The Positive Impact of Social and Emotional Learning for Kindergarten to Eighth-Grade Students

Technical Report

Findings from Three Scientific Reviews

John Payton
Roger P. Weissberg
Joseph A. Durlak
Allison B. Dymnicki
Rebecca D. Taylor
Kriston B. Schellinger
Molly Pachan

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This technical report and an Executive Summary on the three reviews may be retrieved from www.casel.org or www.lpfch.org/sel.

Additional questions about these studies or related work may be addressed to:

Roger P. Weissberg, PhD
Department of Psychology (MC 285)
University of Illinois at Chicago
1007 West Harrison Street
Chicago, IL 60607-7137
Email: rpw@uic.edu

Joseph A. Durlak, PhD
Department of Psychology
Loyola University Chicago
6525 N. Sheridan Road
Chicago, IL 60626
Email: jdurlak@luc.edu

Note: John Payton, Roger P. Weissberg, Allison B. Dymnicki, and Rebecca D. Taylor are based at the University of Illinois at Chicago and affiliated with the Collaborative for Academic, Social, and Emotional Learning (CASEL). Joseph A. Durlak, Kriston B. Schellinger, and Molly Pachan are affiliated with Loyola University Chicago.

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Abstract

This report summarizes results from three large-scale reviews of research on the impact of social and emotional learning (SEL) programs on elementary- and middle-school students — that is, programs that seek to promote various social and emotional skills. Collectively the three reviews included 317 studies and involved 324,303 children.

SEL programs yielded multiple benefits in each review and were effective in both school and after-school settings and for students with and without behavioral and emotional problems. They were also effective across the K-8 grade range and for racially and ethnically diverse students from urban, rural, and suburban settings. SEL programs improved students' social-emotional skills, attitudes about self and others, connection to school, positive social behavior, and academic performance; they also reduced students' conduct problems and emotional distress. Comparing results from these reviews to findings obtained in reviews of interventions by other research teams suggests that SEL programs are among the most successful youth-development programs offered to school-age youth. Furthermore, school staff (e.g., teachers, student support staff) carried out SEL programs effectively, indicating that they can be incorporated into routine educational practice. In addition, SEL programming improved students' academic performance by 11 to 17 percentile points across the three reviews, indicating that they offer students a practical educational benefit. Given these positive findings, we recommend that federal, state, and local policies and practices encourage the broad implementation of well-designed, evidence-based SEL programs during and after school.

We cannot always build the future for our youth, but we can build the youth for our future.
　　—Franklin D. Roosevelt

Introduction

Twenty-first century schools serve socio-culturally diverse students with varied abilities and motivations for learning (Learning First Alliance, 2001). While some students are academically engaged and participate energetically in class and extracurricular activities, others are less engaged and achieve poorly (Blum & Libbey, 2004). Many students become more disengaged from school as they progress from elementary to middle to high school. It is estimated that 40 to 60% of urban, suburban, and rural high school students become chronically disengaged from school — not counting those who have already dropped out (Klem & Connell, 2004). Approximately 30% of high school students participate in or experience multiple high-risk behaviors (e.g., substance use, sex, violence, depression, attempted suicide) that interfere with school performance and jeopardize their potential for life success (Centers for Disease Control and Prevention, 2008; Dryfoos, 1997). Furthermore, large percentages of students lack social-emotional competence, believe their teachers do not care about them, and disrupt the educational experiences of classmates (Benson, Scales, Leffert, & Roehlkepartain, 1999).

Preparing students for life success requires a broad, balanced education that both ensures their mastery of basic academic skills and also prepares them to become responsible adults (Association for Supervision and Curriculum Development, 2007). It is important for families, schools, and communities to identify and effectively implement research-based approaches that promote children's social, emotional, and academic engagement and growth in the early years of school. Research conducted during the past few decades indicates that social and emotional learning (SEL) programming for elementary- and middle-school students is a very promising approach to reducing problem behaviors, promoting positive adjustment, and enhancing academic performance (Diekstra, 2008; Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnik, & Elias, 2003; Wilson, Gottfredson, & Najaka, 2001; Weissberg, Kumpfer, & Seligman, 2003; Zins, Weissberg, Wang, & Walberg, 2004).

The purpose of this report is to summarize the primary findings and implications of three large-scale reviews of research evaluating the impact of SEL programs for school children in kindergarten through eighth grade.

