Original Paper

Effects of the SPARK Teen Mentoring Program for High School Students

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Accepted: 12 March 2022 / Published online: 22 April 2022 © The Author(s) 2022

Abstract
This study employed a randomized controlled trial with pre- and post-intervention measurement to investigate the impact of the Speaking to the Potential, Ability, and Resilience Inside Every Kid (SPARK) Teen Mentoring program on knowledge of the principles of mind, thought, and consciousness; communication, decision making, and problem-solving skills; emotional regulation; and resilience. The SPARK program is a resilience-focused social-emotional learning program designed to promote youth resilience, emotional well-being, and academic success. Study participants included 396 9th through 12th grade students from four high schools. Random assignment occurred at the classroom level and resulted in 12 classes (n = 200 students) in the intervention condition and 12 classes (n = 172 students) in the comparison condition. Students in the intervention condition received the SPARK intervention while students in the comparison condition continued with the regularly scheduled school curriculum. Results revealed that levels of knowledge of the principles of mind, thought, and consciousness; communication, decision making, and problem-solving skills; emotional regulation; and resilience increased for students who received the intervention and either decreased or remained unchanged for students who did not receive the intervention. Results from this study provide initial evidence for the efficacy of the SPARK program with high school age youth and demonstrate the positive effects of the program on the development of emotional and interpersonal capacity required for pro-social behavior and academic success. Considerations for future program development and evaluation efforts are discussed.

Keywords School-based · Adolescents · Prevention · Resilience · Social-emotional learning.

Highlights
• This is the first systematic evaluation of the SPARK Teen Mentoring program: a school-based social and emotional learning program for high school students.
• Students who participated in the SPARK program demonstrated improvements in communication, decision making, and problem-solving skills compared to students who did not receive the intervention.
• Results from this study provide initial support for the positive impact of the SPARK Teen Mentoring program on students’ emotional regulation and resilience.

Today’s youth face many challenges that can negatively impact their likelihood of attaining their full potential as adults, such as poverty, violence, substance abuse, racial discrimination and injustice, limited opportunities for education and employment, child abuse and neglect, and parental conflict (Brooks, 2006; Zolkoski & Bullock, 2012). These challenges can lead to a multitude of poor outcomes including school dropout, teenage pregnancy, substance abuse, and juvenile crime (Brooks, 2006). For students from lower socio-economic backgrounds, exposure to a chronically stressful environment can inhibit normative adolescent
psychosocial development (Perzow et al., 2021) and potentially hinder the development of age-appropriate coping skills such as problem-solving, emotion regulation, and positive thinking (Zimmer-Gembeck & Skinner, 2011). Evidence suggests that disparities in psychosocial adjustment due to chronic stress and multiple stressors related to poverty can be seen early in life and can persist across the lifespan (Evans & Kim, 2013). However, not all youth who face such challenges demonstrate negative outcomes. Rather, some youth demonstrate a level of resilience that allows them to achieve positive outcomes in the face of challenging circumstances. For example, low-income children who rely on coping strategies such as problem solving or cognitive reappraisal in response to poverty-related stress are less likely to exhibit adverse psychological symptoms (Santiago et al., 2018).

The topic of resilience has garnered a great deal of attention from researchers, program developers, and policymakers interested in finding ways to reduce the negative impact of adverse circumstances and promote positive youth development. With this focus in mind, programs designed to enhance the development of social-emotional competencies and facilitate supportive social environments in the home, school, and community have been identified as integral to positive social adjustment and academic success (Nicoll, 2014). Among such programs, school-based efforts to promote students’ social and emotional learning have been identified as a promising approach to support resilience in youth and enhance their success in school and life. In this study, we examine preliminary evidence for the effectiveness of a time-limited school-based social and emotional learning program designed to reduce risk factors, enhance resiliency, promote emotional well-being, and facilitate school success in high school-aged youth.

Resilience

Broadly defined, resilience refers to “the capacity of a dynamic system to adapt successfully to disturbances that threaten its function, viability, or development” (Masten, 2014, p.10). From a resilience perspective, the focus is not on dysfunctions or disorders, but on what occurs in the lives of youth who succeed in multiple life domains even when faced with adverse life situations (Nicoll, 2014). The construct of resilience is often tied to the related constructs of risk and protective factors. Risk factors are those internal and contextual factors that increase an individual’s risk for poor outcomes. Although early research in resilience tended to focus on individual risk factors (e.g., lack of social skills, low self-confidence, aggression, or impulsive behavior), current literature acknowledges the frequent co-occurrence of multiple risk factors and the associated notion of cumulative risk. Depending on the quantity and severity of risk factors present, youth can be especially vulnerable to problems such as maladaptive and antisocial behavior, disciplinary problems, and poor academic achievement (Sanders et al., 2017).

Protective factors are those factors and processes associated with adaptive success in the context of risk or adversity (Masten & Monn, 2015). Protective factors can be internal or external to an individual. Among external protective factors are supportive environments, social supports, adult attachment, positive peer relationships, and a sense of connectedness and belonging. Internal factors might include self-esteem, self-control, self-efficacy, and an internal locus of control. Notably, research suggests that the presence of internal factors can support the development and growth of external factors (Hinduja & Patchin, 2017). Despite the level of risk experienced by an individual child, healthy development and overall life success for all youth depend on both internal capabilities and external resources (Masten & Monn, 2015).

