A Mindfulness-Based Social and Emotional Learning Curriculum for School-Aged Children: The MindUP Program

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Mindfulness-Based Interventions and Social and Emotional Learning

Mindfulness-based interventions (MBIs) are secular programs that employ practices adapted from primarily Buddhist contemplative traditions with the goal of promoting holistic development and well-being (Cullen, 2011; Roeser, 2014). MBIs offer a specific type of mental training with the aim of cultivating *mindful awareness*. Simply defined, mindful awareness is an unbiased present-centered awareness that is accompanied by states of clarity, compassion, and equanimity (Kabat-Zinn, 2003; Roeser, 2013; Young, this volume). Mindful awareness is cultivated through specific training techniques practiced with an attitude of open-heartedness, curiosity, kindness, patience, perseverance, and acceptance of what unfolds during practice (Grossman, 2015). Mindful awareness can be cultivated by practicing moment-to-moment awareness of objects, sensations, and emotions, accepting them as they arise without attempting to evaluate, change, or control the experience.

Over the last 30 years, there has been a convergence of evidence demonstrating that participation in MBIs increases psychological well-being and leads to greater satisfaction with life in both clinical and non-clinical adult populations (for a review see Keng, Smoski, & Robins, 2011). Albeit less conclusive, preliminary evidence suggests that mindfulness training with adults may also improve cognitive abilities, such as attention, working memory, and inhibitory control (Chiesa, Calati, & Serretti, 2011; Jha et al., 2010) and may encourage prosocial action (Condon et al., 2013).

Recently, there has been increasing interest in whether mindfulness-based practices can offer similar benefits to children and adolescents. Although promising, the research is preliminary, and methodological limitations temper conclusions and generalizations to greater populations (Greenberg & Harris, 2012). Moreover, much of the research has focused on *reducing* symptoms related to ill-being, such as rumination, depression, anxiety, and "problem" behaviors (e.g., Biegel, Brown, Shapiro, & Schubert, 2009; Van de Weijer-Bergsma, Langenberg, Brandsma, Oort, & Bögels, 2014). Studies that look at MBIs as potential for *increasing* mental well-being in young people are few in number. Furthermore, few have explored the role of mindful awareness

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in social and emotional competencies, an area of development which has been linked not only to greater well-being, but also to increased prosocial behavior and better school performance (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011).

Social and emotional learning (SEL) is a growing field in education that aims to foster core social and emotional competencies, such as self-awareness, self-regulation, initiating and maintaining healthy relationships, and treating others with respect and care (see Lawlor, this volume). Durlak et al. (2011) have suggested that:

> Over time mastering SEL competencies results in a developmental progression that leads to a shift from being predominantly controlled by external factors to acting increasingly in accord with internalized beliefs and values, caring and concern for others, making good decisions, and taking responsibility for one's choices and behaviors (Bear & Watkins, 2006, p. 406).

Because mindfulness practices are theorized to enhance one's ability to observe external factors and internal reactions and foster the self-control to be able to pause and reflect before taking conscious action (MLERN, 2012), they may potentially enhance school-based SEL programs by offering a practical way to cultivate social–emotional skills rather than simply learn about them conceptually or through talk.

Researchers in the field of mindfulness have expressed concern that some MBIs have decontextualized the practices from their traditional ethical framework (for discussions, see Greenberg & Mitra, 2015; Grossman, 2015; Monteiro, Musten, & Compson, 2015). Situating MBIs in an SEL framework in which ethics of social responsibility and care are emphasized may be one way to teach secular mindfulness in a clear ethical framework, which, some argue, is critical for mindfulness training to lead to transformation for those beyond the self (e.g., Grossman, 2015). Research in this area, however, is scant. Investigating mindfulness-based SEL programs that incorporate ethics and mindfulness can, therefore, shed light on this important potential synergy.

