Preventive Interventions for Children and Adolescents:

A Review of Meta-Analytic Evidence

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Abstract

This systematic review examines the meta-analytic evidence on four broad categories of preventive interventions for children and adolescents, including: mentoring, service learning, outdoor adventure, and social and emotional learning (SEL) programs. There were 15 meta-analytic studies which fit the criteria for inclusion. For each intervention type, the target population, main implementation strategies, and meta-analytic evidence are reported. The review considers the effectiveness of these preventive interventions across various content areas and populations, providing an indication of which type of intervention has the strongest effects on what outcomes, where are they most beneficial, and for whom are they most promising. Experimental evidence has demonstrated that mentoring, service learning, outdoor adventure, and SEL programs can all promote positive development and prevent problematic behaviors. Overall, service learning, outdoor adventure, and SEL programs have shown small to large effects on a variety of outcomes, while mentoring has shown small but significant effects. The review concludes with a discussion of key criteria that should be considered when choosing a particular program type.

Key Words: Mentoring, Service Learning, Outdoor Adventure, SEL, Children, Adolescents

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A Review of Meta-Analytic Evidence

In 2012, the Educational Endowment Fund published a comprehensive review on non-cognitive skills (Gutman & Schoon, 2012). This report is based on that evidence, extending the findings to provide a systematic review of meta-analytic evidence on four broad categories of preventive interventions for children and adolescents: mentoring, service learning, outdoor adventure, and social and emotional learning (SEL) programs.

In the last few decades, there has been an increased focus on both the prevention of problem behaviors and the promotion of positive development in children and young people. Substantial empirical evidence has shown that most outcomes, both positive and negative, are affected by similar risk and protective factors (Lerner, von Eye, Lerner, & Lewin-Bizan, 2009; Masten, 2011). As a result, prevention scientists and positive youth development advocates concur that models of healthy development address both health promotion and prevention of problem behaviors (Catalano et al., 2002; Cicchetti & Toth, 2009; Rutter, 2006).

Significant advances in developmental prevention science have brought a proliferation of interventions which aim to reduce the incidence of risk factors as well as foster competence and enhance coping by working directly with children and young people in their own social contexts, i.e., families, schools, communities, and peer groups (Catalano, 2012; France, Freiberg, & Homel, 2010; Masten, 2011; Pittman et al., 2011). In order to establish evidence-based programs and policies, increased emphasis has been placed on conducting rigorous evaluations to determine their causal impact on developmental outcomes. Such evaluations address the following questions: How was the program implemented? Who was the target population? What were the effects on various outcomes? and What factors impact whether the intervention was more or less effective?

Meta-analytic reviews, which summarize and synthesize the findings across multiple studies, can answer many of these questions. Meta-analysis yields a more reliable precise estimation of program impact than is possible for a single evaluation (Lipsey & Wilson, 2001). In a meta-analysis, findings of each available study on a specific topic are translated into a common metric known as an effect size, so that results can be averaged across studies. For program evaluation, meta-analysis can provide an indication of the effect size of a specific preventive intervention on wide range of outcomes and can determine whether variation exists according to the implementation of the program, the methodology of the evaluation, and/or the characteristics of the target population.

Most meta-analytic reviews examine the effectiveness of a specific preventive intervention type such as mentoring (e.g., Eby, Allens, Evans, Ng, & DuBois, 2008). There are also meta-analytic reviews which examine a particular outcome area such as anxiety (e.g., Fisak, Richard, & Mann, 2011; Reynolds, Wilson, Austin, & Hooper, 2012), those which focus on a specific location such as school-based programs (e.g., Durlak, Weissberg, & Pachan, 2010), or those which concentrate on a particular outcome area within a specific location such as school-based prevention of problems behaviors and/or bullying (e.g., Wilson, Lipsey, & Derzon, 2003; Ttofi & Farrington, 2011). Several researchers, furthermore, adopt a 'review of reviews approach' to summarize meta-analytic research within an outcome, location, and/or population (e.g., Flay & Allred, 2010; Greenberg, 2010; Weare & Nind, 2011; Weissberg & Greenberg, 1997), while others attempt to identify basic principles of effective programs more generally (e.g., Nation et al., 2003; Pittman et al., 2011). What is missing, however, is a 'review of reviews' which considers multiple preventive interventions across various content areas and populations, providing an indication of which type of intervention has the strongest effects on what outcomes, where the effects are most beneficial, and for whom are they most promising. Such information would offer

guidance in selecting the most appropriate intervention strategy for a particular or for a set of outcomes, increasing understanding about which intervention is most effective for what, where, and for whom.