Developing and strengthening protective factors within youth can bolster resilience and the capacity of youth to manage the relationships, responsibilities, expectations, and challenges they face. One way to do this is through the delivery of resilience-focused interventions. Resilience-focused interventions aim to strengthen multiple protective factors to improve a youth’s outlook and sense of control over their circumstances and minimize the impact of risks (Dray et al., 2017). Considerable empirical evidence provides support for the potential of resilience-focused interventions to positively impact outcomes for youth. For example, a recent systematic review of 49 studies that examined the effects of universal school-based resilience-focused interventions on child and adolescent mental health revealed that resilience-focused interventions were effective relative to a control condition in reducing depressive symptoms, internalizing problems, externalizing problems, and general psychological distress (Dray et al., 2017). Additional research provides support for fostering resilience in youth by helping children to gain personal insights into mind consciousness, thought recognition, and inner resilience. More specifically, there is evidence to suggest that exposing youth to an understanding and application of the principles of mind, thought, and consciousness strengthens their capacity for life management (Kelley et al., 2017a).

Social and Emotional Learning

Social-emotional competencies associated with resilience, such as responsiveness to others, empathy, caring, positive relationship skills, and flexibility and adaptability in solving social problems are key to youth developing into healthy and competent young adults (Nicoll, 2014). For example, there is evidence to suggest that prosocial skills in
kindergarten are predictive of on-time graduation from high school, completion of a college degree, and employment in young adulthood. Early prosocial skills have also been found to be inversely related to involvement with police, incarceration, and the number of arrests for a severe offense by age 25 (Jones et al., 2015).

Social and emotional learning (SEL) is the process through which youth develop social and emotional intelligence to understand and manage emotions, establish and maintain positive relationships, make responsible decisions, and engage in adaptive behaviors (CASEL, 2020). The Collaborative for Academic, Social, and Emotional Learning (CASEL) has identified five core competencies of social and emotional learning: self-awareness (e.g., recognizing emotions, thoughts, and their influence on behavior; assessing personal strengths and limitations), self-management (e.g., effectively regulating emotions, thoughts, and behaviors in different situations; setting goals), social awareness (e.g., empathizing with others, understanding social and ethical behavioral norms, and recognizing available resources and supports), relationship skills (e.g., establishing and maintaining healthy relationships, communicating well with others, negotiating conflict, and seeking and offering help when needed), and responsible decision-making (e.g., making constructive choices, evaluating consequences of actions, and considering the well-being of self and others).

Because social and emotional processes affect how and what is learned, it is generally accepted that schools play a role in not only educating children in academics but also in fostering their social and emotional development (Durlak et al., 2011). Research on resilience has indicated the importance of social-emotional competencies for determining future life success and generally supports the implementation of school-based social-emotional learning to foster the development of social-emotional competencies as well as academic competence (Nicoll, 2014). Schools provide an ideal setting for implementing strategies to help youth develop the competencies necessary to cope with life’s challenges and increase the likelihood of positive outcomes. Not only does the integration of these programs into the school setting help to reduce the impact of primary barriers of accessing treatment, time, location, and cost (Werner-Seidler et al., 2017), but schools often possess existing infrastructure and values that aid in the development of communication, decision making, problem-solving, resilience, and positive health (Dray et al., 2017).

Evidence suggests that school-based SEL programs can yield positive outcomes such as increasing social-emotional skills, improving mental health, and improving academic outcomes while reducing negative health, social, and risk-taking behaviors (Corcoran et al., 2018; Dowling et al., 2019; Durlak et al., 2011; Taylor et al., 2017). In a meta-analysis of school-based universal social and emotional learning interventions, findings revealed positive outcomes of SEL related to improved social and emotional skills, attitudes, behavior, and academic performance. The results of this study further provided evidence for the importance of high-quality program implementation for producing positive outcomes (Durlak et al., 2011). In their study, Taylor and colleagues (2017) found that the benefits of exposure to SEL programming in the school continued for months, and in some cases years, following exposure. Findings from this study revealed that the academic performance of students exposed to SEL programs was higher than non-SEL peers after an average of more than three years. Exposure to SEL programming also resulted in lasting positive effects related to greater social and emotional competencies, prosocial behavior, and prosocial attitudes. Lasting decreases in conduct problems, emotional distress, and drug use compared to control groups were also observed (Taylor et al., 2017). From an economic value perspective, a recent report revealed that, on average, every dollar invested in SEL programming yields more than ten times that amount in long-term benefits, including reduced juvenile crime, higher lifetime earnings, and better mental and physical health (Belfield et al., 2015).