Mindfulness Education during Pre- and Early Adolescence

It is still unknown when it is developmentally appropriate, prudent, and effective to introduce young people to mindfulness practices in schools. Transitional periods in development may be a particularly important time to implement mindfulness education programs. Transitional periods have been defined as phases in the life span in which developmental challenges and demands are intensified and can be considered phases of heightened vulnerability or risk where events that have the potential to alter behavior, affect, cognition, or context can result in lifelong changes (Graber & Brooks-Gunn, 1996; Pickles, Rutter, & Torestad, 1991). Thus, transitional periods like early adolescence may be thought as "windows of opportunity"—times in the life cycle in which positive development can be cultivated and fostered through opportunities provided to individuals in their environment that promote success and serve as protective factors that move the individual toward competence (Roeser & Zelazo, 2012). Pre- and early adolescence (i.e., the "tween" years—ages 9–12 approximately) is one such transitional period in development due to the nature and rapid pace of changes that occur in such a short-time span. Indeed, few developmental periods are characterized by many changes at many levels, including changes due to puberty, cognitive, and emotional development, and social changes which include an increasing focus on the peer group and changes in the nature of parent–child and adult–child relationships (Eccles & Roeser, 2011). These years are also characterized by increases in various mental health problems (Roeser & Eccles, 2014). Thus, pre- and early adolescence is an especially important time to implement interventions to promote social and emotional competencies and optimal cognitive function and prevent related psychopathology (Schonert-Reichl et al., 2013). Based on preliminary research with children and adolescents, MBIs show potential as universal preventative interventions to promote healthy development during this transitional developmental period and

beyond (for reviews, see Felver, Celis-de Hoyos, Tezanos, & Singh, 2015; Zoogman, Goldberg, Hoyt, & Miller, 2015). One such program that we describe in more detail that was developed for students of this age period is the MindUp Program by the Hawn Foundation.

Program Development and Process Evaluations

Development of MindUP Curriculum

The development of the lessons that comprise the MindUP program and exploration of ways to provide program training and implementation were both iterative processes that took place over a decade. Specifically, the development of the program was informed by leading experts in the fields of cognitive developmental neuroscience, SEL, and positive psychology as well as from feedback provided by educators and students who participated in earlier versions of the MindUP curriculum. Some of the key components of the current program include: (1) universal participation of all students; (2) tools for creating an atmosphere of an *optimistic classroom* that emphasizes mindful awareness of one's self and others, embracing differences among classmates, and personal growth; (3) a manualized curriculum that is evidence-based, classroom-tested, and meets several prescribed learning outcomes; (4) in-service teacher training; and (5) extension of the concepts and skills learned in the program to other areas of the classroom curriculum and to daily life outside of the classroom (see http://thehawnfoundation.org). In each lesson, students are introduced to key concepts and offered the opportunity to practice skills related to the concepts. Each of the lessons are linked to research on neuroscience with the goal of helping students develop a sophisticated understanding of how the nervous system operates and the role that the brain plays in emotions, behavior, decision making, and learning.

Description of MindUP Curriculum

Theory of Change The MindUP program is a fully developed and manualized program. The lessons that comprise the program are informed from theory and research in cognitive developmental neuroscience (Diamond, 2009, 2012; Zelazo & Lyons, 2012), contemplative science and mindfulness (Roeser & Zelazo, 2012), SEL (Greenberg et al., 2003), and positive psychology (Layous & Lyubomirsky, 2013; Lyubomirsky, Sheldon, & Schkade, 2005).