To fill this gap, this systematic review examines meta-analytic studies of evidence-based preventive interventions. Limitations were placed on the types of evaluations to be included. There are three subcategories of preventative interventions programs, comprising: (a) *universal interventions* that target the general public or a population group that has not been identified on the basis of individual risk; (b) *selective interventions* that focus on population subgroups who have specific risk factors and therefore a greater likelihood of developing a disorder; and (c) *indicted (or targeted) interventions* that target high-risk individuals with detectable symptoms or markers for a specific problem or outcome, but who do not meet diagnostic criteria for a disorder (Munoz, Mrazek, & Haggerty, 1996). As other researchers have noted, the theory, goals, and structure of indicated interventions are significantly different from those of universal and selective interventions and therefore may limit the applicability of the findings (Nation et al., 2003). Therefore, we did not include meta-analytic studies which specifically focused on indicted populations, such as those that targeted juvenile delinquency (e.g., Wilson & Lipsey, 2000).

The review, furthermore, is limited to broad categories of evidence-based preventive interventions. In particular, the review examines interventions applicable for *universal* and *selected* populations which have distinctive implementation strategies. Specifically, the review assesses four intervention types, including: mentoring, service learning, outdoor adventure, and social and emotional learning (SEL) programs. Although this is not a comprehensive list, these intervention types were chosen for several reasons, including: (1) they seek to both prevent problem behaviors and enhance positive development (2) they can

be conducted in a variety of locations (i.e., after-school, within school, or community-based), and (3) they are applicable to children and adolescents.

Search Method

In order to conduct the review, Science Direct, PsychInfo, Springerlink, ERIC, and Google Scholar, were searched from 1990 to 2012. Only English language journal articles were included. Searches were conducted separately for each category of preventive intervention (i.e., mentoring, service learning, outdoor adventure, and SEL). Search terms included "meta-analysis", "children", "youth", "adolescents", "prevention", "intervention", and "promotion". For mentoring, "mentor" and all derivations of that word (i.e., mentoring, mentored) were included. For service learning, "service", "learning", "service-learning", "volunteering", and "community" were included. For outdoor adventure programs, "outdoor", "adventure", "wilderness", and "Outward Bound" were included. For SEL programs, "SEL", "social", "emotional", "learning", "personal", and "skills" were included.

Multiple selection criteria were required for inclusion of an article. First, only meta-analytic studies which focused on one of the four selected categories of evidence-based preventive interventions were examined. Second, meta-analytic studies must have reported the effect size to be included. The effect size is the standardised mean difference between two groups, such as treatment and control groups. For example, an effect size of .25 would represent a difference of one-quarter of a standard deviation on the outcome measure. Guidelines have been suggested for what can be considered a small (.20), medium (.50), or large (.80) effect size (Cohen, 1988). Hattie (2009) uses these effect sizes for educational outcomes: small (.20), medium (.40) or large (.60). Lastly, meta-analytic studies must have examined school-age children and/or adolescents to be reviewed. If college students/adults were included in the meta-analysis, effect sizes must have been reported for children and/or adolescents, separately.

Using these criteria, 15 meta-analytic studies were identified (see Table 1). In this review, the following is reported for each category of preventive interventions. First, a brief background is provided. Then, the target population and main implementation strategies are identified. Next, the meta-analytic evidence is reviewed. Lastly, conclusions are offered, assessing the strengths and limitations of each program type.

Mentoring Programs

Since the 1990s, mentoring programs for children and young people have gained in popularity. The interest in mentoring programs was inspired from research highlighting the importance of positive relationships with non-parental adults as a factor in promoting resilience among youth from at-risk backgrounds (Rhodes, 2005). These efforts gave rise to mentoring programs such as Big Brothers Big Sisters (BB/BS), which is considered one of the oldest and best established mentoring programs internationally (Herrara, Grossman, Kauh, & McMaken, 2011).

Mentoring programs share a common objective of establishing mentoring relationships, but they differ in their targeted population, design, and goals. Although most mentoring programs focus on at-risk children and young people who could benefit from extra support and guidance in their lives (Herrara et al., 2011), specific subgroups may be targeted such as young people from single-parent homes. Furthermore, some programs focus only on mentoring, while others take a multifaceted approach with mentoring being one of several distinct components of the program. The overarching aim of various mentoring programs also diverges, with some addressing universal goals such as promoting positive youth development (PYD), while others adopting specific goals such as those relating to education or employment.