> **1. Universal Review.** This review examined the impact of universal school-based SEL interventions: that is, interventions that are appropriate for a general student body without any identified behavioral or emotional problems or difficulties (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2008).
>
> **2. Indicated Review.** This review focused on school-based indicated programs: that is, interventions that identify and work with students who are displaying early signs of behavioral or emotional problems.
>
> **3. After-School Review.** This review evaluated SEL interventions conducted in after-school programs, which primarily involved students without identified problems (Durlak, Weissberg, & Pachan, in press).

In other words, we evaluated SEL programs across two different time periods and settings (during the school day and after school) and for two different types of student populations (those without any identified problems in the Universal and After-School Reviews and those with early identified problems in the Indicated Review). Our findings were based on 317 studies that involved 324,303 participants. In sum, we examined evaluations of programs conducted by many different independent investigators in three different research literatures in an attempt to reach general conclusions about the impact of SEL interventions.

What is Social and Emotional Learning?
Social and emotional learning is the process through which children and adults ac-

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quire the knowledge, attitudes, and skills to:
- Recognize and manage their emotions
- Set and achieve positive goals
- Demonstrate caring and concern for others
- Establish and maintain positive relationships
- Make responsible decisions
- Handle interpersonal situations effectively

These critical social-emotional competencies involve skills that enable children to calm themselves when angry, initiate friendships and resolve conflicts respectfully, make ethical and safe choices, and contribute constructively to their community (Collaborative for Academic, Social, and Emotional Learning, 2005; Elias, Zins, Weissberg, Frey, Greenberg, Haynes, Kessler, Schwab-Stone, & Shriver, 1997; Zins & Elias, 2006).

The Collaborative for Academic, Social, and Emotional Learning (CASEL) has identified five groups of inter-related core social and emotional competencies that SEL programs should address (Collaborative for Academic, Social, and Emotional Learning; 2005; Devaney, O'Brien, Keister, Resnik, & Weissberg, 2006):
- **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, controlling impulses, and persevering in addressing challenges; expressing emotions appropriately; and setting and monitoring progress toward personal and academic goals;
- **Social awareness:** being able to take the perspective of and empathize with others; recognizing and appreciating individual and group similarities and differences; and recognizing and making best use of family, school, and community resources;
- **Relationship skills:** establishing and maintaining healthy and rewarding relationships based on cooperation; resisting inappropriate social pressure; preventing, managing, and resolving interpersonal conflict; and seeking help when needed; and
- **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; and contributing to the well-being of one's school and community.

Students who appraise themselves and their abilities realistically (self-awareness), regulate their feelings and behaviors appropriately (self-management), interpret social cues accurately (social awareness), resolve interpersonal conflicts effectively (relationship skills), and make good decisions about daily challenges (responsible decision making) are headed on a pathway toward success in school and later life. Thus, the short-term goals of SEL programming are to promote students' social-emotional skills and positive attitudes, which, in turn, should lead to improved adjustment and academic performance as reflected in more positive social behaviors, fewer conduct problems, less emotional distress, and better grades and achievement test scores (Collaborative for Academic, Social, and Emotional Learning, 2005; Zins et al., 2004).

This report addresses the following research questions: (a) What skills, attitudes, behaviors, and academic outcomes do SEL programs achieve for elementary- and middle-school (K-8) students? (b) Do SEL program effects endure over time? (c) Are SEL programs effective in school and after school and for students with problems (Indicated Review) and without problems (Universal and After-School Reviews)? and (d) What features are associated with highly effective SEL programs?

Social-emotional competencies involve skills that enable children to calm themselves when angry, initiate friendships and resolve conflicts respectfully, make ethical and safe choices, and contribute constructively to their community.

Overview of the Three Reviews

General Features of Each Review
For each review, we conducted our analyses using a meta-analytic approach, which summarizes in a quantitative fashion the overall impact of interventions across studies. Studies eligible for inclusion in these reviews had to emphasize the development of one or more social-emotional competencies, target students between the ages of 5 and 13 (i.e., grades K-8), include a control group, and report information for calculating effect sizes (ESs). For each review, we systematically examined published and unpublished literature sources to obtain a representative nonbiased sample of investigations that had appeared by Dec. 31, 2007.

The Universal Review included 180 school-based studies involving 277,977 students. The most common strategy involved classroom-based programming, which usually took the form of a specific curriculum or set of lessons that sought to develop social and emotional skills such as problem and feeling identification, goal setting, conflict-resolution strategies, and interpersonal problem-solving skills. In addition, there were some multi-component programs that supplemented classroom skills training with a schoolwide, parent, or community component to reinforce what was taught in the classroom (Durlak et al., 2008).

