THESIS

SUPPORTING YOUTH MENTAL HEALTH THROUGH LIFE COACHING AND MINDFULNESS

Submitted by

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ABSTRACT

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School-based prevention programs are a promising avenue to support youth mental health on a broad scale. Life coaching and mindfulness-based intervention are two specific approaches that may be effective in promoting resilience in the face of risk factors for adverse mental health outcomes and may be particularly well-suited for universal school-based delivery. Theory and limited empirical evidence suggest that these two types of interventions may share underlying mechanisms; however, there has not been any research directly investigating this overlap. This randomized controlled trial examined the effects of a school-based life coaching intervention with a mindfulness component on depression and anxiety symptoms as well as resilience, emotion regulation, self-efficacy, and mindfulness. Participants were *N*=230 early adolescents 9–13 years of age. Participants in the intervention condition received up to six weekly one-one-one coaching sessions, incorporated into the school day. All participants completed pre- and post-test self-report measures using scales validated for use with adolescents. Linear mixed effects models revealed no significant effect of the intervention on mental health outcomes, resilience, self-efficacy, or mindfulness. However, participants who received the intervention had a greater reduction in emotion regulation difficulties, relative to control, from pre- to post-intervention. Findings suggest that life coaching and mindfulness may be effectively integrated within a school-based intervention to reduce difficulties in emotion regulation, which have been shown in prior research to be precursors to mental health symptomology in adolescence.

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OVERVIEW

With a growing number of youth in the United States struggling with mental health challenges (Twenge et al., 2019) and increasing numbers of youth uninsured and unable to access adequate, affordable care through the traditional healthcare system (Alker & Corcoran, 2020), scalable, evidence-based approaches to promote youth mental health are critically needed. School-based prevention programs have been identified as a particularly promising avenue to support youth mental health on a broad scale. Resilience, or the ability of a system to adapt to adversity (Masten, 2014), is a helpful lens for approaching the prevention of risk factors and the promotion of protective factors in youth. Evidence-based life coaching (subsequently referred to as "life coaching") and mindfulness-based intervention (MBI) are two approaches that may be particularly effective in strengthening processes that contribute to resilience in the face of risk factors for adverse mental health outcomes. Further, there may be shared mechanisms underlying these two types of interventions, making them potentially well-suited to be used in tandem. An existing intervention, Building Resilience for Healthy kids, is a life-coaching program with a mindfulness component designed to increase resilience in middle school students. It has been tested in a pilot single-group study and showed promising effects, with significant and medium-sized effects on increasing resilience and self-efficacy from baseline to post-intervention (Lee et al., 2020; Sabin et al., 2021). This study utilizes data from a follow-up to the single-group study, in which Healthy Kids was tested in a randomized-controlled trial with an assessment-only control. We examined the effects of Healthy Kids on measures of mental health and resilience. We also examined the effects of the intervention on emotion regulation, self-efficacy, and

mindfulness, which theory and limited evidence suggest may be potential proximal processes contributing to the effects of both MBI and life coaching.

SCHOOL-BASED PREVENTION AND RESILIENCE

Nationally, the state of youth wellbeing is worsening on a variety of fronts. Mental health disorders are on the rise (SAMHSA, 2019). The percentage of adolescents aged 12 to 17 years who had a major depressive episode in the past year increased from 9.0 percent in 2004 to 15.7 in 2019 (SAMHSA, 2019). An estimated 1 in 3 adolescents aged 13 to 18 years meet the criteria for an anxiety disorder (Merikangas et al., 2010). In 2019, 1 in 16 youth reported making a suicide plan in the past year, up 44% since 2009 (Ivey-Stephenson et al., 2019). Data from the 2010 Global Burden of Disease study indicate that mental health and substance use disorders are the leading cause of disability among youth in high-income countries, including the United States (Erskine et al., 2015). Today's youth also report struggling with socio-emotional difficulties like loneliness, stress, and bullying (Anderson, 2018; Nicolaisen & Thorsen, 2016). Despite this suffering, only roughly 20% of children with mental, emotional, or behavioral health problems receive treatment (Perou, et al., 2013).

Though these are sobering statistics, we have reason to be positive about the potential for preventing mental health challenges in youth through school-based interventions. Schools afford the opportunity to reach youth in large numbers, and thus, particularly from a planning and implementation feasibility standpoint, schools are promising grounds for prevention (Kaftarian et al., 2014). Moreover, they are increasingly coming to be seen as responsible for supporting student health in addition to providing academic instruction. Furthermore, evidence suggests that

school-based programs can improve mental health outcomes. A systematic review of depression prevention programs in schools found effect sizes ranging from 0.21 (small) to 1.40 (large) for depression symptom reduction (Calear & Christensen, 2010). Another, more recent meta-analysis of randomized controlled trials of school-based programs to prevent depression and anxiety, relative to assessment only, waitlist control, or attentional control/alternate education comparators (e.g., bibliotherapy), found small intervention effects on decreasing both depression and anxiety outcomes that were retained at 12-month follow-up (Werner-Seidler et al., 2017). These findings provide support for school-based programs to prevent mental health challenges. However, dissemination of evidence-based programs remains challenging, often due to contextual factors that hinder effective implementation, such as lack of buy-in from critical stakeholders (Domitrovich et al., 2008). Continued research is needed on how to design and evaluate interventions that meet unique contextual needs but also have the potential to be brought to scale.

Universal prevention efforts, in particular, are well-suited for delivery in schools, and offer distinct advantages. Universal prevention refers to approaches that target all individuals in a given population and are generally aimed at both preventing health risks and promoting strengths and protective factors (Domitrovich et al. 2008). Historically, the literature has suggested that universal programs may not be as effective as selective (i.e., delivered to those at elevated risk for negative outcomes) or indicated interventions (i.e., those already showing signs of progressing toward negative outcomes), including for reducing symptoms of depression (Merry et al., 2012). However, results of a more recent meta-analysis suggest that universal prevention programs are not only efficacious for reducing depression and anxiety symptoms and disorders in children and adolescents compared to assessment-only controls, but their effects also may be

more sustained than both selective and indicated interventions (Stockings et al., 2016). Possible alternative metrics for assessing the impact of universal prevention programs such as relative reduction of risk and number needed to treat provide further evidence for the value of universal prevention (Greenberg & Abenavoli, 2017). Greenberg and Abenavoli (2017) also point to the unique potential of universal prevention for promoting resilience across varied contexts, suggesting that programs that support the development of resilience are a priority for further research. For example, universal prevention programs are frequently less stigmatizing than interventions that target particular groups (Greenberg & Abenavoli, 2017). In the area of mental health prevention and promotion, the potential for avoiding possible stigmatizing effects is particularly relevant. Although attitudes have improved in the last decade toward mental health issues and those who struggle with them, there is still considerable stigma attached to mental health disorders, and stigma unfortunately is cited as a possible reason for failing to seek treatment (American Psychiatric Association, 2020). Therefore, aside from the potential for direct positive effects on mental health outcomes, the possible destigmatizing effects of delivering universal mental health prevention programs in schools make these types of approaches deserving of further research.

The Role of Resilience

In recent decades, resilience has garnered importance as a contributor to health and wellbeing in both clinical and community youth populations. Resilience is the capacity to adapt successfully to changes, threats, or hardship (American Psychological Association, 2014). Another helpful conceptualization, which acknowledges the role of both the individual and the context, is that resilience is "a cluster of positive resources upon which youth can draw as they strive to achieve positive outcomes" (Sanders et al., 2015, p. 42).