There may also be differences regarding the training, supervision, and ongoing monitoring of mentors (Rhodes, 2005). Dubois and colleagues find that careful screening

and ongoing supervision of volunteers, monitoring of program implementation, and having clear expectations of the types of mentoring relationships are associated with more successful programs (DuBois, Holloway, Valentine, & Cooper, 2002). The time length of the mentoring relationship is another factor which may influence the program's success. Research suggests that mentoring relationships of a longer duration have stronger positive effects on young people than those which are more transient (DuBois et al., 2002; Grossman & Rhodes, 2002).

A number of meta-analyses have been conducted regarding the effectiveness of mentoring programs for children and adolescents. DuBois and colleagues (2002) conducted a meta-analysis of youth mentoring programs from 1970 to 1998. Studies which examined mentoring relationships between an older, more experienced mentor and a younger protégée (mean age of less than 19 years) were examined. For the 55 independent studies included in the review, the average effect size for end-of-program participation was .18. The effect size was greatest for problem behavior (.19) and career/employment (.19) outcomes, followed by social competence (.16), academic achievement (.13), and emotional/psychological (.09) outcomes. Positive findings were found to generalize across different groups of young people with various demographic characteristics including gender, ethnicity, and age. There also were no significant differences according to the data source (i.e., parent, teacher, youth, or administrative records). However, significant moderating effects were found for at-risk status, with the largest effect size (.25) found for those young people experiencing both individual (e.g., developmental disability) and environmental risk factors (e.g., single-parent family). Effect sizes were also higher for those programs which utilized a greater number of 'best practices' such as monitoring of program implementation, screening of prospective mentors, matching of mentors and youth on the basis of one or more relevant criteria, providing parent support, and establishing expectations for both the frequency of contact and length of mentoring relationships. For instance, programs which followed six or more

theoretically-based 'best practices' had an effect size of .20 compared to .04 for those programs which followed less than six of these practices. Of the 11 studies which collected follow-up data, the effect size was .10.

In a follow-up meta-analysis of mentoring programs published from 1999 to 2010, Dubois and colleagues examined 73 independent evaluations which focused on mentoring relationships between young people aged 18 or younger and specific non-parental adults or older peers (DuBois, Portillo, Rhodes, Silverthorn, & Valentine, 2011). The average effect size for end-of-program participation was .21. In terms of specific outcomes, there was a small, but significant impact of mentoring programs on attitudinal/motivational (.19), social/relational (.17), psychological/emotional (.15), conduct problems (.21), and academic/school (.21) outcomes, but not on physical health outcomes (0.06). Stronger effects were found for those programs which included a larger proportion of male and at-risk youth, focused on youth engaged in problem behaviors, and matched youth and mentors based on similar interests. Of the 7 studies which included follow-up data (average = 23 months), the average effect size was .17, thus demonstrating a persistent positive effect of having participated in a mentoring program.

A multi-disciplinary meta-analysis examined three major areas of mentoring research (youth, academic, and workplace) published from 1985 to 2006 (Eby et al., 2008). There were 40 studies included which focused specifically on youth mentoring. Effect sizes for youth mentoring were small, ranging from .03 to .14. Effect sizes were significant for school performance (.05), school drop-out and absences (.08), school attitudes (.14), and interpersonal relations (.07); but not for psychological stress, motivation, or helping others. Follow-up data were not examined.

Another meta-analysis synthesized the findings from three evaluations of school-based mentoring programs released between 2007 and 2009 (Wheeler, Keller, & DuBois,

2010). School-based mentoring program effects were generally small in magnitude on selected outcomes. Program effects ranged from 0 to .18. Effect sizes were significant for truancy (.18), reported presence of a supportive non-familial adult relationship (.12), perceived scholastic efficacy (.10), school-related misconduct (.11), peer support (.07), and absenteeism (.07). Program effects were not significant for academic performance, substance abuse, or other outcomes. Follow-up data were not examined in this meta-analysis. The authors concluded that since school-based mentoring programs are linked to the academic calendar, they may be less enduring than those established through community-based programs of longer duration (Wheeler et al.).

In conclusion, research indicates that mentoring relationships can promote positive development among young people. The effectiveness of mentoring programs, however, is modest relative to other prevention programs for children and adolescents. It is important to note, however, that more positive outcomes for some young people are concealed by neutral or even negative outcomes for others who are engaged in less effective mentoring relationships (Rhodes & DuBois, 2008). A number of factors may enhance the effectiveness of mentoring interventions. First and foremost, beneficial effects are enhanced when the mentor and young person establish a strong connection that is characterized by mutuality, trust, and empathy. For this type of relationship to occur, mentors and young people need to spend time together on a consistent basis over a significant period of time (Grossman & Rhodes, 2002). Second, the approach of the mentor is important. Effective mentors adopt a flexible, but structured style which is focused on the young person's interests. Third, mentoring appears to be more beneficial for disadvantaged youth. Stronger effects have been shown for those programs focused on young people experiencing both individual and environmental risk factors (Dubois et al., 2002; Dubois et al., 2011). Lastly, program implementation matters. More positive effects have been found when programs include the

