowering sense of being in control of one's fate, and (5) coping effectively with stress. Thus, Strong Kids was designed to address these five positive pathways whenever possible.

Development and Pilot Testing

Developing and adequate piloting of a new preventative intervention effort is best done when carried out with a specific purpose, a guiding framework, and adequate time and care. All of these elements were in place with our initial efforts to move Strong Kids from being an idea to an intervention protocol that could be formally tried and tested. When I formed the Oregon Resiliency Project team in 2001, I already had an outline developed for what would become Strong Kids. The best decision I made in the entire process was to make the graduate student researchers on the team full partners in developing the first full drafts of the program, and that process was very much a collaborative effort. After a general protocol had been developed for a common organizational structure and script flow for the lessons, pairs or small groups of team members were assigned to draft potential lesson scripts, create instructional activities that would be used during the lessons, and develop potential worksheets, vocabulary lists, and so forth. This process involved frequent vetting, group feedback, and rewriting of script drafts. After approximately 1 year, we had the skeleton in place for what would become the basic Strong Kids programs. Knowing that these curricula would need to be developmentally tuned if they were to be effective across a broad age span, we then rewrote the draft of the basic curriculum into an elementary/middle school version and a high school version. Later, the elementary/middle school version was fine-tuned by dividing it into two parallel programs, one for intermediate elementary-age students (Grades 3–5), and one for middle-school students (Grades 6–8). The key in making the appropriate distinctions across the various intended age ranges was to make the script language, vocabulary lists, examples, and activities particularly relevant for the intended age.

The framework for the Strong Start versions of the program was developed later than the Strong Kids and Strong Teens manuals. We realized early on that creating early childhood and primary grade versions of the intervention was an important goal, but that the developmental characteristics of the younger age groups required a unique approach and framework, not just a downward age extension of the existing manuals. Thus, after we reached a point where the basic elements and prototype scripts were already in place for Strong Kids and Strong Teens, we began a separate process for Strong Start with a smaller work group. The actual script writing and final refinement of Strong Start was conducted by me and two team members who had extensive interest and experience working directly with young children.

Although it is possible to move directly from initial development of a new prevention science innovation to formal research, we think that it is advisable to first make sure that the new innovation has a high probability of being accepted by potential users as being useful, engaging, appropriate, interesting, and easy to use. In short, the notion of *social validity*—a term originally introduced by Wolf (1978)—should be built into an innovation early on in the development cycle, rather than considered only after formal field trials are being conducted. Foster and Mash (1999) have referred to social validity as “the social importance and acceptability of treatment goals, procedures, and outcomes” (p. 308). We agree with this general way of articulating the social validity, but also posit that the use and understanding of the idea has expanded in recent years. We see social validity as encompassing the cutting ground for potential users of any innovation in prevention science or any other field—the subjective aspects of whether they see the innovation as something that meets their needs in ways that will encourage them to continue using it. The idea of social validity weighed heavily in the Strong Kids development work, and we made sure to build into our process many opportunities for vetting, feedback, and revision from the field. To that end, after the basic prototypes had been completed—but before formal research trials were initiated—we made the Strong Kids programs available to many potential users, encouraging them to look it over, evaluate it, and provide us with their feedback. We followed up with these initial field testers systematically to get their input. Ultimately, this process resulted in some invaluable feedback from many individuals that caused us to make a final round of changes before we began the formal research trials.