The MindUP program's approach is similar to other effective SEL programs and also includes activities aimed at developing SEL competencies such as self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social and Emotional Learning, Weissberg & Cascarino, 2013). The core components of program lessons include mindfulness attention awareness practices that have been identified as those that promote children's executive functions (EFs—cognitive control abilities depending on the prefrontal cortex (PFC) that organize, sequence, and regulate behavior), regulation of stress, well-being, and prosociality (see Fig. 20.1). Additionally, the MindUP lessons draw from research and theory in positive psychology which suggests that practicing gratitude and performing acts of kindness bolster one's sense of well-being and happiness (e.g., Emmons & McCullough, 2003; Layous & Lyubomirsky, 2014; Lyubomirksy & Layous, 2013). Also incorporated in the MindUP model is an ecobehavioral systems orientation (Weissberg, Caplan, & Sivo, 1989) in which teachers generalize the curriculum-based skills throughout the school day and support the students' use and internalization of skills to support a positive classroom environment.

Each lesson incorporates mindfulness practices with activities that provide students with opportunities to learn about their brain, understand how their thoughts and feelings affect their actions, and learn strategies to become a caring and altruistic person. Based on teacher feedback from pilot studies, three age-appropriate versions of the MindUP curriculum were created to be calibrated to children at different grade levels:

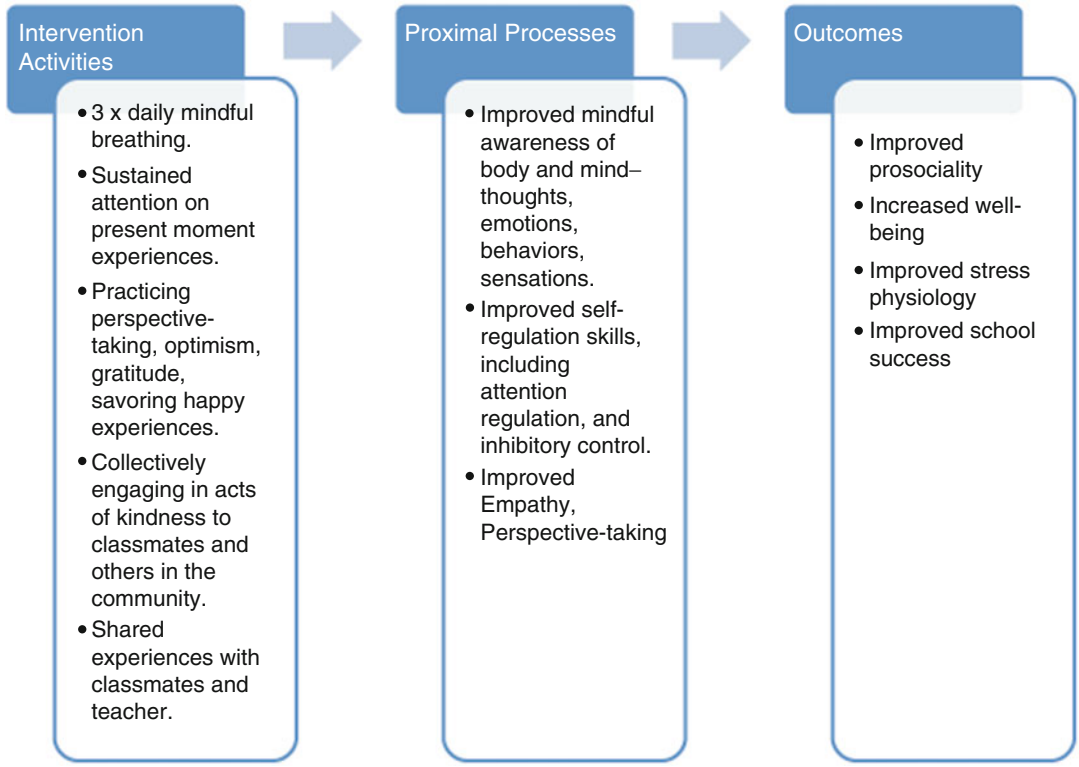

Fig. 20.1 MindUP Theory of Change

grades K-2, 3–5, and 6–8. Each manual was written to be developmentally appropriate for the target age groups and includes detailed lesson plans that can be broken into 10- and 15-min portions, as well as teaching scripts and worksheets to aid in implementation. The manuals contain myriad extension activities and literature suggestions that can be integrated into regular classroom curricula, including math, language arts, science, and social and emotional learning. They also link lesson themes to life outside of the classroom. Manuals for these grades were published by Scholastic books in 2011, and the program is currently being offered in hundreds of classrooms across the United States, Canada, China, Hong Kong, Serbia, Australia, Uganda, Portugal, Finland, the U.K., and in various countries throughout Latin America.[1]