following: training and ongoing supervision of mentors, clear expectations of relatively frequent meetings and long-lasting relationships between mentors and young people, program-sponsored activities to enhance the development of mentoring relationships, and additional programs and services to supplement mentoring such as parental involvement (DuBois et al., 2002; Herrera et al., 2007). DuBois et al. (2002) found that the expected effects of programs with the full complement of evidence-based practices were nearly three times as large as those of the typical program.

Overall, mentoring programs have the ability to fill an important gap in the lives of children and young people. For mentoring programs to be successful, however, relationships need to extend beyond mere engagement in some sort of mutual activity such as tutoring, after-school sports, and service learning programs (Rhodes & DuBois, 2008). A mentoring relationship must constitute a caring, supportive, and consistent bond between young people and their mentors over a continuous period of time to provide positive and meaningful benefits for young people.

Service Learning Programs

Service learning connects community service to classroom learning. Service learning is seen as a form of experiential learning, where reflection transforms experience into new and usable understanding (see Kolb, 1984).   Its major components include "active participation, thoughtfully organized experiences, focus on community needs and school/community coordination, academic curriculum integration, structured time for reflection, opportunities for application of skills and knowledge, extended learning opportunities, and development of a sense of caring for others" (Bhaerman, Cordell, & Gomez, 1998, p. 4). In recent years, service learning has burgeoned as a universal program in schools and communities internationally (Bilig, 2012). Service learning programs are

successfully delivered to primary and secondary school students, as well as those attending universities.

While there are many different methods for implementing service learning, there are several distinct components. The Compact for Learning and Citizenship (CLC, 2001) outlines that successful service learning programs should include the following: (1) fill an authentic need in the community, (2) provide continuous links between classroom instruction and service, (3) involve activities that students organize in collaboration with school and community members, (4) allow students to have decision-making and problem-solving capabilities to foster a sense of ownership, and (5) incorporate structured time to encourage students to reflect upon their service experiences.

Several meta-analytic studies have examined the effects of service learning. A few have focused on studies with undergraduate students only, which are beyond the scope of this review (Novak, Markey, & Allen, 2007; Warren, 2012; Yorio & Ye, 2012). Others have focused on a broader range of participants, including school-age students. For example, Celio, Durlak, and Dymnicki (2011) examined 62 studies published by April, 2008, which evaluated service learning among either school-age and/or undergraduate students. There were significant effects, with both school-age and university students examined together, including: academic performance (.43), social skills (.30), attitudes about self (.30), attitudes about learning (.30), and civic engagement (.27). When overall effect sizes were examined separately according to age, there were higher effects for undergraduate (.31) than school-age (.20) students. There were no significant moderators including source of data (e.g., self-report versus other). As predicted, following certain recommended practices—such as linking service to academic curriculum, incorporating student voice, involving community partners, and providing opportunities for reflection—was associated with better outcomes.

Another meta-analysis of 103 studies published by June, 2008 also reported positive effects of service learning programs (Conway, Amel, and Gerwein, 2009). Most studies focused on school-age and university age students, but ten studies focused on adults only. Effect sizes were moderate for academic outcomes (e.g., grades, cognitive outcomes, academic motivation, and attitudes) with an average weighed mean of .43, which included both school-age and university-age students. For school-age students, personal outcomes (e.g., thoughts, feelings, motives, and values) showed a small but significant effect size of .25, while social outcomes (i.e., relationship with others) showed a significant moderate effect size of .37. Citizenship outcomes (i.e., social responsibility) had the smallest significant effect size of .09 for school-age students, but the effect size increased to .14 when high school students were examined separately. Higher effects were found for programs which were curricular (i.e., taken as part of a course) versus non-curricular, included a reflection component, and integrated the service-learning experience into class discussion.

Taken together, these studies provide support that participation in service learning is associated with positive outcomes for young people. Findings indicate medium effects for academic outcomes and small to medium effects for non-cognitive outcomes including social skills, self-perceptions, and motivation. Evidence also suggests that service learning may be more beneficial for older versus younger students. Nevertheless, there is a need for additional multi-site, experimental studies that can test the effects of various program characteristics at different developmental ages. There are only a small number of controlled outcome studies involving school-age children and adolescents. This will help clarify whether there are recommended practices which are more important for younger versus older students. There is also not enough longitudinal research demonstrating whether these effects are long-lasting and whether they are generalizable in other contexts. Furthermore, the available meta-analytic studies did not report the effect size for follow-up data, perhaps due

to its low frequency, thus the durability of the positive effect of service learning has not been estimated. More high quality, experimental research on service-learning will help to establish its credibility as both a pedagogy and prevention strategy.