Importantly, resilience transcends any specific risk factor or psychopathology and instead is concerned with helping individuals develop and strengthen their capacity to overcome difficulty, however it may present in their lives. This framework may be particularly relevant in adolescence, which is a time of rapid and pronounced changes in biology and social expectations (Eccles, Templeton, Barber & Stone, 2003). These changes, though normative, can nonetheless often be stressful and sometimes challenging. Evidence is growing for the preventive potential of resilience-focused interventions and their effectiveness in school settings. A 2017 meta-analysis of 57 randomized controlled trials of universal, school-based resilience-focused programs found significant effects on reduction of depression and anxiety symptoms at post-test, relative to control. These effects were retained at short-term follow up (<1 year). Effects for depression and anxiety symptoms were not retained at long-term follow-up (>1 year), but a significant effect was observed for overall internalizing problems (referring to depression/anxiety combined; Dray et al., 2017). One program that has been studied extensively, and highlights both the promise of resilience interventions and the need for further research, is the Penn Resiliency Program (Gillham et al., 2007). This program has been evaluated in multiple studies, and in several evaluations has been shown to reduce depressive and anxiety symptoms at post-intervention and follow-up of up to one year, relative to assessment-only controls (Brunwasser, Gillham & Kim, 2009; Cutili et al., 2013; Gillham et al., 2007). However, results have been inconsistent. In fact, the largest study using a multi-school randomized controlled effectiveness trial design showed no effects for the full sample and inconsistent effects across schools (Gillham et al., 2007). These results point to the need for more work that empirically tests the active mechanisms that may underlie the effectiveness of interventions designed to promote resilience.

Across various syntheses of the extant literature on resilience, there is considerable overlap regarding potential mechanisms. In a review covering over 40 years of research, Zulkoski and Bullock (2012) identify various protective factors including individual characteristics such as autonomy, optimism, and social orientation; family conditions such as family cohesion and adequate income; and community-level supports such as safety in neighborhoods and recreational facilities and programs. After more than two decades of testing, researchers involved with the Penn Resiliency Program have identified a set of component abilities believed to increase overall resilience to adversity. These abilities are emotion regulation, impulse control, causal analysis, realistic optimism, self-efficacy, empathy, and reaching out (Reivich et al., 2013). Harvard's Center on the Developing Child has identified its own set of four factors, including individual and contextual aspects, that serve to "counterbalance" risk and increase the likelihood of developing resilience: at least one supportive adult-child relationship, a sense of self-efficacy and perceived control, strong executive function and self-regulation skills, and a context in which faith, hope, and cultural traditions are affirmed (Center on the Developing Child, 2015). These syntheses are helpful in operationalizing resilience and suggest that interventions designed to teach, strengthen, and increase access to these abilities/factors may help youth build resilience.

SELF-REGULATION AND SELF-EFFICACY IN ADOLESCENCE

In addition to featuring prominently in the resilience literature, self-regulation and self-efficacy stand out across multiple literatures in developmental science as important to healthy development and especially important during adolescence. Self-regulation, broadly, is the ability to manage cognition and emotion for the purpose of goal-directed action (Murray et al., 2015).

Emotion regulation is a particularly important domain of self-regulatory abilities responsible for managing feelings in service of adaptive functioning. Self-efficacy refers to beliefs about one's ability to take effective action to produce desired outcomes (Bandura, 1977). Self-regulatory processes (Riedeger & Klipker, 2014) and self-efficacy beliefs (Pajares, 2006) are more sensitive during adolescence, making this a time when programs targeting these processes may be both particularly important and especially promising. In particular, increases in negative emotional reactivity during adolescence contribute to increased vulnerability to developing anxiety and depression symptoms, and regulatory deficits may hinder youth's ability to meet the new socio-emotional expectations of this developmental stage (Murray et al., 2015). With expanded opportunities for exploring interests and developing skills, and their accompanying implications for identity development, the need for self-efficacy also becomes more salient during adolescence. Intervening on these psychological, emotional, and cognitive constructs during this developmental period may also be important because research suggests that mental health in adolescence can influence mental health during later life phases (Park, Scott, Adams, Brindis, & Irwin, 2014).

EVIDENCE-BASED LIFE COACHING

Life coaching may be one effective means of targeting resilience factors, specifically self-efficacy and self-regulation, and supporting mental health in school-based settings. Broadly, life coaching can be defined as a collaborative process between coach and coachee focused on enhancing the coachee's life experience, goal attainment, and wellbeing (Grant, Green & Rynsaardt, 2007). Life coaching that is evidence-based is grounded in the theoretical and empirical knowledge base of, primarily, the field of coaching psychology (Green & Norrish,

2013). Life coaching is well-aligned with a universal approach to mental health prevention in its emphasis on empowering individuals to both harness their own inherent individual strengths and effectively utilize external resources. Furthermore, the life coaching model is rooted in the educational model rather than the medical model (Ferrari, 2017), suggesting that it may be a natural fit for school settings. However, research on life coaching in school contexts for the promotion of mental health and wellbeing in youth is extremely limited.

Though there is very little in the existing literature on the effectiveness of life coaching for improving adolescent mental health outcomes, evidence from the few studies of youth that exist as well as studies of life coaching in adults suggests that life coaching has the potential to have a positive effect on resilience and mental health symptomology. For example, a workplace life coaching program utilizing a cognitive-behavioral therapy approach delivered to a sample of healthy adults showed that those who were randomly assigned to receive life coaching reported greater increases in resilience and greater reductions in depression symptoms compared to a waitlist control (Grant et al., 2009). In another randomized controlled trial of a life coaching intervention delivered to adult teachers, participants reported significant reductions in stress and significant increases in resilience compared to a waitlist control (Grant, Green & Rynsaardt, 2010). Of particular interest is a randomized controlled pilot trial of 56 high school females which found that a 10-session life coaching program delivered by teachers to individual students over an academic year had a significant positive effect on increasing "hardiness" (i.e., commitment to goals, sense of control, and sense of change as a challenge) from baseline to post-intervention, as compared to a waitlist control (Green, Grant & Rynsaardt, 2007). The same study found significant increases in hope and decreases in depression symptoms within the intervention group, compared to no changes in hope or depression for those in the control group.

The sample size was small and student volunteers reported initially non-elevated depression or anxiety scores; thus, the results may not generalize to students with elevated depression or anxiety. Finally, a small within-subjects/single-arm non-randomized pilot study of a school-based life coaching program for 10- and 11-year-olds observed a significant, large positive effect on self-reported hope and a significant, medium positive effect on school engagement from baseline to post-intervention (Madden, Green, & Grant, 2020). This program focused on increasing self-awareness, identifying strengths, setting goals, and building self-regulatory skills. Though limited, evidence suggests that life coaching may be an appropriate modality for promoting resilience and reducing mental health symptoms, but more robust testing in youth and deeper inquiry into potential mechanisms are needed.