Feasibility Research

Carroll and Rounsaville (2003) articulated a three-stage model of behavioral therapies research, initially developed by the National Institute on Drug Abuse (NIDA). We think that this model has particular salience for the prevention science field, especially in developing new preventative interventions. An important element of this model is that, before formal efficacy trials begin (stage II), and before effectiveness of an intervention in real-world settings is evaluated (stage III), it is first useful to experiment with pilot studies that seek to evaluate feasibility of the new innovation (stage I). Describing this stage research notion, Rounsaville, Carroll, and Onken (2001) noted the difficult research demands placed on developers of new clinical innovations: “The progressively rigorous methodological requirements of conducting clinical trials of behavioral treatments has placed a large burden on individual investigators, as treatment manuals, methods of evaluating treatment quality and fidelity, and persuasive evidence of the treatment’s promise, are now virtual requirements of receiving support for conducting a clinical trial of a new or adapted treatment” (p. 133). Within this critique of the sometimes unreasonable demands for efficacy trials, the authors argued that an initial stage of feasibility research and pilot studies should be supported as important and essential efforts. Such feasibility or pilot studies are considered to be a useful tool for allowing researchers who develop new intervention opportunities to evaluate their innovations with smaller samples and under

less controlled conditions prior to scaling up the research to more rigorous standards (Breakwell, Hammond, & Fife-Schaw, 2000).

We believed that it was important to follow this logic in our efforts with Strong Kids, which initially involved some simple pilot studies that used pretest/posttest within-group designs (i.e., did not involve the use of random selection or no-treatment control groups) or treatment–control group designs with very small N values. With these studies we were particularly interested in trying out the Strong Kids programs in a variety of the settings for which it was intended, to help us understand if the instrumentation that we had developed or selected for use in future outcome studies was appropriate, if implementers of the program were delivering it as we envisioned, if any potential gains to participating students were detectable, and if our ideas for the next phase of research needed to be modified. Five such studies were conducted, including two studies reported by Feuerborn (2004) and three studies included in a report by Merrell, Juskelis, Tran, and Buchanan (2008). The specific types of outcomes that we found (and other parameters of these studies) are noted in Table 3, coded by study. The yield of this phase of research was that Strong Kids appeared to be producing some important gains—such as increasing students’ knowledge of curriculum-related healthy social–emotional behavior and reducing problem symptoms in some groups—but that we needed to refine our research instrumentation and methods. Specifically, we determined that we needed to formally examine fidelity of implementation of the SEL programs, evaluate social validity of the programs with both students and teachers, and begin to conduct more sophisticated research in which stronger comparison or control methods were used. We also determined that we wanted to explore particular nuances associated with delivery of preventative interventions in general classroom settings, such as use of expert consultation and pacing of the instructional delivery.

Effectiveness–Efficacy Research

In traditional stage models of clinical intervention research (such as the NIDA model detailed by Carroll & Rounsaville, 2003), there is often a clear distinction between *efficacy research* (carefully controlled experimental trials) and *effectiveness research* (research in real-world settings and conditions). Such distinctions may be important, because efficacy trials allow researchers to first evaluate the intervention under tightly controlled conditions that are somewhat analogous to laboratory research—strict adherence to treatment protocols, random assignment of participants, use of no-treatment control groups, and careful control of other aspects of the environment that might impact the outcomes produced by an intervention—before taking the intervention into the much messier real world of schools, where such strict controls are seldom possible (see Fishman, 2000; Merrell & Buchanan, 2006). Effectiveness research, in contrast, occurs in real-world settings—in the trenches, so to speak. It allows researchers to see how the intervention performs in the circumstances for which it was actually intended.

In practice it is often difficult to separate intervention research into these two distinct types or phases, especially when conducting research on interventions intended for schools, and when conducting research without the benefit of significant financial backing. Thus, Carroll and Rounsaville (2003) advocated a “hybrid” model linking efficacy and effectiveness research—research that attempts to maintain as many of the design controls as possible, while taking into consideration the realities of “research in the trenches,” where the social importance of the setting (such as general education classrooms in typical schools), which may be a messy environment in which to conduct research, may help outweigh the occasional loss of rigid adherence that is only possible in tightly controlled field trials that require excessive resources.