[1] See http://thehawnfoundation.org/mindup/mindup-international/

MindUP Program Practices and Units

The MindUP curriculum includes 15 lessons and each component of the program builds on previous skills learned, moving children from focusing on internal experiences (e.g., mindful smelling, mindful tasting) to cognitive experiences (e.g., taking others' perspectives), to students practicing gratitude, and ending with students enacting acts of kindness to others in their home, classroom, and community. The 15 lessons in the current MindUP curriculum are divided into four main units. The first unit, entitled "Getting Focused," introduces students to brain structure and function and the concept of mindful awareness, "attending to the here and now—other people, the environment, a concern or challenge—in a considerate, nonjudgmental way" (The Hawn Foundation, 2011, p. 34). At the end of Unit 1, students are introduced to the *Core Practice*, a mindfulness practice in which stu-

dents focus on the resonant sound of a chime that marks the opening and closing of the practice. After the sound of the opening chime dissipates, students practice focusing on their breathing. They are encouraged to notice when their mind wanders away from the object of observation and to bring it back to it without judging their performance. The curriculum suggests that students engage in the Core Practice for 1–3 min at a time, three times a day.

Grounded in the latest research and theory in neuroscience, students first learn how training their focused awareness might affect their brain and nervous system, giving them a self-regulatory strategy to calm down when they are stressed out or overwhelmed by emotions. For example, students learn that their amygdala act similarly to a security guard, sometimes overreacting to situations that are not in fact dangerous. Students are then taught about the concept of mindfulness in Lesson 2 and given an opportunity to practice. The Core Practice, introduced in Lesson 3, allows them to experience first-hand how focusing their attention on their breathing may help "engage" the prefrontal cortex, described as their *wise leader*. Doing so can help students calm down so that they are able to pause before making decisions instead of reacting mindlessly.

Unit two, "Sharpening Your Senses," introduces students to the practice of *mindful sensing* in which students concentrate on one of their senses in order to practice focused, present-centered awareness. Lessons include mindful listening, mindful seeing, mindful smelling, mindful tasting, and mindful movement. For example, students practice mindful tasting by engaging all of their senses while slowly eating something. They look at the food very carefully and take time to smell it; they notice the sensation of the morsel in their mouths and the taste of it on their tongues; they notice the sound made by biting into the food when they take their first small bite and pause to savor the flavor. Continuing the process very slowly, students notice that the sensations they experience with each bite are different and unique.

Unit three, "It's All about Attitude," aims to foster a positive mindset in students with the goal of preparing the mind for learning and building positive relationships through the application of mindful awareness to improve social and emotional skills. Lessons are based on research in SEL and positive psychology. Students learn about and practice perspective-taking, optimism, and savoring happy experiences. For example, students learn to "make a happy movie" by focusing their minds on an experience that brings up pleasurable emotions. They explore how focusing on a happy memory makes them feel both physically and emotionally.

The last unit, "Taking Action Mindfully," offers students the opportunity to put mindful awareness into action by practicing gratitude, performing random acts of kindness, and collaboratively planning a social action project to benefit their larger community or the world. Students also practice introspection to notice how they feel when they pay attention to the positive things they have in their lives, no matter how small or seemingly insignificant.