Life Coaching Mechanisms: Theory and Evidence

Existing research exploring mechanisms of life coaching suggests that self-efficacy and self-regulation potentially play a role in its beneficial effects. A 2017 meta-analysis of 117 mixed-methods studies of workplace-based life coaching for adults identified coachee self-efficacy as a key psychological process variable, along with coachee trust of the coach (Bozer & Jones, 2018). In an even more recent review of the literature, self-efficacy again emerged as a key process, particularly in predicting coachee perceptions of coaching effectiveness (Passmore & Lai, 2020). Additionally, the authors identified quality and strength of the coaching relationship and the coachee's readiness to change as important indicators. Self-regulation has also been cited as a key mechanism of life coaching (Spence & Oades, 2011). From a theoretical standpoint, there is reason to expect that life coaching may support resilience given the overlap between the factors that optimize resilience and the mechanisms of life coaching, specifically self-efficacy, self-regulation, and positive relationships. With a growing need for evidence-based

programs to support youth resilience, there is a compelling case for not only empirically testing the theoretical rationale for resilience-focused life coaching, but also exploring how the mechanisms of coaching might align with those of other promising interventions.

MINDFULNESS-BASED INTERVENTION (MBI)

MBI is another encouraging avenue to support youth mental health. Mindfulness is characterized by an attention to moment-to-moment experience with an attitude of nonjudgment (Kabat-Zinn & Hanh, 2009). MBI typically involves teaching participants about the basic principles of mindfulness and training them in one or more mindfulness practices (e.g., breathing awareness, focused meditations, body scan, and/or self-compassion). Though relatively nascent, there has been research linking MBI to a variety of health outcomes in youth. A 2015 meta-analysis found that MBI programs delivered to youth, most of which were conducted in schools with non-clinical populations, had small to medium positive effects overall on a range of outcomes (Zoogman, Goldberg, Hoyt, & Miller, 2015). On average, participants in MBI programs showed greater post-intervention improvements in general functioning (e.g., social skills), psychological symptoms (e.g., depression), and mindfulness, than those in control conditions. Larger positive effects were found on psychological outcomes than other domains. Another meta-analysis, exclusively focused on school-based MBI, similarly found small to medium effects on measures of cognitive performance, emotional problems, stress and coping, and resilience (Zenner, Herrnleben-Kurz, & Walach, 2014). Nineteen of the 24 studies included in this meta-analysis had used a randomized controlled design and five studies collected follow-up data beyond post-intervention. Honing in on universal school-based MBI specifically, such programs have demonstrated acute, post-intervention effects on mental health outcomes across

age groups. For example, in a single-arm, within-subjects pilot study of a 10-week MBI program, significant decreases in depression symptoms were observed in middle schoolers (Joyce et al., 2010). In a feasibility study, high schoolers receiving a 9-week MBI showed fewer depression symptoms at post-intervention and 3-month follow-up, relative to controls (Kuyken et al., 2013). This study was not randomized; to be selected for the intervention condition, schools needed to have a trained MBI teacher, and a matched control school was selected for each intervention school. Within-subjects, participants who reported more frequent mindfulness practice reported fewer depression symptoms at post-intervention and less stress at 3-month follow-up (Kuyken et al., 2013). In another study, middle schoolers randomly assigned to receive an MBI program had greater decreases in anxiety symptoms and rumination relative to an alternate education control condition (Sibinga et al., 2016).

In addition to depression and anxiety, suicide is another, associated major mental health concern during adolescence. As of 2019, it is the second leading cause of death among 12-18-year-olds (CDC, 2019). Very few studies have tested the effects of MBI on suicidal ideation, referring to thoughts about death or suicide, in youth. Yet notably, one pilot study of a universal school-based MBI found that 11- and 12-year-olds randomly assigned to an MBI condition reported less suicidal ideation and thoughts of self-harm than students in an alternate education control group (Britton et al., 2014). These results provide compelling evidence for the preventive potential of MBI for some of the most common mental health symptoms affecting youth, and collectively, extant results highlight the importance of deepening our understanding of mechanisms for the purpose of intervention development and refinement. Greater clarity around the pathways by which MBI is associated with positive health outcomes is essential for

leveraging school-based delivery and developing programs that can be implemented across complex and diverse educational settings.

MBI Mechanisms: Theory and Evidence

There is still considerable debate about the processes by which mindfulness influences these outcomes, particularly in youth, but emotion regulation and attentional control, another domain of self-regulation, are among those most commonly proposed (Zoogman et al., 2015). In teaching youth about mindfulness, an important concept is the "pause." This term is a way to make concrete one of the fundamental benefits of mindfulness: an increased awareness of and sense of separation from thoughts, feelings, and habitual actions, which, in theory, enables a person to choose rather than react to what is going on within or around them. This increased awareness is thought to contribute to improved emotion regulation abilities, particularly in youth (Sapthiang et al., 2019). Research in adults suggests that even a brief mindful breathing exercise can have a significant beneficial effect on emotion regulation. For instance, in an experimental study in which adults were presented with negative stimuli, those who engaged in mindful breathing exhibited less emotional reactivity or volatility, relative to participants who had experienced a 15-minute induction of worrying (Arch & Craske, 2006). In school-based studies of MBI programs, increased attentional control and emotion regulation have been observed in students receiving MBI, relative to waitlist or assessment-only controls (Mendelson et al., 2010; Napoli et al., 2005; Sibinga et al., 2014). These changes in regulatory abilities may occur because many of the mindfulness practices taught in MBI programs involve monitoring of attention and repeatedly bringing it back to a chosen object (e.g., breath, body sensation), thus offering students the opportunity to strengthen this mental skill. Neuroimaging research supports

this potential pathway, with evidence suggesting mindfulness training increases activity in regions of the brain associated with attention (Tang, Holzel, & Posner, 2015).

In addition to self-regulatory processes of emotion regulation and attentional control, MBI may also, like life coaching, affect health outcomes through influencing self-efficacy. One theoretical perspective that can help explain the relationship between mindfulness and both self-efficacy and self-regulation is self-determination theory (SDT), a prominent theory of motivation and behavior (Deci & Ryan, 1985, 2012). According to this theoretical perspective, mindfulness impacts behavior and attitudes through fulfilling or increasing access to basic psychological needs, including the needs for competence and autonomy. Competence relates to the experience of mastery or capably engaging in activities and using skills, and is closely related to self-efficacy (Rodgers et al., 2014). Autonomy is the experience of one's actions as self-endorsed. According to SDT, self-regulation takes various forms, on a spectrum from controlled to autonomous. Mindfulness supports more autonomous forms of self-regulation (Schulz & Ryan, 2015). From an SDT lens, by becoming more aware of engrained maladaptive patterns, mindfulness may help individuals to feel more capable of choosing alternative behaviors (Gilbert & Waltz, 2010), thus facilitating the fulfillment of the needs for competence and autonomy. Schulz and Ryan (2015) suggest that mindfulness may decrease the likelihood of automatic maladaptive behaviors which, in turn, may increase individuals' belief in their ability to choose and persist in more productive behaviors. SDT provides a robust theoretical basis for the exploration of self-efficacy and self-regulatory processes as potential mechanisms of mindfulness practice on health outcomes, thus highlighting a key connection to life coaching and resilience development (Figure 1).