It was this hybrid model of research—integrating elements of efficacy and effectiveness studies whenever possible—that we and our associates have followed in the majority of studies we have

Table 3
 Research Studies Conducted to Date on Strong Kids Programs by Oregon Resiliency Project Team and Associates, Listed Alphabetically: Summary of Study Designs and Major Findings

Study	Brief Description	Major Findings
Caldarella et al., 2009	Treatment-control design with elementary general education students	D, E, F, O
Castro Olivo, 2006	Multiple baseline mixed factorial design in high school with Latino immigrants	A, H, I
Feuerborn, 2004	2 pilot studies using small <i>N</i> treatment-control group designs with at-risk elementary students and typical middle-school students	A, B, E, F
Guedner & Merrell, in press	Treatment-control group design with two treatment conditions in general education middle-school setting	A, E, F, G
Harlacher & Merrell, 2009	Treatment-waitlist control design in general education elementary-school setting, with short-term follow-up after treatment ended	A, C, D, E, J
Isava, 2006	Treatment-control group design with adolescents in a residential treatment setting	A, B, E, D, F, P
Kramer et al., 2009	Within-subjects time-series design with kindergarten students	B, C, E, F
Levitt, 2008	Feasibility study on consultation and feedback to teachers	E, F, G
Marchant et al., in press	Within-groups pre-/posttreatment design with elementary-age students identified at-risk for internalizing behavior problems	A, B, E, F, J, O
Merrell, Juskelis, et al., 2008	3 pilot studies using within-groups pre-/posttreatment designs; elementary- and middle-school general education settings, high-school special education setting	A, B
Nakayama, 2008	Multiple baseline intervention-only design with elementary-age special education students with behavioral and emotional problems	A, C, E, F
Tran, 2007	Treatment-control design in elementary general education setting, manipulating instructional pacing over 6 weeks or 12 weeks	A, B, E, F, L
Whitcomb, 2009	Within-subjects quasi-experimental design in general education first-grade classrooms	E, F, M, O

Table Key for Major Findings:

- A = Increases in students' knowledge of healthy social-emotional behavior.
- B = Reductions in self-reported internalizing problem symptoms.
- C = Increases in self-reported social-emotional competence and resilience.
- D = Increases in teacher-reported social competence.
- E = Strong treatment fidelity.
- F = Strong social validity.
- G = Consultation and performance feedback to teachers did not result in better outcomes.
- H = Effective cultural and linguistic adaptation for Latino students.
- I = Potential preventative effect on reducing acculturative stress and increasing sense of school belonging.
- J = Maintenance of treatment gains at short-term follow-up.
- K = Increases in self-reported coping skills.
- L = No outcome differences related to instructional pacing, but 12-week pacing has higher social validity.
- M = Increases in emotion knowledge.
- N = Decreases in general teacher-reported problem behavior.
- O = Decreases in teacher-reported internalizing problem symptoms.
- P = Increases in parent-reported social competence.

conducted to date on the Strong Kids programs. For example, several of our studies have used treatment-control group designs in which one group receives the Strong Kids intervention and the other group does not receive it. The traditional "gold standard" for efficacy trials is random assignment of subjects to different experimental conditions. In reality, random assignment at the

student level is seldom, if ever, possible in studies where interventions are delivered classwide. Thus, the Society for Prevention Research, in its *Standards of Evidence* (2004), has acknowledged that “Level of randomization should be driven by the nature of the intervention . . . (it) can be of individuals or of intact groups, like schools.” The *Standards* further state, “For some kinds of interventions where randomization is impossible, other approaches may be acceptable, when used with caution and methodological expertise” (p. 3).

As an alternative to random assignment of participants to differing intervention conditions, researchers studying group interventions in schools often use random assignment of preexisting classrooms to treatment and control conditions, rather than random assignment of students to classrooms. Although this type of quasi-experimental design is more feasible in schools, retaining some of the benefits of experimental designs, there are limitations to consider, such as “nesting” effects of studying interventions delivered in classrooms where there may be preexisting differences among students or teachers (Van Acker, Yell, Bradley, & Drasgow, 2004). Another variation we used in our hybrid efficacy/effectiveness research was within-subject and mixed factorial designs that did not use randomly selected control groups, but instead relied on multiple pretest baseline probes to help control for history or maturation effects before the intervention occurred. Knowing in advance the challenge we would face in balancing between feasibility and scientific integrity of our research, moved forward with conducting several studies of the Strong Kids programs over a several-year period.