Outdoor Adventure Programs

Outdoor adventure programs have become increasingly popular in the past few decades. Modern outdoor adventure programs are based on the philosophy of experiential education (Gass, 1993). In adventure programs, individuals or groups are placed in natural settings where they have to cope with their environment and complete novel tasks. These encounters provide learning opportunities which encourage the development of problem-solving skills, as well as feelings of self-competence and personal achievement. Most programs also incorporate group activities, which require collaboration, communication, and cooperation and, in turn, develop team work, social and interpersonal skills.

These programs; which are also known as wilderness programs, outdoor behavioral healthcare (OBH), and adventure therapy; differ widely in their design, implementation, structure, and foci. They have been employed as an intervention strategy to address issues such as substance abuse, addiction, problem behaviors and delinquency, psychological difficulties, low self-esteem, and eating disorders/weight management. They have been used to promote resilience for at-risk populations as well as for universal populations to enhance leadership, team-building, and social skills.

Many studies have examined whether outdoor adventure programs improve outcomes for children, adolescents, and adults. A number of meta-analyses have been conducted in order to synthesize these effects. Cason and Gills (1994), for example, compiled studies in adventure programming specifically for adolescents. Using 43 studies, they found an average effect size of .31. The effects of most outcomes were significant, including self-reported data such as self-concept (.34) and locus of control (.30), behavioral assessments by others (.40),

and administrative data such as grades (.61) and school attendance (.47). In terms of program

characteristics, the only significant moderating effect was length of program. Longer

programs had higher effects (.58) than medium (.19) and short (.17) programs.

In another meta-analysis, Hattie, Marsh, Neill, and Richards (1997) analyzed 96

studies published between 1968 and 1994. They included studies of adventure education and

Outward Bound programs focused on secondary students, university students, and adults.

There was an overall effect size of .18 for secondary students and .21 for university students.

The follow-up effect size was .07 for non-adults over an average of 5.5 months. Several

factors were identified which were associated with higher effect sizes, including: longer

rather than shorter programs, programs focused on adults rather than non-adults, and

Australian rather than non-Australian programs.

Other meta-analytic studies have taken a more focused approach. Hans (2000), for

example, examined the effects of adventure programming on locus of control. There were 24

studies involving programs between the years of 1972 and 1995. There was an average effect

size of.36 for participants 20 years and younger (n=10). Another recent meta-analysis

focused specifically on studies conducted between 1986 and 2006 examining challenge

(ropes) courses, which are a frequently utilized tool in outdoor adventure programs (Gillis

and Speelman, 2008). Using 44 studies, the authors find that the average effect size was .46

for middle school age (i.e., 11 to 13 years), .38 for high school age (i.e., 14 to 18 years), and

.18 for university students. They also examined various outcomes as well as follow-up data,

but the effect sizes were reported with adults, children, and adolescents examined together.

Medium effect sizes were reported for group dynamics (.62) and attitudes about physical

condition (.52). Small to medium effects were reported for self-efficacy (.48), behavioral

observations (0.37), mood or personality measures (.29), self-esteem or self-concept (.26),

and academic measures (.26). For the 12 studies which contained follow-up data, the effect

size was .23. For middle and high school students, programs which had a developmental

(i.e., designed to improve behaviour) or therapeutic (i.e., intended to change the pattern of

behaviour) focus were more effective than educational programs (i.e., intended to improve

school performance).

Overall, these studies have shown that participation in outdoor adventure programs

has small to medium effects on the psychological, behavioral, physical, and academic

outcomes of young people. These findings indicate that outdoor adventure programs are a

promising tool to improve the health and wellbeing of young people. Nevertheless, there are

a few caveats to consider. First and foremost, there is a dearth of studies examining the long-

term effects of outdoor adventure programming on children and young people. Many of the

studies analyzed students and adults together and failed to assess whether follow-up effects

varied according to age. As a result, there is little indication concerning whether these

interventions differ for different age groups, or whether they have enduring positive effects

on children and/or young people. Second, these programs often varied in their design as well

as intention. Therefore, a wilderness program for troubled teens should look very different to

a team-building excursion in a mainstream school. More information is required

documenting the essential features of outdoor adventures programs for young people in

different circumstances. Lastly, outdoor adventure programs need to be considered within

the context of the everyday lives of young people (Russell, 2007). This is particularly

relevant for children and adolescents who involuntarily participate and those placed in

compromising conditions in unregulated programs. Young people in such programs often are

alienated from their network of support including parents, school personnel, and friends.