In the Indicated Review there were 80 studies involving 11,337 students. These studies focused on children who showed signs of social, emotional, or behavioral problems, but had not been diagnosed with a mental disorder or need for special education. More than half (59%) of the programs consisted of a single-intervention component such as small-group problem-solving sessions, in which leaders taught various social and emotional skills — e.g., recognizing feelings in oneself and others, making friends, and handling provocations by others. The remaining studies included multi-component programs involving different combinations of individual, group, classroom, and parent training supports.

The After-School Review included 57 studies involving 34,989 students. These after-school programs had to be implemented outside of regular school hours during at least part of a school year, be supervised or monitored by adults, and have the goal of developing one or more personal and social skills. After-school programs that focused only on improving academic performance or school attendance, and outdoor-extra-curricular, summer camp, or adventure programs such as Outward Bound, were not eligible (Durlak et al., in press).

Main Findings
Overall, the results indicated strong and consistent support for the value of SEL programs. There were six major sets of findings:

1. Students in SEL programs demonstrated improvement in multiple areas of their personal, social, and academic lives. SEL programs fostered positive effects on: students' social-emotional skills; attitudes towards self, school, and others; social behaviors; conduct problems; emotional distress; and academic performance. Notably, SEL programming yielded an average gain on achievement test scores of 11 to 17 percentile points.
2. SEL interventions were effective in both the school and after-school setting and for students with and without presenting problems. They were also successful across the K-8 grade range, for schools in urban, suburban, and rural areas, and for racially and ethnically diverse student bodies.
3. Studies that collected data at follow-up indicated these effects remained over time — although they were not as strong as the results at post (i.e., immediately after the intervention).
4. Data from the Universal and Indicated Reviews also indicated that SEL programs were effective when conducted by school staff, suggesting that these interventions can be incorporated into routine educational practice.

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5. In two of the reviews (Universal and After School), we found that interventions using four recommended practices for skill training (we called these SAFE programs) were more effective than programs that did not follow these recommendations. Each letter in the acronym SAFE refers to a recommended practice for teaching skills (Durlak et al., 2008):
   - *Sequenced:* Does the program apply a planned set of activities to develop skills sequentially in a step-by-step fashion?
   - *Active:* Does the program use active forms of learning such as role-plays and behavioral rehearsal with feedback?
   - *Focused:* Does the program devote sufficient time exclusively to developing social and emotional skills?
   - *Explicit:* Does the program target specific social and emotional skills?
6. Placing current findings in the context of previous research offers strong support for SEL programming. Comparing the findings in our reviews to results obtained in reviews of evidence-based interventions conducted by other researchers suggests that SEL programs are among the most successful interventions ever offered to school-aged youth.

In conclusion, our findings demonstrate that SEL programs implemented by school staff members (e.g., teachers, student support personnel) improve children's behavior, attitudes toward school, and academic achievement. Given these broad positive impacts, we recommend that well-designed programs that simultaneously foster students' social, emotional, and academic growth be widely implemented in schools.

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Methods

Study Inclusion Criteria
Studies eligible for inclusion in these reviews had to be written in English, appear by December 2007, emphasize the development of one or more SEL competencies, target students between the ages of 5 and 13 (i.e., grades K-8), include a control group, and report information sufficient for calculating effect sizes (usually the mean outcome of a treatment group and that of a control group post-intervention and the standard deviation of each).

Search methods
To assure that our sample was as representative as possible, we identified studies for inclusion in these reviews through a systematic search of published and unpublished reports. Five methods were used: (a) computer searches of multiple databases using relevant search terms; (b) searches of the reference lists and bibliographies of previous reviews; (c) manual searches of journals with relevant studies from January 1970 through December 2007; (d) searches of the web sites of organizations that promote youth development; and (e) contacting researchers, practitioners, and policy advocates who presented relevant work at professional conferences.

Student outcome variables
To analyze data from the reviewed studies, we grouped student outcomes in the same six categories across implementation contexts. These outcomes assessed three broad areas of student development—(a) social and emotional skills and attitudes (including self-perceptions and attitudes toward school and others); (b) indicators of behavioral adjustment (e.g., positive social behaviors, problem behaviors, and emotional distress); and (c) aspects of school performance (e.g., achievement on standardized tests and school grades). Grouping study outcomes into these categories enabled us to avoid small cell sizes with insufficient power to identify true differences between intervention and control groups.