Because many of the studies conducted by our team started out as Ph.D. dissertations, we generally avoided direct replications of previous research, given the need to make unique contributions with each individual effort. A result of this approach is that the body of research we have generated tends to build on general findings and themes while adding new and unique elements, as opposed to direct or systematic replication of the same findings across settings. Again, there are advantages and disadvantages to each approach. One element that we have been able to consistently include across most studies has been measurement of gains or growth in curriculum-related knowledge of healthy social and emotional behaviors and concepts among groups of students who participated in the Strong Kids or Strong Teens programs. Without exception, we found significant and large gains in social–emotional knowledge among students. Whether we used treatment group/control group comparisons (in later studies), or pre-/post-treatment-only comparisons (in the earlier pilot research), we consistently found large effects in this area, with effect sizes (ES) near or slightly above an ES of 1.0 in most cases. Measuring knowledge gains in this manner proved to be a complicated issue. Because we could find no existing measures of general knowledge in the SEL realm, we needed to construct measures specifically for this purpose, which carried the added burden of needing to demonstrate adequate psychometric properties, which we did. In addition to the earlier simple pretest/posttest pilot studies that demonstrated significant gains in student social–emotional knowledge among groups that participated in Strong Kids or Strong Teens, there have been several subsequent studies that have shown this same pattern of findings using more experimentally refined research methods (i.e., treatment group/control group designs or multiple pretest probe designs). These studies include efforts by Castro Olivo (2006); Gueldner and Merrell (in press); Harlacher and Merrell (2009); Isava (2006); Marchant, Brown, Caldarella, and Young (in press); Nakayama (2008); and Tran (2007). Again, a more complete summary of types of findings organized by each study is found in Table 3.

Although social–emotional knowledge gains are an important outcome in their own right, they do not necessarily translate into changes in behavior or social functioning, at least in the short term. For that reason we have also been interested in studying whether participation in a brief SEL program like Strong Kids is associated with changes in important social–emotional behaviors, such as reductions in problem behaviors or increases in social–emotional competence. Our earlier efforts in

this manner showed some evidence of problem symptom reduction—particularly when considering internalizing problem symptoms such as characteristics of depression and anxiety (Feuerborn, 2004; Merrell, Juskelis et al., 2008). Subsequent studies that employed more sophisticated research design features have also shown this pattern, but not on a totally consistent basis. Some studies have shown meaningful reductions in problem symptom reduction—especially reductions in internalizing problem symptoms (e.g., Caldarella, Christensen, Kramer, & Kronmiller, 2009; Isava, 2006; Marchant et al., in press; Tran, 2007)—and other studies fail to identify such a pattern (Gueldner & Merrell, in press; Nakayama, 2008). There were two challenges we faced in trying to research problem reduction outcomes: the facts that (a) the settings in which we conducted our research varied greatly (ranging from general education classrooms to residential treatment facilities) and (2) most students in the general education settings where “asymptomatic” or had low problem behavior scores to begin with, making reductions in their scores in this area unlikely. As a result, we determined that we needed to include measures of social–emotional competence in Strong Kids intervention studies rather than relying on the traditional option of trying to gauge change by seeking reductions in problem symptoms. Studies that have included measures of social–emotional competency (either by student self-report or by teacher report) have been somewhat more encouraging, with significant, meaningful gains in these variables noted in several trials (Caldarella et al., 2009; Harlacher & Merrell, 2009; Kramer, Caldarella, Christensen, & Shatzer, 2009; Nakayama, 2008). Our present and planned future efforts with Strong Kids are focusing more specifically on gauging increases in positive social–emotional competencies and less so on problem symptom reduction.