Learning to Deliver MindUP Program in Classrooms

The Hawn Foundation currently offers in-service teacher training and continual learning support via an online portal, webinars, and mentorship programs for the MindUP Program. Training includes a full-day, interactive training session. Teachers learn about the theory and research guiding each unit and its lessons and participate in interactive discussions on SEL and the developmental characteristics of children's social and emotional competence. The training also includes experiential learning in mindfulness practice. Teachers are given strategies that guide the introduction of mindfulness to the classroom with considerations for engaging students (e.g., by invitation), and how to work with common challenges to practice (e.g., restlessness). Teachers learn through lecture, video, readings, and role-plays of curriculum instructional techniques. Additional support is provided via a web-learning portal where teachers can participate in Webinars, see additional teaching tips, view vid-

eos, access an e-library of related materials, ask questions, and share best practices. To ensure the program is being implemented with fidelity, The Hawn Foundation offers a booster session approximately 4 months after the initial training. Teachers can request this in the form of another workshop or a mentoring session. To become an accredited MindUP teacher or school, after the first year of implementation, schools must conduct an evaluation (using a predesigned evaluation kit) to assess teacher and student satisfaction and better understand how teachers are actually implementing the program in order for MindUP to provide additional recommendations and/or coaching if need be. MindUP recommends hosting a refresher workshop the following year.

Program Evaluation

Over the past several years, the MindUP program has been evaluated via both formative/process and outcome evaluations utilizing both qualitative and quantitative methodologies. See Fig. 20.1 for a summary of these evaluations. Equally important to outcome evaluations in understanding the effectiveness of MBIs are program *process evaluations* that examine the implementation fidelity of the program (i.e., the degree to which the program was implemented as designed). Domitrovich and Greenberg (2000) noted that one major shortcoming of many, if not most, preventive intervention studies are that investigators do not report on aspects of implementation. It is not enough to understand *if* a program works; researchers must also investigate the "hows," "whys," and contexts for optimal program effectiveness (Harachi, Abbott, Catalano, Haggerty, & Fleming, 1999). Moreover, practitioners intending to implement the program need to be informed of the most effective ways to introduce the program in natural contexts in order to ensure evidenced-based programs are equally as effective as found to be in research studies (Domitrovich & Greenberg, 2000). Thus, it is essential to move beyond a "black box approach" to evaluating programs that focus only on outcomes in order to better understand the mechanisms that may influence outcomes (Harachi et al., 1999). For each study conducted on MindUP (e.g., Schonert-Reichl et al., 2015; Schonert-Reichl & Lawlor, 2010), researchers have included a process evaluation, which has been essential in the iterative development of the curriculum, as well as study design. The first quasi-experimental study took place in 2005. Since then, Schonert-Reichl and colleagues have conducted four subsequent studies with a fifth longitudinal follow-up study currently underway (see Fig. 20.2).

Formative Evaluation

Following the quasi-experimental study described below (Schonert-Reichl & Lawlor, 2010), Lawlor (2007) conducted a formative evaluation of the MindUP curriculum (then called Focus Mind) to inform the development of the next iteration of the program. Through teacher questionnaires, focus groups, student satisfaction surveys, and implementation lesson tracking, Lawlor obtained qualitative and quantitative data to investigate feasibility, program integrity, and participant responsiveness of the program. Participants included nine teachers, one administrator, and 110 students from kindergarten to grade 6 across three sites.

Overall, both teachers and students reported some satisfaction with the program. All teachers rated the program positively with ratings of four (positive) or five (very positive) on a five-point Likert scale ($M = 4.5$). Students reported mid to high levels of enjoyment of the program, and teachers reported mid to high levels of student engagement for each lesson. Three key findings emerged from qualitative data that were considered in future revisions and implementation of the program: (1) Primary grade teachers identified a need for age-appropriate lesson plans for younger students. These comments supported the work to create a primary curriculum in the current iteration of the program. (2) Although teachers reported the manual as largely, "easy to use, well-organized and written," 87.5 % of those teachers felt the training they received was not