Successful programs incorporate family involvement strategies in order to provide continued

support from family members during and after completion of the program (Russell, 2007).

Outdoor adventure programs appear to have beneficial effects for children and adolescents;

however, more understanding is needed regarding how the experience can lead to positive change in a developmentally-appropriate framework.

Social and Emotional Learning

Social and Emotional Learning (SEL) has been defined as the process of acquiring the knowledge, skills, and competence to recognize and manage emotions, set and accomplish positive goals, consider the perspectives of others, establish and maintain positive social relationships, make responsible decisions, and handle interpersonal situations constructively (CASEL, 2005). SEL is designed as a universal, school-based program focused on reducing risk factors and fostering protective mechanisms (CASEL, 2005). SEL programs typically target multiple outcomes, are multi-year in duration, coordinate school-based efforts with those in families and the larger community, and include opportunities to practice positive behaviors and receive consistent reinforcement. SEL promotes students' social-emotional skills and positive attitudes so that students feel valued, experience greater intrinsic motivation to achieve, and develop social-emotional competencies which, in turn, should lead to better academic performance and improved adjustment (CASEL, 2005).

Four recommended practices have been identified which lead to more successful SEL programming for children and adolescents (Durlak & Weissberg, 2007; Payton et al., 2008; Durlak, Weissberg, Dymnicki, Taylor, and Schellinger, 2011). These recommended practices include using sequenced step-by-step training approach, adopting active forms of learning, focusing sufficient time on skill development, and having explicit learning goals, which form the acronym SAFE for sequenced, active, focused, and explicit (Durlak, 1997).

Several meta-analyses of SEL programs have shown positive, moderate effects on socio-emotional skills and other outcomes. In a meta-analysis of universal school-based programs published from 1995 to 2008, Sklad, Diekstra, Ritter, Ben, and Gravesteijn (2012) examined 75 studies using an experimental or quasi-experimental design with a

comparison/control group. Most (96%) were published in peer-reviewed journals, while three were progress reports. Of the studies, 16 were conducted in parts of the world other than North America, with 11 conducted in continental Europe. At post-test, programs demonstrated significant effects across the seven outcomes examined in the expected direction, including: social-emotional skills (.70), positive self-image (.46), academic achievement (.46), antisocial behavior (.43), prosocial behaviour (.39), mental disorders (.19), and substance abuse (.09). All of the outcomes were statistically significant at follow-up, but their effect sizes were small. The largest beneficial effect was shown for academic achievement (.26), followed by antisocial behaviour (.20), substance abuse (.18), prosocial behaviour (.12), mental disorders (.10), positive self-image (.07), and social-emotional skills (.07). Analysis of program features found that programs with a shorter duration had a more immediate effect on outcomes compared to longer programs. There were no differences in program effectiveness on social-emotional skills according to whether the program was delivered by a teacher or professional or whether it was conducted in a primary or secondary school. This study was also the first meta-analysis to examine whether the effects on social-emotional skills differed according to whether the study was conducted in North America or elsewhere in the world, mainly continental Europe. The authors found that the overall effect sizes of the two groups were similar, suggesting that SEL programs may enhance the social emotional development of children in diverse national and cultural contexts.

In a meta-analysis of after-school program (ASP) to promote personal and social skills in children, Durlak and Weissberg (2007) examined 75 reports from 1983 to 2005. The average effect size was .22. Of the programs that used SAFE practices, significant mean effects were found for child self-perceptions (.35), school bonding (.26), positive social behaviors (.30), problems behaviors (.26), drug use (.22), and school grades (.24). The mean effects for achievement tests (.31) and school attendance (.15) failed to reach statistical

significance. Programs not using SAFE practices did not show significant effects. In terms of follow-up data, only child self-perceptions (.19) remained significant. According to Durlak and Weissberg, there were too few studies with follow-up data to conclude about the durability of program effects.

In a universal review of 180 studies that appeared by 2007, Payton and colleagues (2008) analyzed the effects of SEL programs for kindergarten to eighth grade students. At post-intervention, the mean effect sizes were .60 for social and emotional skills, .28 for academic performance, .24 for positive social behavior, .23 for attitudes toward the self and others, .23 for conduct problems, and .23 for emotional distress. The effect sizes for these outcomes remained significant in five out of the six outcome categories at follow-up, with the exception of emotional distress. At follow-up, the mean effect sizes were .36 for social and emotional skills, .32 for academic performance, .17 for positive social behavior, .12 for attitudes toward the self and others, .15 for conduct problems, and .13 for emotional distress. Interventions using the recommended practices (SAFE) were more effective than programs that did not follow these recommendations.