**SPARK Teen Mentoring Program**

The current study contributes to the existing literature on school-based SEL programs by providing an initial examination of the Speaking to the Potential, Ability, and Resilience Inside Every Kid (SPARK) Teen Mentoring program. The SPARK Teen Mentoring program is a resilience-focused school-based SEL program designed to reduce risk factors, uncover innate resilience, promote natural emotional well-being, and facilitate school success. In drawing on the three principles of mind, thought, and consciousness, the SPARK program capitalizes on the idea that individuals are not passive recipients of adverse circumstances, but are capable of resilience. The principle of Mind represents the energy that powers thought and consciousness and has been conceptualized as the source of inner mental health and wisdom that is available to everyone. Throughout the SPARK program, Mind is referred to as the “SPARK.” It is described as the source behind all things in life: everything seen, felt, and experienced. Through Mind, everyone has access to innate resilience and wisdom; this is the SPARK inside that guides us naturally. This SPARK may also be called “intuition,” “instinct,” or “common sense.” The principle of Consciousness represents awareness and the ability to experience life, and the principle of Thought refers to the ability to think and create a psychological experience from within (Pransky & Kelley, 2014).
Unlike other SEL programs that aim to change thoughts, feelings, or behaviors, SPARK focuses on helping youth realize that they can quiet their personal thinking so that their mental well-being, common sense, and innate resiliency naturally surface. Helping youth to uncover their innate strengths is a notable characteristic of the SPARK program and contributes to the preventative impact of the program and its potential to reduce the effects of adverse experiences. As suggested by Banerjee et al. (2007), targeting the principles of mind, thought, and consciousness is likely to produce more sustainable change than simply targeting an individual’s thoughts, thought processes, feelings, and behaviors.

The SPARK program consists of manualized age-appropriate lessons delivered in a group format by trained facilitators through hourly sessions taught over 13 consecutive weeks. Lessons incorporate multiple learning activities (e.g., group discussions, role plays, videos, demonstrations, etc.) to help students master content and skills and emphasis is placed on the development and generalization of personal and social skills. Lessons for the SPARK Teen Mentoring program address the following topics: personal goal setting, how the mind and thought create experience, decision making, habits and habitual thinking, reasoning, mood and changes in mood, fear and insecurity, self-esteem, and acceptance of differences in individual thought. Through exposure to curriculum lessons and activities, youth are expected to demonstrate an increase in emotion regulation, resilience, and communication, problem-solving, and decision-making skills.

**Study Aims**

To date, the effectiveness of the SPARK Teen Mentoring program has not been systematically evaluated. Therefore, the purpose of this study is to provide preliminary evidence for intervention effectiveness in a sample of high school students. The specific aims of this evaluative study are to determine if the SPARK Teen Mentoring program: (1) increases participants’ understanding of the principles of mind, thought, and consciousness (knowledge-based outcome); (2) increases participants’ communication, problem-solving and decision-making skills (skill-based outcome); (3) increases participants’ emotional regulation skills (skill-based outcome); and (4) increases youth participants’ resilience level (skill-based outcome).

**Method**

**Participants**

Participants included 396 students in 9th through 12th grade from four urban public high schools located in the Southeastern United States, including two Title 1 general education schools and two alternative schools. Schools designated as Title I are those that receive federal funds due to being identified as having a high number or percentage of low-income students. The alternative schools that participated in this study include schools that offer an alternative route to high school graduation for students who have fallen behind academically or have otherwise struggled to succeed in a traditional educational setting. The general education schools provided 212 students in 12 classrooms for the study while the two alternative schools provided 184 students in 12 classrooms. The two general education schools serve 2,300 and 1,600 students in grades 9 to 12 and have high rates of economically disadvantaged students (68% and 63%). Both schools have high rates of non-white students, 76% and 73%, with Hispanic students making up 44% and 28% of the student body. The alternative schools have much lower enrollments with 197 and 226 students served in grades 11 and 12. Both schools have high rates of non-white students, 73% and 79%, with Hispanic students making up most of the student body (79% and 73%).

Of the 396 students who agreed to participate in the study, 24 (6.1%) did not complete the post-intervention questionnaire and were lost to follow-up. The number of students lost to follow-up from the intervention condition (n = 16) and the comparison condition (n = 8) did not differ significantly ($\chi^2(1) = 1.51, p = 0.219$). Students lost to follow-up did not differ significantly from those who completed the post-test questionnaire with regard to age ($t(368) = 0.42, p = 0.673$), gender ($\chi^2(1) = 3.06, p = 0.080$), race ($\chi^2(2) = 0.83, p = 0.660$), ethnicity ($\chi^2(1) = 0.41, p = 0.524$), or whether they received free or reduced-price lunch ($\chi^2(1) = 1.34, p = 0.247$). An examination of differences between students lost to follow-up and those who completed the post-intervention questionnaire revealed no significant differences in any of the study variables assessed at pre-intervention, except for knowledge of the three principles. Compared to students who completed the post-intervention questionnaire, students lost to follow-up demonstrated higher levels of knowledge of the principles of mind, thought, and consciousness at pre-intervention ($t (394) = 1.99, p = 0.047$). Collectively, these results suggest that attrition is unlikely to have impacted study findings.