Each category included a broad range of related outcomes. In the **social and emotional skills** category these included a variety of personal, social, cognitive, and affective skills such as emotional self-awareness, coping with stress, resolving conflict, and resisting unwanted peer pressure. All skill assessments were based on student, teacher, parent, or independent ratings completed in structured or test situations. Ratings of daily student behavior were placed in the positive social behavior outcome category described below.

Outcomes in the **attitudes toward self, school, and others** category included self-efficacy, bonding to school, pro-social attitudes, conventional pro-social beliefs about violence, social justice, drug use, and in a few after-school studies racial-ethnic identity or pride. Ratings in this outcome category were all based on student self-reports.

Outcomes in the **positive social behaviors** category included the appropriate expression of emotions, positive interactions with others, cooperation, leadership, appropriate responses to conflict and peer pressure, and assertiveness in social situations, as reflected in daily behavior rather than in hypothetical or test situations, as was the case in the social and emotional skills outcome category.

Outcomes in the **conduct problems** category included risky, disruptive, and delinquent behavior such as aggression, bullying, noncompliance, rebelliousness, disciplinary referrals, school suspensions, or delinquent acts based on reports from students, teachers, parents, independent raters, or school records.

Assessments of **emotional distress** included measures of anxiety, depression, and social withdrawal based on reports of students, teachers, and parents.

Outcome indicators of **school performance** were based only on standardized achievement test scores such as the Iowa Test of Basic Skills and grades in the form of overall GPA or grades in specific subjects.

Calculation of Effect Size

The indicator we used to determine program impact on the above student outcomes was the standardized mean difference or effect size (ES), usually calculated by subtracting the control group mean from the intervention group mean at post (or follow-up if relevant) and dividing the remainder by the pooled standard deviation of the two groups. Typically, we calculated one effect size for each analysis in each study. Whenever possible, we adjusted for any previous intervention differences between groups on each outcome measure by first calculating a pre ES and then subtracting this from the obtained post ES. To calculate a single overall effect size for a study, we averaged all of its individual effect sizes. Higher effect sizes reflected a greater positive program impact than lower effect sizes. These analyses also used a random effects model: by adding an error term to the calculation, the unique features of each program evaluation could be considered and the findings made more generalizable (Hedges & Olkin, 1985; Lipsey & Wilson, 2001). We used a two-tailed .05 probability level in determining statistical significance, and reported ±.05 confidence intervals throughout the report. Means are statistically significant when their confidence intervals do not include 0.

Before data were analyzed, outliers falling beyond three standard deviations from the mean in either direction were reset using windsorizing, a technique that allows all relevant studies and their effects to be retained while eliminating extreme values that would distort results (Lipsey & Wilson, 2001).

Moderating Variables

In each review we evaluated the possible impact on student outcomes of selected moderating variables. In all three we evaluated whether or not a program had implementation problems (e.g., incomplete implementation, attendance problems, or inadequately trained new teachers) (Durlak & Dupre, 2008). In the universal and after-school reviews, we determined whether programs incorporated evidence-based training (i.e., SAFE) practices and their impact on student outcomes. Research on skills development in youth shows that such practices increase the likelihood of learning (Durlak et al., in press). Finally, in the universal and indicated reviews we evaluated the impact on student outcomes of program format or who delivered the program, which is discussed more fully below in the results section.

Quality of implementation has become important in interpreting program effects. A lack of significant findings in a partially implemented program, for example, may have a different meaning from such a finding in a fully implemented program. The former suggests that the program might have had significant effects if it had been properly implemented. The latter indicates that the program had little effect in its current state.

We used the acronym SAFE to designate criteria we developed to capture the application of evidence-based practices. These included: (a) a *Sequenced* set of connected learning activities that teaches social-emotional skills through a coordinated, step-by-step approach; (b) the use of *Active* learning methods such as role-play or behavioral rehearsal with feedback; (c) the inclusion of at least one program component that *Focused* specifically on the development of social-emotional skills through devoting sufficient instructional time to it on a regular basis; and (d) *Explicit* teaching of clearly identified skills with clear and specific learning objectives, as distinguished from a program goal on general skill enhancement.