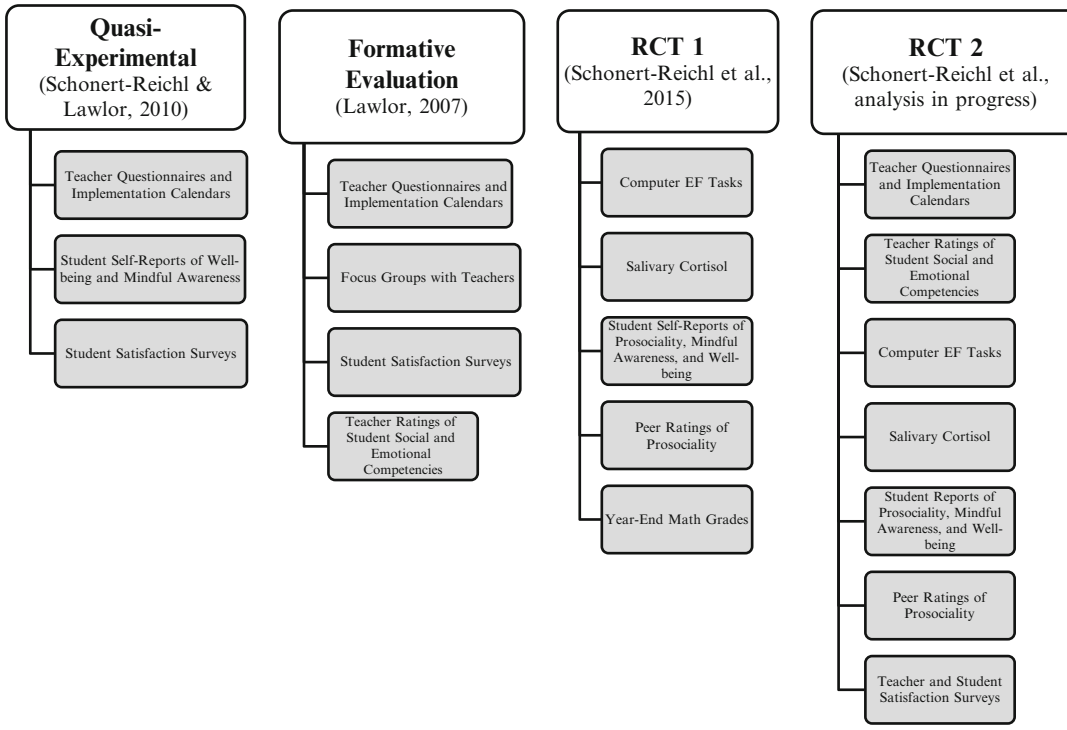

Fig. 20.2 Summary of studies on MindUP conducted by Schonert-Reichl and colleagues. *Notes:* The Quasi-Experimental Study was conducted in 2005. The formative process evaluation (Lawlor, 2007) followed. RCT 1 was conducted in 2008. It compared MindUP to an active control group, which received a social responsibility program. RCT 2 was conducted in 2011–2012 and had several conditions: (1) teachers who participated in a mindfulness-based SEL program for themselves Stress Management and Relaxation Techniques in Education (SMART-in-Education) before being trained and implementing MindUP; (2) teachers who did not participate in SMART, but were trained and implemented MindUP; (3) teachers who participated in SMART but did not implement MindUP, teaching a district-mandated social responsibility program instead, and (4) teachers who neither participated in SMART, nor implemented MindUP, but taught the social responsibility program. The data on students' perceptions of MindUP (Maloney et al., 2014) were from RCT 2. Quantitative analyses are underway

sufficient to feel comfortable to implement the program. Based on these findings, the protocol for teacher training was reformatted to include more time to learn about mindfulness, more information on particular techniques, and more time to practice and role-play to facilitate comfort level with the program. (3) Results indicated a need to improve the program's ability to be embedded into existing required subject areas. To improve the program's implementation, sustainability, and growth, the Focus Mind curriculum was modified so that the core practices, approaches, and lessons could be easily transferable to what teachers are already doing within their classrooms, resulting in the current MindUP curriculum (see description above).