The final sample for the current study includes 372 students for whom both pre- and post-intervention data were available. The average age of participants was 15.7 years, and 52% were female. Most of the students included in the study sample (90.6%) received free or reduced-price lunch, an indicator of poverty. Slightly over half of the study participants (51%) identified as Hispanic. Only 52% ($n = 195$) of the study sample provided data on race. Of these participants, 24% were White, 22% were Black, and 7% were Multiracial.
Study participants were recruited by contacting principals from local high schools to inform them of the availability of the SPARK program and the opportunity to participate in the study. Principals who agreed to participate in the study worked with teachers within their schools to identify general education elective classes for participation. Consent for participation was obtained from parents of 396 students in the identified classes. Random assignment was at the classroom level within each school and included a balance of classrooms assigned to the intervention or comparison conditions at each school. Classes were randomly assigned to either the intervention or comparison condition using a flip of the coin. To help account for possible nesting effects of students within schools, classes within each school were balanced so that each participating school included both intervention and comparison classes (see Kutash, et al., 2007). For schools with two participating classes, one class was randomly assigned to the intervention condition and one to the comparison condition. For schools with more than two participating classes, whenever possible, classes were balanced by teacher prior to randomization so that an individual teacher had at least one class in each condition. Randomization procedures resulted in 13 classes ($n = 216$ students) being randomized to the intervention condition and 13 classes ($n = 180$ students) being randomized to the comparison condition.

Program implementation and data collection took place across two school years, including the second semester (January to May) of the 2017–2018 school year and the first semester (September to December) of the 2018–2019 school year. The SPARK intervention was delivered to students in the intervention condition by two facilitators in the 2017–2018 school year and three facilitators in the 2018–2019 school year. Facilitators received 20 h of training in the intervention model and data collection procedures, including the standardized collection of data, privacy and confidentiality, and security of information. Facilitators had prior classroom experience and had previously delivered the SPARK intervention. Students in the intervention condition completed a pre-intervention questionnaire at the beginning of the first SPARK session and a post-intervention questionnaire immediately following the final SPARK session. The comparison condition was school as usual. Students in the comparison condition completed the pre- and post-questionnaires on the same days as students in the intervention condition. The time between pre- and post-assessments was approximately 13 weeks. Questionnaires were administered by SPARK facilitators and then forwarded to SPARK research staff for scoring and analysis.

A fidelity monitoring system was used to monitor the degree to which the intervention was implemented as designed. After every session, facilitators completed a Session Fidelity Rating Scale. This scale contains 23 items that describe the essential components and processes of the intervention. Facilitators rate each item on a scale of 1 ‘Not Met’ to 4 ‘Met’. In addition to facilitator self-ratings of session fidelity, supervisor ratings of fidelity were collected through the use of a Supervisory Fidelity Scale. This scale contains the same 23 items as the Session Fidelity Rating Scale and is completed by the SPARK supervisor during two random session observations. For the current study, the average rating across facilitators and sessions on the Session Fidelity Rating Scale was 3.96 out of 4.00. A comparison of facilitator and supervisor ratings revealed exact agreement between facilitators and supervisors on 83% of the ratings, providing evidence for the reliability of self-ratings and maintenance of program fidelity.

Student attendance of SPARK sessions was monitored to help ensure that each student received an adequate amount or “dose” of the intervention. Monitoring the dose of the intervention received by students helps support that the impact of the program was due to the program content not external events. When students missed a session, efforts were made to cover the missed curriculum content with the student. On average, students in the intervention condition attended 11.48 of the 13 SPARK sessions.

On consent forms, parents provided their child’s date of birth, gender, race, and ethnicity. The school district provided data on lunch status (e.g., free, reduced, or full price) for each student. Free or reduced-price lunch status was used as an indicator of poverty.

The youths’ level of knowledge regarding the principles of mind, thought, and consciousness was measured using the Three Principles Inventory (3PI; Kelley, 2011). The 3PI is a 10-item scale that assesses student knowledge of the principles of mind, thought, and consciousness. Responses to items on the 3PI range from 1 ‘Disagree Completely’ to 6 ‘Agree Completely’. Total scores are the
sum of all items and range from 10 to 60 with higher scores indicating greater knowledge of the curriculum. The 3PI has demonstrated adequate reliability when used with elementary aged students (Cronbach’s alpha = 0.73; Green et al., 2021a), adolescents (Cronbach’s alpha = 0.68; Green et al., 2021b), and adults (Cronbach’s alpha = 0.70; Kelley et al., 2017b). The internal consistency reliability of the 3PI for the current study sample was 0.49. Evidence of convergent and divergent validity of the 3PI can be drawn from observed correlations between the 3PI and measures of emotional regulation and anxiety, respectively (Kelly et al., 2015).

Communication, decision making, and problem-solving skills

The Communication, Decision Making, and Problem-Solving scale (CDP) was developed for the current study and is based on items from the National Life Skills Evaluation System scales of decision making, problem-solving, and communication, all of which have demonstrated evidence for reliability and validity (Mincemoyer & Perkins, 2005). The CDP includes 3 subscales as follows: problem-solving skills (5 items), decision-making skills (5 items), and communication skills (6 items). Items for each subscale have responses that range from 1 Never to 5 Almost Always. The total score on the CDP is the sum of all items and ranges from 16 to 80 with higher scores indicating greater communication, decision-making, and problem-solving skills. Subscale scores range from 1 to 5 and are derived by summing items for each subscale and then dividing by the number of items for that subscale. Based on the current study sample, Cronbach’s alpha for the CDP was 0.93. Internal consistency estimates (Cronbach’s alpha) for the three subscales were 0.88, 0.79, and 0.82, respectively.