Methodological Variables

To increase the credibility of our findings, we also examined the possible effects of three primary methodological variables to determine if they could account for any significant differences found between treatment and control groups. These included randomization to treatment or control conditions, problems with attrition, and the reliability and validity of outcome measures. Randomization compares the effects of

studies that used a randomized control design, where participants were randomly assigned to experimental and control conditions, with studies that used a quasi-experimental design. In the latter, researchers compared participants from experimental sites with participants from comparison sites that were matched on key demographic characteristics, such as race-ethnicity and socioeconomic status.

Problems with attrition, which refers to the loss of data from either treatment or control subjects due to subject dropout, can distort treatment effects. We coded attrition yes/no, yes when it was above 30% or when it was between 11-30% and study authors failed to check for differential attrition across conditions to determine whether continuers and dropouts had equivalent ratings on key outcome variables.

The third methodological variable we considered was the reliability and validity of outcome measures. The reliability of an outcome measure was considered acceptable if its alpha coefficient was ≥.70 or the kappa assessment of inter-judge agreement was ≥.60. A measure was considered valid if authors cited data on its construct, concurrent, or predictive validity. Analyses of these methodological variables (randomization, attrition, reliability, and validity) indicated little outcome bias, meaning that none of these variables influenced outcome effects.

Coding

A coding system available from the third author was developed to record information on many characteristics of the studies reviewed. We estimated reliability of the coding process by having pairs of students independently code a random sample of about 25% of the studies on most variables. Mean kappas for this process were 0.69, and rater agreement on continuous variables was consistently above 0.90. We resolved coding disagreements among raters through discussion.

Results

We describe our results for each review separately, starting with the universal, then moving on to the indicated and after-school reviews. Within each review, we first describe characteristics of the included programs and participant populations studied and then describe significant findings across student outcome categories. Where relevant, we report the effects of implementation (universal), use of evidence-based (SAFE) training practices (universal and after school), or factors such as presenting student problems (indicated), program components and program deliverers (universal and indicated) on outcomes.

Universal Review

Table 1 summarizes characteristics of 180 studies of programs with outcome data at post-intervention that were included in the universal review. Nearly 80% of these studies appeared since 1990 and most (79%) were in the form of published articles or books. Sixty-four percent of the studies evaluated programs that served elementary students in grades K-5. A large percentage of studies did not report on the racial-ethnic (29%) or socio-economic background (26%) of program participants. While this failure to report participants' race-ethnicity and socio-economic background did not allow us to determine the differential effects of these programs with different student groups, it is clear from the data that the studied programs served a very diverse student population in urban, suburban, and rural areas (see Table 1). Lack of follow-up data measured after the conclusion of the intervention did not allow us to determine the enduring effects of programs.

More than half of the programs studied were implemented by classroom teachers. They involved whole classes of students (i.e., not students who had volunteered to participate) with no identified adjustment or learning problems. Universal programs had to last at least 8 sessions. The most common program duration (31%) was from one semester to an entire school year with a mean of 45 sessions. More than three-quarters of studied curricula were rated as meeting all four SAFE criteria for evidence-based practices. In terms of methodological features, almost half (45%) used randomized designs and most (71%) reported no problems with attrition. Seventy-six percent of outcome measures were of acceptable reliability, and 50% were of acceptable validity. About one-quarter of the studies reported implementation problems.

Compared to students in the control groups, those participating in SEL universal programs demonstrated significantly enhanced social-emotional skills, attitudes, and positive social behavior, reduced conduct problems and emotional distress, and improved academic performance at post-intervention. The mean effect sizes for these outcomes ranged from 0.23 for reduced conduct problems and emotional distress and improved attitudes to 0.60 for enhanced social and emotional skills (see Table 2). Although the effect sizes for these outcomes were smaller at follow-up, they remained significant in five out of the six outcome categories. Only emotional distress was not significant at follow-up, and the mean effect for academic performance was directionally higher at follow-up (see Table 2).

These outcomes are comparable to or exceed the benefits on similar outcomes found in eight other meta-analyses of psychosocial or educational interventions for school-aged youth (see Table 3). Moreover, when these effect sizes were translated into improvement indices that show percentile gains achieved by the average student in an intervention class compared to the average student in a control class, they ranged from a 9-10% improvement in positive attitudes and social behaviors, conduct problems, and emotional distress to an 11% gain in academic performance and a 23% gain in social-emotional skills. These improvement indices provide a better indicator of the practical value of improved outcomes than effect sizes alone (Kirk, 1996; Vacha-Haase & Thompson, 2004).