To date, theory outweighs empirical support for the association of mindfulness and self-efficacy, though the existing evidence provides preliminary support for the idea that MBI programs might support resilience through self-efficacy. Of particular relevance and interest to the association between mindfulness and resilience is a small body of literature on the association between mindfulness and coping self-efficacy. Coping self-efficacy refers specifically to the belief that one can deal effectively with adversity. One study of undergraduate students found that dispositional mindfulness was associated with greater coping self-efficacy, and that coping self-efficacy accounted for some of the variance in the relationship between mindfulness and emotion regulation (Luberto et al., 2014). Another study of undergraduate students examined mindfulness, coping self-efficacy, and non-suicidal self-harm. Mindfulness was significantly positively correlated with coping self-efficacy, and coping self-efficacy fully mediated the relationship between mindfulness and non-suicidal self-harm (Heath, Joly & Carsley, 2016). Theories linking mindfulness and self-efficacy require further empirical testing, especially in adolescents; however, given the well-acknowledged importance of self-efficacy to developmental outcomes, increasing our understanding of this association is an important pursuit.

FUTURE DIRECTIONS FOR EXPLORING SHARED PROCESSES

Taken together, a review of the separate life coaching and MBI literatures suggests that self-regulation and self-efficacy – two key factors for the development of resilience – may be common processes by which these two modalities contribute to positive mental health and wellbeing. Indeed, a combination of life coaching support and training in mindfulness could be anticipated to mutually reinforce the development of these capacities in youth. Moreover, in

combination, life coaching and mindfulness may offer the possibility to more comprehensively target the other contributing factors of resilience. For example, research on the interpersonal effects of mindfulness (e.g., sense of support, empathy) is still in its very early stages, and life coaching may simply be better suited to facilitate important factors that promote resilience, like fostering supportive adult-child relationships or the skill of reaching out to others for help. Likewise, mindfulness may be able to provide alternate, perhaps more intuitive and embodied pathways for youth to learn about and practice the important factors of causal analysis and realistic optimism (Figure 2).

To my knowledge, there have been only two published studies integrating mindfulness and life coaching. In an exploratory study of healthy adults, participants were randomly assigned to one of three conditions to compare a combined mindfulness-life coaching intervention to an alternate education control and examine the influence of order (e.g., mindfulness training first, then coaching, or coaching, then mindfulness training). Participants in the mindfulness-first condition experienced significant within-condition decreases in anxiety and stress while participants in the coaching-first condition experienced significant within-condition decreases in stress only. Participants who received the general health education program did not demonstrate significant within-condition changes in mental health outcomes (Spence et al., 2008). These findings suggest further research on interventions that combine mindfulness and life coaching is merited.

The second is an ongoing research program that provided data for the present study. Specifically, the overall goal of this work is to test the effects of a school-based life coaching intervention called Building Resilience for Healthy Kids (Healthy Kids) on resilience and mental health in middle school students. Students receive up to six 1-on-1 life coaching sessions in

which they set and track progress on resilience-focused goals and learn about coping strategies. Each session begins with a brief mindfulness activity. In an initial, pilot single-group study, the program showed promising effects, with significant and medium-sized effects on increasing resilience and self-efficacy from baseline to post-intervention (Lee et al., 2020; Sabin et al., 2021). As a follow-up to the single-group study, Healthy Kids was then tested in a randomized-controlled trial with an assessment-only control, the results of which are reported here.

The Present Study

The present study tested to what extent Healthy Kids, a school-based life coaching intervention with a mindfulness component, was effective for decreasing mental health concerns and increasing the theoretical active therapeutic mechanisms of resilience, emotion regulation, self-efficacy, and mindfulness. Consistent with evidence supporting the associations of life coaching and MBI programs, independently, with positive mental and emotional health outcomes in youth (Green, Grant & Rynsaardt, 2007; Joyce et al., 2010; Kuyken et al., 2013), I hypothesized that relative to an assessment-only control group, students who received a school-based life coaching intervention with a mindfulness component would demonstrate significant decreases in mental health symptomology (e.g., depression symptoms, anxiety symptoms). The second aim was to examine the effect of the intervention on mechanisms theoretically associated with life coaching (Bozer & Jones, 2018; Spence & Oades, 2011) and/or MBI (Luberto et al., 2014; Mendelson et al., 2010; Napoli et al., 2005; Sibinga et al., 2014). These include resilience, emotion regulation, self-efficacy, and dispositional mindfulness. I expected that the intervention would be associated with increases in these four outcomes, relative to control.

METHOD

Participants

The total sample included 261 adolescents (9-13 years old, $Mean_{age}$=11.6 years). Demographic information for the total sample is provided in Table 1. Demographic information for three participants, all of whom were in the treatment condition, was unavailable, so those participants were removed. Twenty-eight participants (18 control, 10 treatment) completed no survey measures, and thus, also were removed from the sample. The final analytic sample consisted of 230 adolescents.

Table 1. Demographic Information for Total Sample

	Control (*n*=88)		Treatment (*n*=173)	
	n	%	*n*	%
Gender				
Female	40	45.5	73	42.2
Male	48	54.5	97	56.1
Age (Mean/SD)	11.6	0.52	11.6	0.53
Race				
Hispanic	11	12.5	33	19.1
Native American	1	1.1	1	0.6
Asian	0	0	2	1.2
Black/African American	6	6.8	8	4.6
Pacific Islander	0	0	1	0.6
White	61	69.3	111	64.2
2 or more races	9	10.2	14	8.1
Parent in military	24	27.3	64	37.0

Procedures

All 6th grade children enrolled in a participating school within a school district in the western United States were invited to participate. The study utilized an "opt-out" recruitment approach, meaning that parents of all eligible students were notified and given the option to

provide their dissent to participate. Youth could also opt-out of assenting to participate for any reason.

As the target school separated their students into "teams" by grade, with the 6th grade consisting of three "teams," students were randomly assigned at the team level with a 2:1 ratio of teams assigned to intervention or assessment-only control. All students completed online questionnaires at baseline and post-intervention. The intervention was delivered and data were collected between April and June 2021. During this time the school experienced periodic school closures and shifts to remote and/or hybrid learning due to COVID-19.

Students in the Healthy Kids intervention condition received six weekly sessions of 1:1 life coaching. Coaches were hired through a local area hospital and had a relevant credential (e.g., Master's degree in health promotion, National Commission for Certifying Agencies coaching certification, International Coaching Federation coaching certification), completed background checks, and completed 32 hours of training in the Healthy Kids intervention prior to intervention delivery. Coaches also participated in weekly meetings to discuss successes and challenges. Participants worked with the same coach for all sessions, and sessions occurred on the same day and time each week throughout the course of the intervention to promote a sense of consistency and stability. Students and coaches met for 30 minutes each week in a room (in-person or virtually) designated by the school.

The initial session involved rapport-building, introduction of the topic of resilience, and expectation-setting for the remaining weeks. Remaining sessions began with a brief, approximately 2-minute mindfulness exercise (e.g., deep breathing, progressive relaxation, body scan, or guided visualization), followed by discussion of strategies to improve resilience. Together, the coach and participant developed a long-term (4-month) goal, and weekly action

steps to progress toward that goal. Each week, the coach and student discussed and recorded progress on the action steps. During the final session, the coach and student summarized what had been learned and accomplished and developed a plan for the student to practice resilience on their own moving forward. Students received a certificate of completion at the end of the program, but otherwise were not compensated or incentivized for participation.

Measures

All measures used in the study relied on participant self-report. Homerooms teachers administered surveys, which students completed on computers. All variables were assessed at baseline (i.e., prior to the start of the program) and post-intervention follow-up (i.e., immediately after the conclusion of the program).