Among the key aims and values that informed our Strong Kids development efforts was the desire to create an easy-to-use SEL program that had strong social validity and that required minimal training and outside support for educators and mental health clinicians to be able to deliver the curriculum at a high level of fidelity. Once we worked our way through the first pilot studies, we determined that these two areas should be high priorities for our research. Several studies have formally evaluated fidelity (as defined by adherence to the structured curriculum outlines) and social validity from the perspective of the curriculum implementers and the students, or both of these areas. In fact, in every study in which these outcomes were evaluated, we have found strong levels of treatment fidelity and social validity (e.g., Caldarella et al., 2009; Feuerborn, 2004; Gueldner & Merrell, in press; Harlacher & Merrell, 2009; Isava, 2006; Kramer et al., 2009; Levitt, 2008; Marchant et al., in press; Nakayama, 2008; Tran, 2007; Whitcomb, 2009).

In sum, the research on Strong Kids (including the Strong Start, Strong Kids, and Strong Teens programs) conducted by the Oregon Resiliency Project team and our associates has to date consisted of 15 separate studies reported in 12 different sources. Each study has found some evidence of significant and meaningful outcomes related to the Strong Kids programs. A variety of outcome variables have been studied, ranging from treatment fidelity and social validity, to student knowledge gains, and to reductions in problem symptoms and increases in social–emotional competence among students—identified from the perspective of both student self-report and teacher or parent report. Some of these studies have used feasibility or pilot research methods, but most have employed a hybrid of efficacy and effectiveness methods. We do not argue that our research has employed “gold standard” methods of complete randomization at the level of students such as is often required for federally funded support of clinical trials. However, we think that one of the major accomplishments and demonstrations of our 8-year experiment in developing and researching Strong Kids has been that we have been able to consistently show meaningful results under such a variety of real-world conditions, without the benefit of extensive external supports. This “SEL on a shoestring” approach is consistent with our overall objective of creating an easy to use and low-cost universal SEL program that has few barriers to adoption, implementation, and maintenance.

WHAT WE HAVE LEARNED: CURRENT STATUS, UNEXPECTED DETOURS, AND NEXT STEPS

At the present time—after 8 years of research and development activities related to the Strong Kids SEL programs—there is still work to be done. The results of the research reviewed in this section have helped us better understand the strengths of our brief, low cost, universal approach to primary prevention through SEL. We are particularly satisfied that the Strong Kids programs have solid social validity with both teachers/group leaders and students, that the simple scripted approach to the curriculum results in a program that can be delivered with a high degree of fidelity—even without extensive training or the use of expert consultation—and that participation in the Strong Kids programs consistently results in significant and meaningful increases in students' knowledge of curriculum-related concepts: emotional knowledge and management strategies, problem-solving skills, coping strategies, self-management skills, cognitive change techniques to enhance optimism and reduce negative thinking errors, and the ability to set goals and plan for positive behavior change. We are also optimistic that participation in the Strong Kids programs may result in meaningful increases in students' social-emotional competencies, reductions in their internalizing problem symptoms, and enhancements in their general resiliency and ability to cope with adversity.

We are particularly enthusiastic about the potential of Strong Kids to be adapted to meet the needs of culturally and linguistically diverse students, as exemplified by a study by Castro Olivo (2006) with Latino immigrant adolescents, and by her current efforts to research this extension of Strong Kid—*Jovenes Fuertes*—with broader samples of Latino youths. Similar efforts by some of our associates are underway with preschool and primary grade Latino children, and the initial signs and findings are encouraging.