In another large-scale meta-analysis of SEL programs, Durlak et al. (2011) examined 213 school-based universal interventions published from 1970 to 2007. Findings indicate that SEL participants demonstrated significantly improved social and emotional skills, attitudes, behavior, and academic performance compared to controls. The average effect size was .30. For individual outcomes, SEL interventions had an average effect size of .57 on social-emotional skill performance, .23 on attitudes, .24 on positive social behavior, .22 on conduct problems, .24 on emotional distress, and .27 on academic achievement. SEL programs led by well-trained professionals were more likely to produce change in SEL skills (.87) compared to teacher-led programs (.62). However, programs led by teachers were more likely to produce change in the other outcomes including academic achievement, positive

social behavior, and emotional distress. For follow-up, 33 studies (15%) collected data at least 6 months after the intervention ended. The average follow-up period across all outcomes for these 33 studies was 92 weeks (median = 52 weeks). Mean follow-up effect sizes remained significant for all outcomes: SEL skills (.26), attitudes (.11), positive social behavior (.17), conduct problems (.14), emotional distress (.15), and academic performance (.32). Their study also found that programs using SAFE practices were more effective than those not using the recommended practices, highlighting the importance of high-quality program design and implementation (Durlak et al.).

Another meta-analysis evaluated 28 studies of classroom-wide interventions to build social skills (January, Casey, & Paulson, 2011). Only studies in peer-reviewed journals published between 1981 and 2007 were eligible for inclusion. The overall effect size was significant, but small (.15). The mean effect size may be more modest compared to previous meta-analytic studies due the smaller number of studies included in the meta-analysis.   The authors also found that age of student moderated the results. In particular, early interventions with young children were more effective than interventions with older students. Their findings suggest that resources in classroom-based social skills interventions are best invested in younger students, particularly those in preschool and kindergarten.

In conclusion, evidence indicates that high-quality SEL programs are not only successful at increasing children's socio-emotional and language skills, but are also effective at fostering positive outcomes and preventing negative ones. On average, meta-analytic studies reported medium to large effects on social skills and small to medium effects on academic achievement, positive attitudes, psychological/emotional adjustment, and problem behaviors. Payton et al. (2008) concluded that, "Comparing results from these reviews to findings obtained in reviews of interventions by other research teams, SEL programmes are among the most successful youth-development programmes offered to school-age youth."

Despite these documented effects, however, there still remain many unanswered questions concerning SEL programs. Most critically, there is a lack of knowledge concerning what specific skills are taught in SEL programs. Many of the meta-analyses include evaluations focusing on a myriad of various social and emotional behaviors. Furthermore, there is little understanding of which particular SEL skills can be taught at what ages. Rigorous, longitudinal studies using multi-sites are required to address these concerns.

Overall Evaluation

There is experimental evidence that mentoring, service learning, outdoor adventure, and SEL programs can all promote positive and prevent problematic behaviors. Overall, service learning, outdoor adventure, and SEL programs have shown small to large effects on a variety of outcomes, while mentoring has shown small, but significant effects. However, in a particular circumstance, given the right factors, any of these interventions may be the best choice for an intervention strategy. What then are the key criteria that should be considered for the purposes of implementation?

The selection of an intervention strategy should reflect the needs and resources of the school/community and the specific target group and/or problems areas at hand. Mentoring programs appear to work best for at-risk children and adolescents. Mentoring can be implemented in a school or community, but community-based programs show larger effects perhaps because relationships extend beyond the school year. Service learning, on the other hand, provides a universal program which can be implemented in either a school or community setting. It has significant effects for all ages, but may be more beneficial for adolescents and university-age students. Service learning which incorporates curricular approaches emphasising reflection show more positive effects than non-curricular approaches. Outdoor adventure programs are appropriate for older children and adolescents

and offer a promising tool to promote positive outcomes in young people, especially when programs have a developmental or therapeutic design. SEL programs have been shown to enhance positive outcomes for a universal school-aged population and may be particularly beneficial for younger children. SEL programs are easily and effectively administered by school staff. In addition to these considerations, the most important factor in the implementation of any intervention program is its design and execution. Well-designed and well-executed programs conducted by high quality staff will have greater effects than those with implementation problems (Durlak et al., 2008; Lerner et al., 2009). An effective intervention can be conceptualised as one that supports the basic needs of the developing person, including their competence, connections, character, confidence and contribution to society, the 5 C's of PYD (Lerner et al., 2005). As specified by Eccles and Gootman (2002), youth programs are more likely to promote positive development if they provide the following: structure and limits that are developmentally appropriate; physical and psychological safety and security; supportive relationships which demonstrate positive morals, values, and social norms; a sense of belonging; opportunities to build non-cognitive skills and develop competence; and strong links among families, school, and the community.