Mental health: Mental health was operationalized as depression symptoms and anxiety symptoms. These symptoms were assessed using the PROMIS Emotional Distress Depression and Anxiety Symptoms short forms (Irwin et al., 2010). Each 8-item form asked participants to indicate on a 5-point Likert scale (1 = '*never*', 5 = '*almost always'*) how often statements have applied to them over the past 7-day period. Higher scores are indicative of more depression and anxiety symptoms. To report on baseline levels of depression and anxiety, the items were summed for a score ranging from 8 to 40, then translated to *T* scores and classified as follows: less than 55 is "typical/normative," 55–60 is "slightly elevated" 60–70 is "elevated," and greater than 70 is "very elevated" (Irwin et al., 2010). For outcome analyses, an average was taken from responses to the 8 items. The measure has demonstrated satisfactory goodness of fit and adequate internal reliability ($\alpha = 0.85$) in children and adolescents aged 8–17 years (Irwin et al., 2010).

Resilience: Resilience was assessed using the 17-item Child and Youth Resilience Measure (CYRM, Ungar & Liebenberg, 2011), a measure of socio-ecological resilience that has

been validated in youth (Daigneault et al., 2011; Liebenberg, Ungar & Van de Vijver, 2011). The measure captures multiple dimensions of resilience, including individual qualities (e.g., "Getting an education is important to me"), family/caregiver support (e.g., "I feel safe when I am with my family/caregiver"), peer relationships ("People like to spend time with me"), and community resources ("I have opportunities to develop skills that will be useful later in life."). On a 5-point Likert scale (1 = '*not at all'*, 5 = '*a lot'*), youth rate to what extent various statements apply to them. The mean score of all items is calculated to derive an average resilience score across the various dimensions.

Emotion regulation: Emotion regulation was assessed using the 18-item Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Gratz and Roemer 2004). Respondents indicated on scale of '*almost never'* to '*almost always*,*'* how often certain statements (e.g., "When I'm upset, it takes me a long time to feel better," "I'm confused about how I feel') apply to them. Higher scores suggest greater problems with emotion regulation, and averages were calculated to create an overall score. The DERS-SF has demonstrated acceptable to excellent internal consistency and high convergent validity when used with adolescent samples (Neumann et al., 2010; Weinberg and Klonsky, 2009).

Self-efficacy: Self-efficacy was measured using the 24-item Self-Efficacy Questionnaire for Children (SEQ-C, Suldo & Shaffer, 2007). Participants rate their perceived ability in handling various situations on a 5-point Likert scale (1 = '*not at all'*, 5 = '*very well'*). The measure captures self-efficacy as it may manifest in several domains, including interpersonal relationships (e.g., "How well can you have a chat with an unfamiliar person?"), school (e.g., "How well do you succeed in understanding all subjects in school?"), and emotion regulation

(e.g., “How well can you control your feelings?”). An average score is calculated for an overall self-efficacy score, with higher scores indicating higher (more positive) levels of self-efficacy.

Mindfulness: Youth reported on mindfulness using the 10-item Child and Adolescent Mindfulness Measure (CAMM, Greco, Baer & Smith, 2011). Evidence suggests that the CAMM is developmentally appropriate for use with youth 9 years and older and scores correlate strongly with measures of acceptance, quality of life, and self-regulation (de Bruin, Zijlstra & Bogels, 2014; Greco, Baer & Smith, 2011). It has also shown good internal consistency (de Bruin, Zijlstra & Bogels, 2014; Kuby, McLean & Allen, 2015) when used in this age group. Respondents rated statements (e.g., “At school, I walk from class to class without noticing what I’m doing,” “I push away thoughts that I don’t like”) on a 5-point Likert scale (0 = ‘*never true’*, 4 = ‘*always true’*). All 10 items are negatively worded and reverse-scored, so that higher scores indicate higher or more positive levels of mindfulness.

Demographic variables: Administrative data provided by the school included student age, sex, race/ethnicity and military status of the family.

Analysis

Data cleaning procedures and descriptive analyses were performed with the Statistical Software Package for the Social Sciences (SPSS, version 26.0, IBM Corp., 2019); data imputation and outcome analyses were performed in R (R Core Team, 2020). We used linear mixed-effects models to test for group differences (assessment-only control vs. Healthy Kids treatment) in pre-post changes for each outcome measure. The models therefore included group (control=0, treatment=1), time (pre=0, post=1), and the interaction of group with time as fixed effects, with random intercepts specified for individual study participants (pre/post) and with an unstructured covariance matrix. In other words, the intercept term corresponds to the control

group at pre-intervention; group = treatment corresponds to the effect of being in the treatment group, conditional on time = 0 (pre-intervention); time corresponds to the effect at post, conditional on group = 0 (control); and the interaction of group by time corresponds to the effect of treatment at post-intervention.

Thus, for adverse outcomes (depression, anxiety, emotion regulation difficulties), we expected to observe a significant negative interaction effect, which would indicate that individuals in the Healthy Kids treatment group, on average, showed more pre-to-post reduction (or less pre-to-post increase) relative to the assessment-only control group. Correspondingly, for positive outcomes (resilience, self-efficacy, mindfulness), we expected to observe a significant positive interaction term, which would indicate that the treatment group improved more (or declined less) in these outcomes over time, relative to the control group.

The raw data showed evidence of high rates of attrition (See Table 2). Attrition was 44%–56% in the treatment condition with variability by measure, and 53%–80% in the control condition, with variability by measure. The National Institutes of Health and others have recommended multiple imputation with auxiliary variables (i.e., variables that can account for missingness but that are not, themselves, a substantive focus of the research) as a current "best practice" for addressing attrition-related missingness in clinical trials (Bell et al., 2014; National Research Council, 2010).

Following these guidelines, we imputed 20 complete data sets. The imputation model included all outcome variables, treatment condition, and measurement occasion (for testing differences in the controlled experimental outcomes), as well as participant age, sex, race, and military status of the participant's family as auxiliary variables. Because analyses were conducted within a multilevel framework, we imputed the complete data sets accounting for

multilevel (nested) structure using the R package jomo (Quartagno et al., 2019). Analyses for each of the outcomes were applied to all 20 imputed data sets using the R package lme4 (Bates et al., 2010) with maximum likelihood estimation. Results (parameter estimates) were pooled across analyses of the imputed data sets using Rubin's rules (Van Buuren, 2018). As we tested six outcomes, we used Bonferroni correction to adjust the alpha significance criterion (i.e., alpha = .05/6 = .008).

RESULTS

The treatment and control groups did not differ significantly on any demographic characteristics. Baseline self-efficacy was significantly higher in the assessment-only control condition (M= 3.47, SD=.67) than Healthy Kids treatment (M=3.24, SD=.76), $t(203)=2.10$, $p<.05$; otherwise, the groups did not differ at baseline (Table 2). On average, participants received 3.81 out of 6 coaching sessions (SD=2.08, Range=0–6), with 46% receiving at least 80% (5 out of 6 sessions) of the intervention. Due to COVID-19, on average, students received 27% of sessions virtually, however modality differed substantially across students. For example, 49.7% of students received all sessions in person, and 14.5% students received all sessions virtually, with the remainder receiving a mix of in-person and virtual sessions. Of the possible 6 opportunities for mindfulness practice during the sessions, participants completed an average of 2.08 practices (SD=1.68, Range=0–5). Bivariate correlations were calculated to describe associations among key study variables at baseline (Table 3).