Difficulties in emotional regulation

Difficulties in emotional regulation were measured using the Impulse and Clarity subscales from the short form of the Difficulties in Emotional Regulation Scale (DERS-SF; Kaufman et al., 2016). Each subscale includes 3 items with response options that range from 0 Almost Never to 4 Almost Always. Subscale scores are derived by summing the items for that subscale and range from 0 to 12. The total score, which ranges from 0 to 24, is obtained by adding the two subscale scores. Lower scores on the DERS-SF are desirable as they indicate fewer difficulties with emotional regulation. The DERS-SF total and subscale scores have demonstrated good internal reliability (0.78 to 0.91) and adequate construct and concurrent validity (Kaufman et al., 2016).

Resilience

Resilience was measured using the following three subscales from the Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2007): the Sense of Relatedness subscale (24 items), the Sense of Mastery subscale (20 items), and the Optimism subscale (7 items). Response options for items on all three subscales range from 0 Never to 4 Almost always. Subscale scores are the sum of the items for each subscale and range from 0 to 96 for the Sense of Relatedness subscale, 0 to 80 for the Sense of Mastery subscale, and 0 to 28 for the Optimism subscale. A total resilience score is calculated by summing all three subscale scores with higher scores indicating greater resilience. The RSCA scales have demonstrated validity through structural investigations, acceptable internal consistency (0.61 to 0.94), and test-retest reliability (0.79 to 0.83) (Prince-Embury, 2007; 2011).

Data Analysis

First, in order to evaluate the adequacy of the random assignment in equating the groups for each condition, students in the intervention and comparison conditions were compared on demographic characteristics and scores from the pre-intervention questionnaire. Next, each of the scales contained within the questionnaire that was administered before and after the intervention was analyzed to compare change over time for students in the intervention condition compared to students in the comparison condition. The average pre-intervention scores (intervention vs. comparison) were compared with an independent groups t-test. Changes in average scores for the two groups from pre-intervention to post-intervention were compared using repeated measures analysis of variance (ANOVA). In this analysis, the test statistic for the time by condition effect using Type III Sums of Squares is reported. Given the number of statistical tests conducted, alpha was set at 0.002 (Neyman & Pearson, 1928). The effect size for each measure using Hedges’ g is presented. For this statistic, 0.8 or more indicates a large effect, 0.5 to less than 0.8 indicates a medium effect, and 0.2 to less than 0.5 indicates a small effect, although these cutoffs are generally not applied rigidly (Cohen, 1992).

Results

Pre-Intervention Comparison

In order to evaluate the adequacy of the random assignment in equating the groups for each condition, students in the intervention and comparison conditions were compared on
demographic characteristics and on scales from the pre-intervention student questionnaire. No differences were revealed on age ($t = 1.00, p = 0.317$), gender ($X^2 (1) = 1.31, p = 0.252$), race ($X^2 (2) = 2.48, p = 0.289$), ethnicity ($X^2 (1) = 0.02, p = 0.880$), or whether students received free or reduced price lunch ($X^2 (1) = 0.004, p = 0.948$).

At pre-intervention, the intervention and comparison groups did not differ regarding their level of knowledge of the principles of mind, thought, and consciousness (3PI) or their difficulties in emotional regulation (DERS-SF). However, the groups did differ significantly on the total CDP scale ($t = 3.53, p = 0.001$) and all three subscales (Communication Skills ($t = 3.18, p = 0.002$), Decision-Making Skills ($t = 3.02, p = 0.002$), and Problem-Solving Skills ($t = 3.26, p = 0.001$)) with students in the intervention condition having lower mean scores (less desirable scores) than students in the comparison condition at pre-intervention. Groups also differed significantly on the total Resilience scale ($t = 3.20, p = 0.002$) and all three subscales (Sense of Relatedness ($t = 2.64, p = 0.009$), Sense of Mastery ($t = 3.19, p = 0.002$), Optimism ($t = 2.08, p = 0.038$)) with the intervention group again having lower mean scores (less desirable scores) than the comparison group at pre-intervention (see Table 1).

### Post-Intervention Comparison

Results from post-intervention comparisons are described below according to the specific aims of the current study. As previously noted, the aims of this study are to determine if the SPARK curriculum: (1) increases participants’ understanding of the principles of mind, thought, and consciousness; (2) increases participants’ communication, problem-solving and decision-making skills; (3) increases participants’ emotional regulation skills; and (4) increases youth participants’ resilience level. Results for analyses addressing each of these aims can be found in Table 2.

### Understanding of mind, thought, and consciousness

Post-intervention scores for students in the comparison group were essentially unchanged from the pre-intervention scores on the 3PI. In contrast, the mean post-intervention scores for this measure were higher than the mean pre-intervention scores for students in the intervention group. The group difference in the change from pre- to post- was statistically significant. Higher scores on the 3PI reflect more knowledge of the curriculum content, so the intervention group significantly increased their knowledge of the curriculum compared to the comparison group. The Hedges’ $g$ effect size for the difference between pre- and post-intervention 3PI scores was 0.88, which is a large effect size (see Table 2).