Despite our satisfaction with the outcomes we have produced and our optimism for future efforts, there are still some challenging issues to be researched. Developing partnerships at the high-school level for systematic experimental trials with Strong Teens has been a particular challenge. Since the early iterations of the program, we envisioned high-school health classes as being an ideal setting in which to deliver a brief SEL program such as Strong Teens, which would be done efficiently even in a half-semester block of classes. Our experience in actually gaining entrée into high-school health classes in the manner we wish has been disappointing. Not only are there significant issues to be resolved regarding teachers' curriculum autonomy for larger scale efforts to be conducted, we have become increasingly aware of how teachers of high-school health classes—and almost any other type of high-school class—are under tremendous pressure to deliver numerous state and district mandated curriculum programs, leaving little flexibility for optional programs such as Strong Teens. Our goal is to be able to study Strong Teens in a more systematic and experimental manner in high-school classes than has thus far been possible, using multiple classrooms within and across schools, random assignment to classwide conditions, and multielement outcome measures.

Research with the Strong Start programs—those brief SEL programs aimed at children ages 3–5 and in Grades K–2—has also presented some unique challenges, although access to populations has not been among them. What we have found to be particularly challenging in this regard is developing appropriate outcome measures that are not only psychometrically sound, but sensitive to the types of changes that are most likely with brief SEL programs. Much of our standard practice in relying heavily on student self-report assessments is simply not feasible with children younger than approximately age 9 (Merrell, 2008), who tend to lack the reading skills and cognitive sophistication required to respond to complex self-report measures in a reliable manner. Although we have been able to obtain reliable teacher report data in the form of rating scales, direct observation of young children's social-emotional development over short periods of time has also proven to be problematic and fraught with reliability issues (see Hintze, 2005; Hintze & Mathews, 2004, for key findings related to this issue). In general, the expectation that a brief, prevention-oriented SEL

program like Strong Start should produce reliable changes in overtly observable behavior of children over short time periods is an assumption that we are not convinced is on solid ground in the first place.

There has been a silver lining to some of the measurement and assessment challenges that we encountered in the process of conducting feasibility and effectiveness/efficacy research with Strong Kids. After our early efforts convinced us that focusing on pathology reduction as an SEL outcome with normal populations of students (who were largely asymptomatic to begin with) was a limited measurement strategy, we sought to bolster our use of strength-based social–emotional assessment tools in our research studies, which we think is in general a more appropriate strategy when studying general education populations. Our ability to detect short-term changes with these types of measures following SEL program participation has been encouraging, but we were also dismayed by the general paucity of high-quality, strength-based assessment tools appropriate for our purposes. Because the psychological assessment has traditionally been focused on the search for psychopathology, strength-based measures are far fewer in number.

Beginning about 2006, we determined to help remedy this situation by taking an unexpected detour into the realm of assessment development, and we carefully constructed a prototype for a strength-based cross-informant assessment system that would be ideally suited for use with SEL programs. A major emphasis of our team’s efforts since 2007 has been on systematically researching and refining this assessment system, which we have named the *Social-Emotional Assets and Resiliency Scales* (see <http://strongkids.uoregon.edu/SEARS.html> for more information and for summaries of research conducted to date). We have made significant strides in the validation and refinement of the scales, which we hope to make available to researchers and practitioners on a larger scale.

One of the unexpected detours that our research has taken has been into the realm of clinical or special populations. Although we did not intend for Strong Kids to be used extensively with students who have the greatest levels of intensity of needs, we found that there was strong interest among our school-based research partners for using the programs with a variety of at-risk or high-risk students, including students in self-contained special education programs for children with emotional and behavioral disorders, students in alternative high schools, youths in residential treatment settings, and children who have high-functioning autism or Asperger’s disorder. We have included some of these populations in our research to date, with encouraging results that have convinced us that Strong Kids may have appropriate applications at the targeted and indicated risk levels in addition to the universal level. We are particularly interested in the possibility of adapting SEL programs like Strong Kids for use with students at the higher end of functioning in autism spectrum disorders.

In conclusion, our efforts to link prevention science to SEL in school settings through the research journey of the Oregon Resiliency Project—especially with our Strong Kids programs—have convinced us that the juncture of these two areas has the potential to be important. We also believe that this nexus may be fruitful territory for researchers and intervention innovators. We encourage other research groups to build on our efforts as a way of addressing some of the significant mental health and social–emotional needs within our nation’s schools.

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