In light of these conclusions, a number of limitations must be noted. First, this review includes only those meta-analytic studies published in English, limiting the focus on evidence from English-speaking countries. It might be possible that there is evidence from other countries which was not considered. Second, the meta-analytic studies in this review often examined intervention studies spanning several decades. It is difficult to know if the same interventions would have similar effects today, given different social dynamics, technological innovations, new forms of communication and interaction, and period effects; which all should be considered in future analyses. Third, the meta-analytic studies vary in both their selectiveness and rigor. For instance, some meta-analytic reviews analyzed only those

studies published in peer-reviewed journals (e.g., January et al., 2011), while others included evaluations which appeared in journal articles, books, and published reports (e.g., Payton et al., 2008). This help may explain differences in reported effect sizes. Furthermore, there are differences in the inclusiveness of the eligible studies in each meta-analytic review. While several meta-analytic reviews only included evaluations with both experimental and control groups (e.g., Dubois et al., 2011), others also allowed evaluations with both pre-data and post-data (e.g., Dubois et al., 2002; Wheeler et al., 2010). However, it must be noted that these methodological differences were not found to be a significant moderating factor (Dubois et al.). Another limitation is that most meta-analytic studies fail to distinguish between outcomes which were self-reported versus those which were independently assessed. There is a need for greater rigor in the conceptualization of outcome measures. Lastly, many of the meta-analytic studies included both children and adults in their analysis. Although only meta-analytic studies which reported effect sizes separately for children and adolescents are included in the review, in a few instances, some of the individual outcomes were analyzed with both age groups together. This unfortunately limits the conclusions that can be drawn for children and young people regarding program impact.

A number of evidence gaps still exist concerning preventive interventions. First, the vast majority of the available evidence stems from studies in high-income countries. The issue of transferability, adaptation, and sustainability of efficacious preventive intervention programs across middle and low-income countries must also be given clear consideration (Catalano et al., 2012). High-quality research needs to be conducted to determine how programs can be tailored to meet the needs of children and young people in a variety of culturally diverse contexts, particularly in middle and low-income countries where there is likely to be more risk factors and fewer resources than high-income countries. Another issue concerns the durability of positive effects. With the exception of SEL programs, few

evaluations include follow-up data over a longer period of time and there is little evidence

that beneficial effects are carried forward. As a result, there is a dearth of information on the

long-term developmental effects of such programs across childhood and adolescence. More

longitudinal research is necessary to foster developmentally-appropriate frameworks which

would aid our understanding of how to optimise prevention strategies for targeted age groups.

Lastly, while meta-analytic studies of preventive interventions provide information about

their effectiveness, they do not specify the processes which link the intervention to

developmental outcomes. It is important not only to look at what works in prevention, but to

also to understand why it works – which implies a consideration of development under the

conditions of risk, hardship, and uncertainty; moving beyond an aggregate understanding

towards a more context-based approach.

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Table 1

Articles included in the review

Intervention type and author	No. of studies reviewed	ES[1]	Follow-up ES[2]
Mentoring			
Dubois et al. (2002)	55	.18	.10
Dubois et al. (2012)	73	.21	.17
Eby et al. (2008)	40[3]	.03 to .14	
Wheeler et al. (2010)	3	0 to .18	
Service Learning			
Celio et al. (2011)	62	.20[4]	
Conway et al. (2008)	103	.09 to .43	
Outdoor Adventure			
Cason & Gillis (1994)	43	.31	
Gillis and Speelman (2008)	44	.46, .38[5]	
Hans (2000)	24	.36[6]	

[1] This is the average effect size, if reported. Otherwise, this represents the range of effects reported.
[2] This is displayed only for studies where follow-up effects were reported.
[3] Youth mentoring only.
[4] School-age only.
[5] 11 to 13 years, 14 to 18 years.
[6] 20 years or younger.

Hattie et al. (1997)	96	.18[7]	
SEL			
Durlak & Weissberg (2007)	73	.22	0 to .19
Durlak et al. (2011)	213	.30	.11 to .32
January et al. (2011)	28	.15	
Payton et al. (2008)	180[8]	.23 to .60	.12 to .36
Sklad et al. (2012)	75	.09 to .70	.07 to .26

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[7] Secondary school students only.
[8] 180 universal programs only.