#### Table 1 Comparison of Pre-Intervention Scores for Students in the Intervention Condition vs. Comparison Condition

| Subscale                    | Intervention | Comparison | t*    | p     |
|-----------------------------|--------------|------------|-------|-------|
| 3PI Total Score             | 34.5         | 35.0       | 0.98  | 0.315 |
| CDP Total Score             | 53.3         | 57.4       | 3.53  | 0.001 |
| Communication Skills Subscale | 3.3         | 3.6        | 3.18  | 0.002 |
| Decision-Making Skills Subscale | 3.3        | 3.6        | 3.10  | 0.002 |
| Problem-Solving Skills Subscale | 3.3        | 3.6        | 3.26  | 0.001 |
| DERS-SF Total Score         | 9.9          | 9.3        | 0.96  | 0.337 |
| Clarity Subscale            | 5.0          | 4.7        | 0.66  | 0.509 |
| Impulse Subscale            | 4.9          | 4.5        | 0.98  | 0.328 |
| Resilience Score            | 106.2        | 114.8      | 3.20  | 0.002 |
| Relatedness Subscale        | 58.5         | 62.8       | 2.64  | 0.009 |
| Mastery Subscale            | 47.7         | 52.1       | 3.19  | 0.002 |
| Optimism Subscale           | 15.9         | 17.1       | 2.08  | 0.038 |

*Degrees of freedom were 370 for all tests except Knowledge of 3PI. For that scale, the variances were unequal, so the Satterthwaite method was used and $df = 361.2$.

### Communication, problem-solving, and decision-making skills

On the total CDP scale and the three CDP subscales, the post-intervention scores for the comparison group were lower compared to the pre-intervention scores. This suggests that for students in the comparison group, skills in these areas deteriorated somewhat over the time of the study. In contrast, the mean post-intervention scores for all these measures were higher than the pre-intervention scores for the intervention group. The comparison of the groups on change from pre- to post- was statistically significant for the total CDP scale and all three subscales. Higher scores on these scales reflect more skill in each of these areas, so the intervention group significantly increased these self-reported skills compared to the comparison group. All post-intervention differences obtained Hedges’ $g$ values that represented medium effect sizes (0.57–0.72) (see Table 2).

### Emotional regulation skills

For both the Impulse and Clarity subscales of the DERS-SF and the total score, the mean post-intervention scores for the comparison group were slightly higher than the pre-intervention scores, whereas for the intervention group, the mean scores went down for both subscales and the total score. The group difference in the change from pre- to post-intervention was statistically significant for both subscales.
and the total score. Lower scores on the DERS-SF reflect less difficulty with emotional regulation, so the intervention group appeared to improve in this regard whereas the comparison did not improve in their emotional regulation ability, in fact, they may have deteriorated somewhat. The Clarity and Impulse subscales of the DERS-SF obtained Hedges’ g values of 0.56 and 0.57, respectively, which are both medium effect sizes. The DERS-SF Total obtained a

|                          | Intervention | Comparison | F*  | p    | Effect size |
|--------------------------|--------------|------------|-----|------|-------------|
| 3PI Total Score          |              |            |     |      |             |
| Pre-Intervention         | 34.5         | 35.0       |     |      |             |
| Post-Intervention        | 39.3         | 34.4       | 71.77 | <0.0001 | 0.88        |
| Change (post – pre)      | 4.8          | −0.6       |     |      |             |
| CDP Total Score          |              |            |     |      |             |
| Pre-Intervention         | 53.3         | 57.4       |     |      |             |
| Post-Intervention        | 57.9         | 55.2       | 48.66 | <0.0001 | 0.72        |
| Change (post – pre)      | 4.7          | −2.1       |     |      |             |
| CDP Communication Skills Subscale |          |            |     |      |             |
| Pre-Intervention         | 3.3          | 3.6        |     |      |             |
| Post-Intervention        | 3.6          | 3.5        | 33.11 | <0.0001 | 0.60        |
| Change (post – pre)      | 0.3          | −0.1       |     |      |             |
| CDP Decision-Making Skills Subscale |        |            |     |      |             |
| Pre-Intervention         | 3.3          | 3.6        |     |      |             |
| Post-Intervention        | 3.6          | 3.4        | 30.08 | <0.0001 | 0.57        |
| Change (post – pre)      | 0.3          | −0.2       |     |      |             |
| CDP Problem-Solving Skills Subscale |        |            |     |      |             |
| Pre-Intervention         | 3.3          | 3.6        |     |      |             |
| Post-Intervention        | 3.7          | 3.5        | 41.60 | <0.0001 | 0.67        |
| Change (post – pre)      | 0.3          | −0.2       |     |      |             |
| DERS-SF Total Score      |              |            |     |      |             |
| Pre-Intervention         | 9.9          | 9.3        |     |      |             |
| Post-Intervention        | 7.8          | 10.9       | 42.41 | <0.0001 | 0.68        |
| Change (post – pre)      | −2.1         | 1.7        |     |      |             |
| DERS-SF Clarity Subscale |              |            |     |      |             |
| Pre-Intervention         | 5.0          | 4.7        |     |      |             |
| Post-Intervention        | 4.0          | 5.7        | 29.17 | <0.0001 | 0.56        |
| Change (post – pre)      | −1.0         | 1.0        |     |      |             |
| DERS-SF Impulse Subscale |              |            |     |      |             |
| Pre-Intervention         | 4.9          | 4.5        |     |      |             |
| Post-Intervention        | 3.8          | 5.2        | 29.92 | <0.0001 | 0.57        |
| Change (post – pre)      | −1.1         | 0.7        |     |      |             |
| RSCA Total Resilience Score |          |            |     |      |             |
| Pre-Intervention         | 106.2        | 114.8      |     |      |             |
| Post-Intervention        | 114.6        | 108.0      | 56.32 | <0.0001 | 0.78        |
| Change (post - pre)      | 8.4          | −6.9       |     |      |             |
| RSCA Relatedness Subscale |            |            |     |      |             |
| Pre-Intervention         | 58.5         | 62.8       |     |      |             |
| Post-Intervention        | 62.2         | 59.3       | 30.04 | <0.0001 | 0.57        |
| Change (post - pre)      | 3.7          | −3.4       |     |      |             |
| RSCA Mastery Subscale    |              |            |     |      |             |
| Pre-Intervention         | 47.7         | 52.1       |     |      |             |
| Post-Intervention        | 52.4         | 48.6       | 47.77 | <0.0001 | 0.72        |
| Change (post - pre)      | 4.7          | −3.5       |     |      |             |
| RSCA Optimism Subscale   |              |            |     |      |             |
| Pre-Intervention         | 15.9         | 17.1       |     |      |             |
| Post-Intervention        | 17.8         | 16.2       | 32.79 | <0.0001 | 0.59        |
| Change (post - pre)      | 1.9          | −0.9       |     |      |             |