Despite these overall positive findings, not all universal interventions were equally

effective. Those that used four evidence-based practices, indicated by the acronym SAFE (Table 4), and/or those that did not encounter any of several implementation problems (e.g., failure to implement all program components as written or inadequate training for new teachers implementing a program) (Table 5), had more significant outcome effects and larger effect sizes than those that did not use all four practices and/or experienced implementation problems. Universal interventions that included all four of these evidence-based practices had significant mean effect sizes in all six outcome categories. Programs that did not meet the SAFE criteria had significant effects in only three outcome categories (attitudes towards self, school, and others; conduct problems; and academic performance). Even though the mean effects for these three outcomes were significant, they were smaller in magnitude than those of programs that met the SAFE criteria.

When outcomes were analyzed by delivery format, significant outcomes in all six categories were achieved when a classroom-based intervention was implemented by the teacher (Table 6). These interventions usually consisted of a specific curriculum and set of instructional strategies. Similar classroom-based interventions implemented by researchers achieved significant outcomes in only two of the six categories – SEL skills and conduct problems. Multi-component programs that included both classroom instruction and a school-wide, parent, or community component achieved significant outcomes in only four of the six categories, perhaps due to the greater implementation challenges of such programs (Lipsey & Wilson, 2001). The results make clear that classroom teachers can effectively implement these programs. It is feasible for school staff to implement these programs (see Table 6).

Indicated Review
While many SEL programs are designed as universal interventions to address the needs of all children and youth both during school and in after-school settings, some programs focus on the needs of students who already show signs of social, emotional, behavioral, or learning problems. From a policy perspective, this is an important time to intervene: if this less-intensive type of programming can prevent students with presenting problems from developing full-blown diagnoses that require intensive mental health treatment, schools can save much money and time devoted to mental health services.

Table 7 summarizes many of the characteristics of the 80 indicated programs included in this review. More than half (56%) of the reviewed reports appeared since 1990, mostly in the form of published articles or books. Regarding methodological features, 80% of the indicated studies used a randomized design, and only 16% reported problems with attrition. Eighty-one percent used measures that met reliability standards, and two-thirds of the measures met validity standards.

Programs serving elementary- and middle-school students comprised 69% and 31%, respectively, of the reports reviewed, and over half of the programs were implemented in urban areas. Students participating in these programs most frequently displayed conduct problems (38%) such as aggression or bullying; followed by emotional distress (23%) such as anxiety or depression; and problems with peer relationships (10%). In the remainder of the programs, children presented either with more than one problem each (e.g., depression and relationship problems in the same child), designated as "comorbid problems," or they presented as participants in a single program with a mixture of different problems.

School personnel identified children for participation in a program in 38% of the studies, while students self-identified or were identified by a peer in 18% and 9% of studies, respectively. More than half (59%) of the programs consisted of a single intervention component such as small-group problem-solving, in which programs taught students to become aware of bodily cues that indicate how they or others were feeling or strategies for coping with anxiety such as generating alternative solutions. Forty-one percent of programs included multiple components (e.g., both one-on-one and

group activities). Twenty-three percent of programs included training parents in how to reinforce what their children were learning at school (Table 7). Half of the indicated programs used non-school personnel exclusively to deliver the intervention; 21% used school personnel; and 20% used a combination of both school and non-school personnel. Most interventions lasted less than six months, and 51% lasted less than three months.

Significant mean effect sizes ranging from 0.38 for improved attitudes toward self, school, and others to 0.77 for improved social and emotional skills were achieved in all six outcome categories studied. Participants in these indicated SEL programs received significantly greater benefits across outcome categories than did participants in the control groups. Although the magnitude of these effects was generally lower at follow-up, they were still significant in five out of the six categories (all except academic performance) (see Table 8).

When program effects were calculated based on the presenting problems of participants, students with a range of presenting problems showed greater improvements than control students (see Table 9). Mean effects ranged from 0.42 for studies that included group of children with assorted presenting problems to 0.92 for those including individual children with more than one (i.e., "comorbid") identified presenting problem. Similarly, significant mean program effects were achieved for all groups when calculated by program deliverer - school staff, non-school staff, or a combination of the two groups (Table 9). Similar to universal programs, school personnel can implement this type of programming effectively. While we have no data indicating why the effect size for combined program delivery was lower (0.26) than for programs with a single component, the greater coordination requirements of such delivery may have been a factor (Lipsey & Wilson, 2001).