Table 2. Key Variables Across Condition and Time (Analytic Sample)

	Control (n=70)								Treatment (n=160)							
	Time 1				**Time 2**				**Time 1**				**Time 2**			
	N	*M*	*SD*	*Range*	*N*	*M*	*SD*	*Range*	*N*	*M*	*SD*	*Range*	*N*	*M*	*SD*	*Range*
Depression	46	2.26	1.18	1.00-5.00	23	2.97	1.13	1.00-5.00	151	2.31	1.07	1.00-5.00	80	2.23	0.92	1.00-4.00
Anxiety	46	2.46	1.11	1.00-4.88	23	2.72	0.86	1.25-4.25	151	2.71	0.91	1.00-5.00	80	4.22	0.57	2.59-5.00
Resilience	67	4.05	0.63	2.57-5.00	26	3.99	0.63	2.59-5.00	161	4.05	0.63	2.57- 5.00	92	4.22	0.57	2.59-5.00
ER[1]	41	2.47	0.80	1.28-4.61	23	3.77	1.02	2.17-5.56	147	2.59	1.07	1.00-5.00	75	2.40	0.82	1.17-4.44
Self-efficacy	53	3.47	0.67	1.71-4.71	24	3.25	0.76	1.71-4.79	155	3.24	0.76	1.42-5.00	91	3.63	0.71	1.91-5.00
Mindfulness	40	2.28	0.79	0.20-3.70	14	2.07	0.70	0.50-3.20	146	2.19	0.82	0.00-4.00	74	2.29	0.88	.10-4.00

[1]Emotion Regulation

Table 3. Baseline Correlations Among Key Variables

	Dep.	Anx.	Resil.	ER	SE	Mind.
Depression	-					
Anxiety	.70**	-				
Resilience	-.37**	-.34**	-			
ER[1]	.70**	.64**	-.46**	-		
Self-efficacy	-.48**	-.44**	.65**	-.55**	-	
Mindfulness	-.64**	-.57**	.42**	-.77**	.44**	-

[1]Emotion Regulation **p<0.01

Changes in Primary Outcomes of Depression and Anxiety

Most participants reported "typical/normative" levels of depression symptoms (M_T=54.05, SD=12.40, 35.2–82.3), with 34% reporting elevated depression. Most participants reported "mild" levels of anxiety symptoms (M_T=57.11, SD=10.87, 33.5–83.3), with 40% reporting elevated anxiety. Table 4 shows estimates for the efficacy of the Healthy Kids intervention compared to the assessment-only control group for the primary and secondary outcome variables. No significant between-group differences were found with respect to pre-to-post changes in depression symptoms (p>.10) or anxiety symptoms (p>.10).

Changes in Therapeutic Mechanisms of Resilience, Emotion Regulation, Self-efficacy, and Mindfulness

No significant between-group differences were found with respect to pre-to-post changes in resilience (p>.25). In contrast, participants who were randomized to the Healthy Kids intervention had a greater reduction in emotion regulation difficulties, relative to those who were randomized to the assessment-only control condition ($B_{treatiment*time}$=-.61, SE=.16, p=.0002). The size of this effect (calculated as $2t/\sqrt{df}$) was large, d=-0.84. Participants in the assessment-only control condition showed increased difficulties in emotion regulation from pre-intervention to post-intervention (M_{pre}=2.47, SD_{pre}=0.80; M_{post}=3.77, SD_{post}=1.02), while participants in the Healthy Kids intervention condition had a reduction in emotion regulation difficulties (M_{pre}=2.59, SD_{pre}=1.07; M_{post}=2.40, SD_{post}=0.82). There were no significant between-group differences in pre-to-post changes in self-efficacy (p>.10) or mindfulness (p>.25).

Table 4. Multilevel Model Analysis of Efficacy of Healthy Kids Intervention Compared to Assessment-only Control

Outcome	Fixed Effects				Random Effects	
	Intercept	Treatment	Time	Treatment*Time	Intercept	Residual
Depression	2.23 (0.25)	0.12 (0.28)	0.18 (0.16)	-0.23 (0.17)	0.67	0.45
Anxiety	2.69 (0.24)	0.39 (0.28)	-0.11 (0.16)	-0.27 (0.18)	0.44	0.50
Resilience	4.00 (0.13)	-0.04 (0.15)	0.04 (0.08)	0.07 (0.09)	0.19	0.15
ER*	2.14 (0.22)	0.51 (0.25)	0.52 (0.14)	-0.61 (0.16)*	0.45	0.32
Self-efficacy	3.31 (0.19)	-0.34 (0.21)	0.07 (0.13)	0.21 (0.14)	0.38	0.18
Mindfulness	2.28 (0.21)	-0.17 (0.25)	-0.08 (0.13)	0.16 (0.17)	0.38	0.32

Note: *ER=Emotion Regulation Standard Errors are shown in parentheses. * Indicates a significant effect ($p < 0.05/3$)

DISCUSSION

The goal of the present study was to examine the effects of a school-based life coaching intervention with a mindfulness component on depression and anxiety symptoms, resilience, emotion regulation, self-efficacy, and mindfulness in 6th graders. We expected the intervention to be associated with decreases in mental health symptomology and emotion regulation difficulties and increases in all other outcomes relative to an assessment-only control.

Results showed that youth who were randomized to the life coaching intervention had decreases in difficulties in emotion regulation at post-intervention, relative to youth who were randomized to the assessment-only control group. We did not observe significant intervention effects on any of the other outcome variables, including those that we expected might be additional, theoretically-informed process variables (resilience, self-efficacy, mindfulness) and, as such, anticipated to change over a relatively short-term assessment period. There were also no significant effects for depression or anxiety symptoms. These null findings are generally inconsistent with previous results in an uncontrolled test of the intervention. Specifically, in a

single-arm pilot study, youth who participated in this life coaching intervention had significant increases in resilience and self-efficacy and, for youth with initially elevated negative affectivity, significant reductions in anxiety symptoms (Lee et al., 2020; Sabin et al., 2021).

Depression and Anxiety Symptoms

Although, contrary to hypotheses, we did not observe significant intervention effects on either of the mental health outcomes we measured, it is possible that the universal nature of this intervention played a role in these findings. Some prior work comparing universal with selective and indicated interventions suggests that universal interventions may not be as effective for reducing depression symptoms (Merry et al., 2012). It is possible that effects on depression and anxiety symptoms only may be observed in adolescents already exhibiting symptoms. Indeed, in a single arm, non-randomized pilot test of this intervention, only those youth with elevated negative affectivity – operationalized as mild-to-severe symptoms of either depression and/or anxiety symptoms – showed improvements in anxiety symptoms (Sabin et al., 2021). Although beyond the scope of the current thesis project, future analyses of these data should examine elevated baseline depression and anxiety symptoms as a moderator of intervention effects. Another consideration is that pre-intervention and post-intervention data were collected 6 weeks apart, which may not be sufficiently long enough to see changes in mental health symptoms. Particularly given the average age in this sample (11.6 years), examining longer-term effects is essential. Though mental health challenges can begin to present during the age range represented in this sample, average age of onset is slightly older, at 13 years, with prevalence increasing drastically in mid-adolescence, from 4.5% at age 13 to 8.7% at age 16 (Avenevoli et al., 2015).