*Degrees of freedom = 1, 370 for all tests*
Hedges’ $g$ value of 0.68, which is also a medium effect size (see Table 2).

**Resilience**

For the total Resilience scale and each of the three RSCA subscales, the mean post-intervention scores for the comparison group were lower than the pre-intervention scores. Whereas for the intervention group, the mean post-intervention scores on these scales were higher than the pre-intervention scores. The group difference in the change from pre- to post-intervention was statistically significant for the total Resilience scale and for each of the subscales. Higher scores reflect more resilience, so the intervention group appeared to improve in this regard whereas the comparison group had some deterioration in their resilience. The total Resilience scale obtained a Hedges’ $g$ value of 0.78, which is a medium effect size. The three subscales (Relatedness, Mastery, and Optimism) obtained Hedges’ $g$ values of 0.57, 0.72, and 0.59, respectively, which are all medium effect sizes (see Table 2).

**Discussion**

The SPARK Teen Mentoring program, which employs the principles of mind, thought, and consciousness, is designed to strengthen emotional well-being and adaptive functioning in youth. The manualized program curriculum includes age-appropriate lessons that are delivered sequentially in a group format over consecutive weeks by trained facilitators. As a resilience-focused program, SPARK capitalizes on the idea that youth are not passive recipients of adverse circumstances but can access their innate resilience to meet life’s challenges. This study aimed to measure the extent to which the SPARK program positively influences youth’s knowledge of the three principles of mind, thought, and consciousness; communication, decision making, and problem-solving skills; emotional regulation; and resilience. A randomized controlled trial with pre- and post-intervention measurement was employed to address these aims. Use of a randomized design with the measurement at two time points allowed for the examination of the effects of the SPARK program on multiple indicators of social and emotional functioning. Overall, results from this study provide initial support for the efficacy of the SPARK Teen Mentoring program as an effective resilience-focused social and emotional learning program for high school students.

Based on the results of this study, youth who received the SPARK intervention demonstrated increases in their knowledge and understanding of the principles of mind, thought, and consciousness. These results suggest an increase in comprehension of the human experiences of instinct, thinking, and awareness for students who received the intervention, all of which are important for social and emotional development and functioning in youth (Kelley et al., 2017a). A greater understanding of these principles has the potential to increase students’ perceptions of their capacity for healthy emotional, social, and interpersonal functioning.

While students who did not receive the intervention demonstrated a deterioration in communication, decision-making, and problem-solving skills throughout the study, students who received the intervention demonstrated an increase in their communication, decision-making, and problem-solving skills. These results provide support for the effectiveness of the SPARK program to positively influence youth’s perceptions of their capacity to engage in effective interpersonal communication, have control and influence in their lives, and generate solutions for the challenges they face. This social intelligence supports pro-social behaviors and conflict resolution and can help youth navigate interpersonal interactions and obligations (Zautra et al., 2015).

In addition to providing support for improved communication, decision-making, and problem-solving skills, results from this study also provide initial support for the positive effect of the SPARK program on youth’s emotion regulation. Findings from this study indicate that students who received the SPARK intervention demonstrated improvement in emotion regulation, whereas students who did not receive the intervention showed little to no improvement in this area. These results highlight the potential effectiveness of the SPARK program in increasing youth’s awareness and management of their emotions as well as their understanding of the connection between their thoughts and their emotions. Among the primary aims of any social-emotional learning program is to strengthen self-awareness, self-management, social awareness, and relationship skills (CASEL, 2020). The results from this study demonstrate the potential of the SPARK program to positively impact emotional intelligence, thus strengthening a youth’s capacity for effective emotion regulation and positive relationship building and sustainability.