After-school Review
Table 10 summarizes characteristics of the after-school studies included in this review. These studies tended to be more recent even than those that appeared in the universal review: more than 70% appeared since 2000. An equal proportion of them were unpublished reports. More than half of the studies (56%) looked at programs serving elementary school students, and like those in the universal review, most of these were intended for general student audiences rather than for students already exhibiting problems. As in the school-based studies, more than one-third of the after-school studies did not report the race-ethnicity of participants, and 44% did not report on socio-economic background. While these missing data did not allow us to determine differential program effects based on these factors, it is clear from the data available that after-school programs were effective with widely varying student populations based on race and socio-economic status.

The settings where programs were delivered were about equally divided between school grounds and the surrounding community. More than 56% of these programs lasted from six months to a year. In terms of content, a little more than half of the programs included no academic component, 58% used all four evidence-based (SAFE) practices, and 42% had parent involvement. With regard to methodological features, more than three-quarters did not use a randomized design. Two-thirds of the measures were of acceptable reliability, and only 14% reported problems with attrition.

Compared to students in control groups, participants in after-school SEL programs experienced significant mean effects in all five outcome categories analyzed, although one of these (emotional distress) was based on a very small sample size (Table 11). Other significant outcomes ranged from a 0.08 effect size for increased academic performance to 0.22 for attitudes toward self and others and positive social behaviors. The mean effect sizes were generally higher in the universal than after-school programs. Of the 55 programs included in the after-school review that reported outcomes at post, 32 of them met all four criteria for using SAFE evidence-based practices, as described earlier (see Table 11). As in the school-based universal review, these

programs achieved significantly better effects than those that didn't meet the SAFE criteria. Those meeting these criteria were significant in all five outcome categories analyzed, ranging from 0.17 for improved academic performance to 0.41 for improved positive social behaviors. Those not meeting SAFE criteria had no significant effects across the five outcome categories.

As in the review of universal programs, the mean effect sizes achieved in the after-school review were comparable to or greater than those achieved in eight other reviews of universal interventions for children and youth, although not all outcome categories were included in these other reviews (see Table 12).

Discussion

Our findings across reviews of universal and indicated SEL programs conducted during the school day and of SEL programs conducted in after-school settings showed that these programs significantly impacted a wide range of outcomes across multiple domains in children both with and without identified emotional or behavioral problems. These programs achieved significant effects across all six of the outcome categories studied (five categories in the after-school review): improved SEL skills; attitudes toward self and others; positive social behaviors; reduced conduct problems; emotional distress; and improved academic performance. In the universal and indicated reviews, program effects in most outcome categories remained significant at some follow-up point beyond post-intervention. Follow-up measurements in the after-school review were insufficient to determine if program effects persisted at follow-up.

The positive impact of these programs on academic outcomes, including school grades and standardized achievement test scores, was particularly noteworthy in light of the current educational policy environment in which schools are held accountable for raising student test scores. Although some educators argue against implementing this type of holistic programming because it takes valuable time away from core academic material, our findings suggest that SEL programming not only does not detract from academic performance but actually increases students' performance on standardized tests and grades.

The effects of these SEL programs were equal to or exceeded those of other school-based prevention and after-school psychosocial programs on comparable student outcomes. In fact, when the practical value of SEL programs was demonstrated through conversion of program effects to improvement indices, they showed that the average student in an SEL intervention class gained 11 to 17 percentile points on academic test scores compared to the average student in a control class.

The majority of studies reporting the racial-ethnic composition of the student bodies studied was diverse. We found that SEL program effects were achieved in student populations that were diverse racially-ethnically, socio-economically, and geographically (i.e., urban, suburban, and rural).

Moreover, our findings indicated that it is feasible for schools to implement these programs themselves. A common complaint about this type of holistic programming is that it cannot be sustained once the researchers leave the school because only researchers are capable of delivering it. But this is not the case with SEL programs. Not only can programs be delivered as effectively by school personnel as by researchers (or other non-school personnel), but in many cases in our reviews program implementation by school personnel achieved greater impact than implementation by non-school experts.