Future tests of this intervention should include longer term follow-up. Likewise, it may also be important to consider alternative metrics aside from effect size in assessing universal

programs such as this one. Though helpful, effect size can underestimate the impact of universal interventions, relative to selective or indicated interventions, because it is does not account for lower prevalence rates of the outcome in the overall population (Greenberg & Abenavoli, 2017). Metrics such as relative reduction of risk may be better suited to assess the impact of universal interventions, and these metrics merit evaluation in future studies.

Resilience

The null finding for resilience contradicts previous findings related to this intervention. Specifically, when the intervention was tested in a single-arm pilot study, there were significant pre-to-post increases in resilience (Lee et al., 2020; Sabin et al., 2021). However, findings on the effectiveness of interventions targeting resilience are generally mixed in the literature (Brunwasser, Gillham & Kim, 2009; Gillham et al., 2007), indicating that our results are not entirely surprising. One possible contributor to the current non-finding may stem from the approach used to measure resilience. The CYRM was designed to capture a "social ecological interpretation" of resilience (Ungar & Liebenberg, 2011, p.2). Specifically, the authors of the scale conceptualized resilience as pertaining to qualities of both the individual and the individual's environment, and the measure includes items related to resources at the child's disposal. The majority of the items (9 out of 17) could be considered as related to environmental factors (e.g., "If I am hungry, there is enough to eat," or "I feel safe when I am with my family/caregivers."). This information is valuable to capture; development occurs within nested environmental contexts (e.g., family, school, historical), each influencing the other in interdependent ways (Bronfenbrenner, 1979; Lich et al, 2013), and there are critical contributors to children's resilience at each level. However, these contextual factors are often complex and potentially difficult to modify. Future tests of Healthy Kids could potentially benefit from

gathering additional data (e.g., parent and/or teacher-report) to better understand these contextual dimensions of resilience.

Emotion Regulation

In contrast to the null effects for depression, anxiety, resilience, self-efficacy, and mindfulness, youth who were randomized to the intervention experienced significant reductions in emotion regulation difficulties, relative to those randomized to the control condition. Although, to my knowledge, there have been no other studies of the effects of life coaching on emotion regulation in children or adolescents, these findings are consistent with theories of life coaching that posit that improvements in self-regulation are core to this intervention approach's effectiveness (Spence & Oades, 2011). The life coaching format, in which the adolescent meets one-on-one with an adult, may be particularly well-suited to helping youth reduce emotion regulation difficulties. During one-on-one meetings there is the time and space for identifying and responding to the adolescent's individual emotional experience, and providing personalized life coaching to help a youth cope more effectively in the future with their emotional challenges.

In addition to the coaching format, the inclusion of a mindfulness component also may have contributed to the distinctive effects observed for improving difficulties in emotion regulation. In contrast to the coaching field, in the field of mindfulness science and practice there has been much interest in emotion regulation, and our findings are consistent with prior work indicating the role of MBI in supporting emotion regulation abilities (e.g., Cooper et al., 2018; Ma & Fang, 2019). Due to the multicomponent nature of this intervention, future studies including designs that allow for a closer examination of the contribution of each component would be valuable. For example, dismantling studies allow for the comparison of discrete components of an intervention with their combination (Papa & Follette, 2014), and are helpful in

identifying the active ingredients of multicomponent interventions (e.g., Mira et al., 2019; Whiteside et al., 2015).

Of note, the distinctive effect on difficulties in emotion regulation, relative to the other outcomes assessed in the current study, may be related to the developmental timing of this intervention, which was delivered to early adolescents or sixth graders. Research indicates that emotion regulation difficulties assessed in early adolescence predicts depressive symptoms, both cross-sectionally, and longitudinally from early to middle adolescence (Goncalves et al., 2019). Problems with emotion regulation also longitudinally predicted anxiety symptoms in a sample of early adolescents who were assessed every three months for three years (Schneider et al., 2016). This evidence suggests early adolescence may be a time of particularly pronounced changes in emotion regulation, which may explain the significant effect of emotion regulation in this early adolescent sample. Interventions that reduce emotion regulation difficulties delivered to early adolescents may offer a promising universal approach with implications for reducing depression and anxiety risk in later adolescence

Self-efficacy

The null finding for self-efficacy diverges with the small body of research that has examined the effects of coaching on self-efficacy in adults (Bozer & Jones, 2018; Passmore & Lai, 2020). It also is inconsistent with uncontrolled pilot findings that the intervention was associated with increases in self-efficacy (Sabin et al., 2021). It is possible that the timing of this study delivering the intervention in the midst of the COVID-19 pandemic (spring of 2021) may partially explain the divergence from the findings of the pilot study, which was delivered just prior to the start of COVID-19. Though there is no evidence to date on the impact of COVID-19 on self-efficacy in youth, theory suggests that mastery experiences are critical influences on the

development of self-efficacy (Shek et al., 2013). In the transition to remote learning, the opportunity for mastery experiences may have been diminished for some students, thus adversely affecting self-efficacy. Future research investigations are merited that test the effects of the intervention after schools have had more time for to recover from COVID-19. In addition, research addressing specific self-efficacy factors pertinent to COVID-19 (e.g., access to internet at home, close family member sick or die from COVID, etc.) could be valuable.

An alternative explanation relates to the typical developmental trajectories of motivational processes, such as self-efficacy, during early adolescence. Numerous studies have documented declines in motivation, particularly academic motivation, during adolescence (Gnambs & Hanfstingl, 2016). To counter these downward trends, a more robust focus on self-efficacy may be needed to observe improvements from the intervention, as compared to a randomized control condition. It is also possible that, as measured with the SEQ-C, self-efficacy is more static or trait-like and would be less receptive to change by a life coaching intervention, particularly over a 6-week period. Specifically, this tool's measurement of self-efficacy includes some items that are dependent on one's environment and external relationships (e.g. "How well do you succeed in satisfying your parents with your schoolwork?", "How well can you get teacher to help you when you get stuck on school work?"). and may be inherently difficult to change though an individual youth-focused coaching intervention. Although these aspects undoubtedly relate to the early adolescent's beliefs about their own abilities to effectively navigate certain situations and draw on specific interpersonal strengths and skills, they also, to a large degree, depend on the actions or reactions of others, which are largely out of the child's control and would not be subject to change by an individual intervention.