Resilience is key to developing into an adaptive and productive adult. Results from this study provide evidence for the effectiveness of the SPARK program in increasing resilience in youth. Where students who did not receive the SPARK intervention reported a decrease in their perceived resilience over time, students who received the SPARK intervention reported an increase in perceived resilience. These results suggest an increase in optimistic thinking and self-confidence for students who received the intervention. Research shows that increased resilience can lead to improved positive outlook and self-assurance as well as greater self-worth and sense of well-being (Mak et al., 2011). As a resilience-focused
intervention, the SPARK program has the potential to strengthen the protective factors that can bolster healthy development and a youth’s capacity to manage life’s challenges (Dray et al., 2017).

A notable strength of this study is the incorporation of a fidelity monitoring system for intervention implementation. Assessments of session fidelity ratings completed by SPARK facilitators and supervisors indicate a high degree of implementation fidelity. Additionally, student attendance during SPARK lessons remained high throughout the study. Collectively, these results provide greater confidence in interpreting the observed changes in measured outcomes for students in the intervention group as likely resulting from having received the SPARK intervention. Future research and development of the SPARK Teen Mentoring program should build upon these findings and directly assess the relationship between fidelity of implementation and student outcomes. This line of research will be especially important as program developers consider different modes of program delivery that can be sustained in school systems. For example, adaptation of the SPARK program to be delivered by school personnel trained as SPARK facilitators would make the program more accessible to youth and more sustainable from an organizational perspective. Demonstration of implementation fidelity as related to student outcomes using this type of adapted delivery model is an important area of future research.

Limitations

There are several limitations to the current study. To begin, this investigation involves a relatively small sample size recruited from a limited number of schools within a single public-school district and regional geographic area. Additionally, the duration between pre- and post-intervention assessment was relatively short (i.e., a single academic semester). Additional research is needed with larger and more diverse samples to determine if intervention effects generalize to other settings and are maintained over an extended period of time. Regarding outcome measures used in the current study, the low internal consistency reliability estimate of the 3PI scale observed with the current study sample is notable. The reason for this is unclear as this measure has demonstrated adequate reliability when used in previous studies with adolescents and adults (Green et al., 2021b; Kelley et al., 2017b). Given the foundational nature of the three principles of mind, thought, and consciousness for the SPARK program, including a measure of knowledge of these principles in future studies of the effectiveness of this program is an important priority. Should the 3PI be considered for use in future studies, additional psychometric analysis with high school age youth is warranted. Finally, classes assigned to the comparison condition were not monitored with regard to the nature of the classrooms, teacher characteristics, class lessons related to social and emotional learning, etc. As a result, it is not possible to state with certainty what students in the comparison classes were exposed to during the study period. This is noted as a limitation of the current study and should be taken into consideration when interpreting study findings. Finally, future research should consider the use of more objective measures and the inclusion of multiple respondents to reduce the potential impact of self-report bias.

Conclusion

The objective of the SPARK Teen Mentoring intervention is to reduce risk factors, uncover innate resilience, promote natural emotional well-being, and facilitate school success. Overall, findings from this study indicate that the SPARK Teen Mentoring intervention is a promising intervention for high school students and reveal multiple important areas to consider in the pursuit of future program development and evaluation efforts. Study findings suggest that the SPARK program has the potential to provide youth with the social, emotional, and developmental tools needed to decrease risk factors (maladaptive thoughts and behaviors) and increase self-esteem, well-being, and academic success. Findings from this study are consistent with other research demonstrating the positive impact of SEL programs on social and emotional competencies as well as prosocial attitudes and behaviors (Dowling et al., 2019; Durlak et al., 2011; Taylor et al., 2017).

While findings from the current study are important in that they provide some initial evidence for program effectiveness, they are limited in terms of providing insights into specific areas to target for further program development and evaluation. A potentially useful line of future research includes the use of qualitative methods to explore school personnel’s perceptions of the SPARK program in terms of acceptability, feasibility, and expected benefit. Additionally, students’ perceptions of the program could be explored. For example, students could provide insights into the perceived appropriateness of program content and the usefulness of lessons. This line of research could prove especially useful in understanding specific aspects of the program that may need to be addressed to improve program implementation and effectiveness.

Another important area to consider in future program development and evaluation is the impact of the SPARK intervention on student mental health and academic outcomes. As a school-based SEL program, an important measure of success is the impact on academic functioning. Future research is needed to directly assess the impact of
the SPARK intervention on important academic outcomes such as achievement, attendance, and discipline. In the current climate, another high priority for schools is student mental health. Additional research that directly assesses the impact of the SPARK intervention on students’ overall mental health and well-being could prove quite beneficial for schools in their efforts to address the mental health needs of students.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

IRB Approval Research was approved by the participating school district’s Office of Assessment and Accountability; informed consent was obtained from all study participants.

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