Our findings also indicated that including four evidence-based training practices (i.e., **S**equenced or coordinated instructional steps, **A**ctive learning methods, a **F**ocus on skill instruction, and **E**xplicit teaching of specific skills) significantly improved program outcomes. Although SAFE practices don't capture all aspects of effective skill development, our findings indicated that they were effective in multiple outcome areas and that programs without these procedures were not as effective. We also found that good implementation is crucial to positive outcomes, even though our data were not detailed enough for us to differentiate the impact of different types of implementation problems on outcomes. The finding that multi-component programs were not as effective as single component programs may have been due to the fact that the former were less likely to have used SAFE practices and were more likely to have had implementation problems.

SEL intervention programs for students exhibiting adjustment or learning problems worked for a wide range of presenting problems, were effective when delivered by either school or non-school personnel, and had significant outcomes whether they

included only one or multiple program components.

Although care was taken to include a representative and up-to-date sample of recent studies, and analyses of methodological variables were conducted to rule out plausible alternative explanations for findings, our research did have several limitations. First, it wasn't possible to determine whether teaching certain skills or combinations of skills affected some outcomes more than others. This information would be helpful in designing programs to impact specific skills sets. Also, there are many program characteristics and evidence-based practices (beyond SAFE) associated with positive outcomes for youth that were not examined in this analysis. Second, because most studies measured outcomes at only one point in time, it was not possible to determine if certain skills mediated final outcomes by first contributing to intermediate or proximal outcomes. Knowing such mechanisms of change is also helpful in program design. Third, only 16% of the universal studies and less than one-third of the after-school studies collected data on academic achievement at post, and only 15% of universal studies assessed program impact at follow-up of at least six months duration. As a result, conclusions about the persistence of SEL program outcomes should be made with caution.

A fourth limitation was the small number of studies that collected demographic data on program participants. This made it impossible to determine the possible differential impact on student outcomes in any of the implementation contexts among different racial, ethnic, or cultural groups. However, we can say with confidence that SEL programs, especially those using evidence-based practices, benefit both children without identified social-emotional, behavioral, or learning problems and those who are beginning to show signs of such problems. Such programs should be recommended as potentially successful options for promoting youth well-being and adjustment both during and after school hours.

Future Research Directions

This manuscript is the first to systematically document the impact of SEL programming within Universal, Indicated, and After-School samples. One important question for future research is to determine the extent to which coordinated programming efforts (e.g., Universal plus Indicated or Universal plus After-school) produce more powerful effects than when programs are offered separately. In addition, although more research is needed to determine the relationship between academic performance and personal and social development, analyses done for this study suggest a synergistic effect between these two developmental domains. Future research should also aspire to identify (a) what program characteristics contribute to which specific outcomes, (b) the differential benefits that various student groups derive from these programs and how these programs can be adapted to meet the needs of these groups, (c) the degree to which program effects persist over time, and (d) how to improve student participation in these programs.

Policy Implications

The meta-analytic reviews of SEL program evaluation research on which we have focused here are part of a larger picture demonstrating the extent of current interest in SEL research, policy, and practice to promote school children's social, emotional, and academic development. Neuroscience research, for example, has demonstrated that because of the plasticity of the brain, experience across the lifespan changes it. This finding suggests that school children's participation in SEL programming will lay a strong neurocognitive foundation for their future learning, social functioning, and ability to emotionally self-regulate. In fact, SEL policymaking based on this research has already taken off in several states (e.g., Illinois, New York) and countries (e.g., Singapore, Great Britain, Spain).

Illinois has been a leader in establishing SEL policies by approving legislation that includes SEL as part of the State's learning standards and is now funding statewide

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professional development for school teams involved in implementing schoolwide SEL. New York has also passed a similar law and is in the process of establishing guidelines to promote social and emotional learning and development. In addition, several large districts – such as Anchorage, Alaska - are developing their own SEL standards, aligning their curricula with these standards, and implementing SEL programming throughout the district. Consistent with the findings of research cited here, Anchorage has found that its SEL initiative has reduced problem behaviors among its students, improved their attitudes toward school, and increased their academic performance.

Recent research also finds that principal leadership in supporting SEL programming enhances student benefits from SEL programming (Kam, Greenberg, & Walls, 2003) and that professional development for administrators, teachers, student support staffs, and human service providers is critical to ensure the quality of SEL program implementation (Devaney, et al. 2006).

Although there is still much to learn about how best to implement and support school-wide SEL programming, the current research base clearly demonstrates its value in promoting the social, emotional, and academic development of school children.

Principal leadership in supporting SEL programming enhances student benefits from SEL programming, and professional development for administrators, teachers, student support staffs, and human service providers is critical to ensure the quality of SEL program implementation.