Mindfulness

We also sought to explore whether, on account of the incorporation of a brief mindfulness training component, a coaching intervention would change adolescents' mindfulness, and there was no effect of the intervention on this outcome. Though there is still considerable debate in the field of mindfulness research about the construct of mindfulness, many consider mindfulness to be a process-level variable that supports changes in mental health and well-being outcomes. The degree to which mindfulness training increases self-reported mindfulness is not yet clear; however, a meta-analysis of randomized trials of MBIs in adults found that certain dimensions of mindfulness do appear to increase with training, albeit minimally (Quaglia et al., 2016). No such review has been conducted on MBIs in adolescents; indeed, changes in mindfulness itself are underexamined as an outcome. Moreover, this past research reflects the effects of manualized multi-session trainings exclusively focused on mindfulness. The Healthy Kids program was quite different: mindfulness training was a brief, relatively minor part of this intervention and was not manualized to the same degree as the rest of the coaching program. Indeed, there was considerable flexibility around the duration of practice, the type of practice, and the degree to which home practice was encouraged. This flexibility was intentional, as coaches were given the autonomy to respond to the child's individual needs and preferences, but it is possible this flexibility contributed to the relatively low frequency (i.e., twice, on average) that mindfulness was practiced during the program. Whereas MBI programs typically are structured such that each session builds on the prior session's experiences (e.g., Learning 2 BREATHE; Broderick, 2014) and participants both learn what mindfulness is and have opportunities for structured practice, here the focus was on offering participants the opportunity to use mindfulness-like coping skills such as deep breathing, body scan, or guided visualization to settle in at the beginning of each session. It may

be that standardizing this component of the intervention, and/or incorporating a more didactic component to help youth understand what mindfulness is will be needed to see changes on measures of mindfulness.

Strengths, Limitations, and Future Directions

A strength of the study is its school-based and universal nature. To deliver such an intervention during the COVID-19 pandemic was particularly challenging and contributed to some limitations of the study. There were some inconsistencies in terms of format (in person vs. online) across participants and COVID-19 may have impacted how many sessions participants in the intervention condition received. The average dose was 64% of the 6-session program, with considerable variability, and there was additional variability among students in terms of session modality (73% in-person vs. 27% virtual delivery). Future work should examine whether attendance at coaching sessions moderates intervention effectiveness, which has been suggested by prior data (Sonesh et al., 2015). Nevertheless, that implementation continued despite the disruptions created by COVID-19 reflects considerable commitment on the part of school administrators and coaches and suggests a high level of stakeholder buy-in, which is critical to implementation and adoption of school-based programs (Hickey et al., 2018). It also reflects a high degree of adaptability, a program characteristic that is increasingly being recognized as essential to sustainable and effective implementation across diverse contexts (Hickey et al., 2018; Lendrum et al., 2016).

The majority of participants in this sample were White adolescents, which limits the generalizability of the study. It will be important in future work to assess the effects of this intervention in more diverse student populations. Further, in the future, to more robustly examine mediational processes and the theoretical underpinnings of this intervention, the study might be

expanded to include more repeated measures to allow for testing temporal relationships between changes in the various variables. We also might consider designs that include random assignment to additional conditions (e.g., a mindfulness-only condition, and a coaching-only condition). Within such a study design, we might probe whether mindfulness and coaching differentially affect mental health outcomes, resilience, emotion regulation, self-efficacy, and mindfulness, and whether one of these, or the combination of the two, has more long-lasting effects relative to control.

The immediate post-intervention effects on reducing emotion regulation difficulties are relevant for the prevention of mental health challenges and the promotion of overall wellbeing in adolescents. They suggest that this novel intervention, which combines coaching with brief mindfulness activities, may be effective in teaching early adolescents skills that help them to better regulate emotions and cope with difficulty. Taken together with results from pilot tests of the intervention on resilience and self-efficacy (Lee et al., 2020; Sabin et al., 2021), these findings provide justification for continued testing of this program, including longer-term follow-up, implementation fidelity assessments, and qualitative data collection to more deeply understand how the intervention is operating, for whom it is most beneficial, and how to optimize it further.

FIGURES

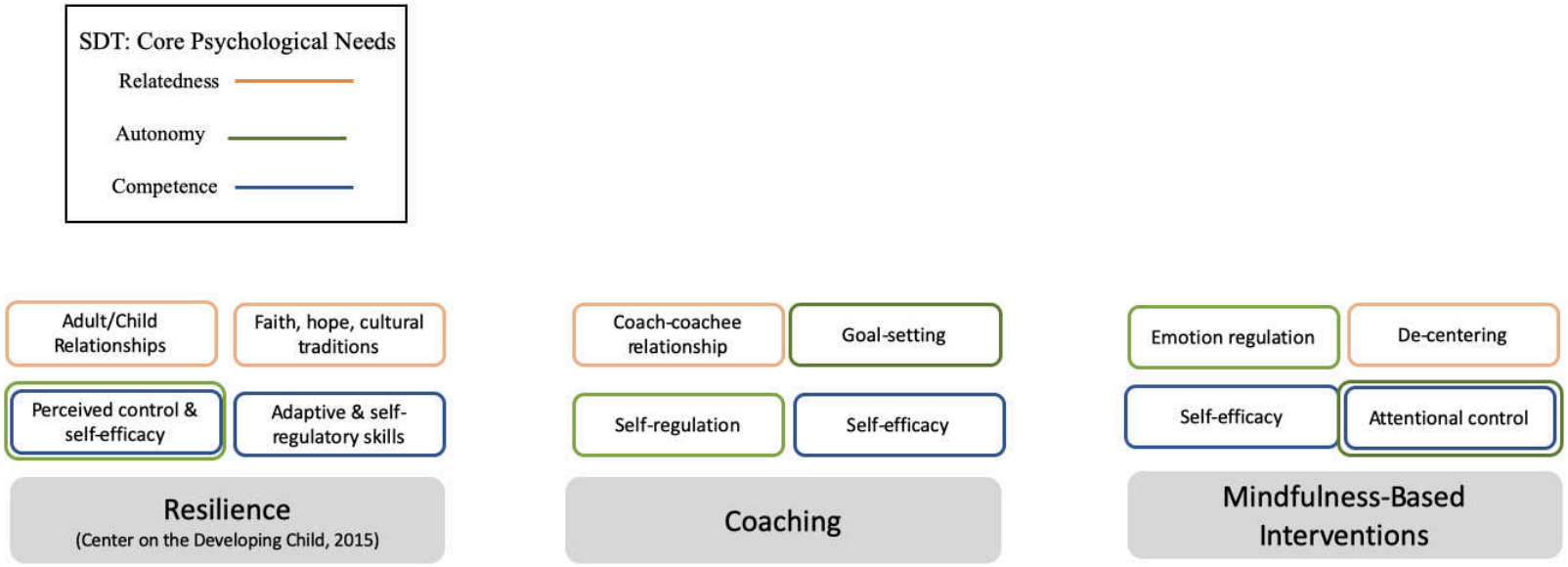

Figure 1. Self-determination theory (SDT): A framework for considering shared psychosocial processes in the associations between resilience, coaching, and MBIs and health outcomes

		MBIs		Coaching	
		Empirical Support*	Theoretical Support	Empirical Support*	Theoretical Support
Factors that optimize resilience across multiple contexts (Center for the Developing Child, Harvard)	Building a sense of self-efficacy and perceived control	✓	✓	✓	✓
	Providing opportunities to strengthen adaptive skills and self-regulatory capacities	✓	✓	✓	✓
	Facilitating supportive adult-child relationships			✓	✓
	Mobilizing sources of faith, hope, and cultural traditions		✓		✓
Key intrapersonal factors or abilities that appear to increase overall resilience (Penn Resiliency Program)	Emotion regulation	✓	✓	✓	✓
	Impulse control	✓	✓		
	Causal analysis		✓		
	Realistic optimism		✓		✓
	Self-efficacy		✓		✓
	Empathy		✓		
	Reaching out				✓

*Existing peer-reviewed studies examining effects of intervention on this outcome.

Figure 2. Evidence for effects of mindfulness-based interventions and coaching on factors that support resilience

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