Triangulating Data: Investigating Multiple Outcomes Using Multiple Methods

Over the last decade, Schonert-Reichl et al. (2015; Schonert-Reichl & Lawlor, 2010) have evaluated iterations of the MindUP program, examining multiple outcomes from multiple perspectives in order to provide an in-depth understanding of student changes related to participation in the program. Doing so helps account for potential errors or biases that may be present when conducting a single-method study, for example, relying solely on studies employing self-report measures. These studies have included

quantitative measures of outcomes, including social and emotional competencies through teacher-, self-, and peer-reports; third-person objective assessments of executive functions; and biological measures of stress via diurnal cortisol. Schonert-Reichl and colleagues have also conducted mixed-method process evaluations in order to better understand the implementation fidelity and acceptability of the MindUp program (e.g., Lawlor, 2007; Maloney, Whitehead, Lawlor, & Schonert-Reichl, 2014).

Measuring Social and Emotional Competencies from Multiple Perspectives

Along with investigating changes in mindful awareness, a primary focus of the research on MindUP has been the examination of changes in social and emotional competencies as a result of participating in MindUP, such as perspective-taking, empathy, and prosocial behavior. To gain an in-depth understanding of changes in social and emotional competencies from multiple perspectives, Schonert-Reichl et al. (2015; Schonert-Reichl & Lawlor, 2010) have employed reports from three different perspectives: teachers, individual students, and peers. Especially important to understanding changes in students' behaviors as a result of the MindUP curriculum is peer-report data from the perspective of the students' classmates in order to triangulate data and provide a balanced perspective. For example, self-reports may be biased due to social desirability (Crandall, Crandall, & Katkovsky, 1965). Teacher reports may also be biased because the teachers in the MindUP studies are not blind to condition, having implemented the program themselves. Collecting data from peers is one way to address these issues because the peer nomination approach has the unique advantage that observations of the same behaviors are provided by many different observers. Given that 20–30 students in the classroom may be providing information about the target participant (see Quiggle, Garber, Panak, & Dodge, 1992), no single rater can unduly influence the target participant's final score (Huesmann, Eron, Guerra, & Crawshaw, 1994).

Peer assessment instruments involve the use of peer nominations in which students are presented with a list of their classmates participating in the study. For each behavioral description, students are asked to "circle the names of the students in your classroom who are kind; who help other children when they have a problem; who cooperate; who break the rules; who take the perspectives of others," etc. Peers are participant observers that can provide an important glimpse into the behaviors of their classmates that do not occur when adults are present, and hence peer reports can be more comprehensive than adult reports as they are more likely to garner reports of both positive and antisocial behaviors (Pepler & Craig, 1995). In this vein, peer reports provide an effective way to determine how students are perceived by their peers (Hoza et al., 2005). We speculate here that peers' ratings of classmates' behaviors would be less likely than teachers to be influenced by knowledge of the intervention status given that it is unlikely that children would be able to generate the hypothesis of the study. However, we have no data to support such a claim, and future investigations of the MindUP program would benefit from collecting data from observers blind to intervention status in order to allow for a less biased assessment of children's classroom behaviors.

Objective Measures of Outcomes Related to Social and Emotional Competencies

In addition to report measures, Schonert-Reichl et al. (2015) have also employed third-person objective measures of outcomes related to social and emotional competencies, namely executive functions and the diurnal function of the stress hormone cortisol. Executive functions (EF) refer to higher cognitive processes utilized in problem solving, reasoning, and planning (Diamond & Lee, 2011), and thus are intertwined with social

and emotional competencies, especially with the core competency of self-management (Lawlor, this volume). Another important part of social and emotional learning is developing the capacity to cope with stress in a healthy way (Weissberg & Cascarino, 2013). One way to observe this is to examine activity in the hypothalamic-pituitary-adrenocortical (HPA) axis via diurnal cortisol rhythms (Miller, Chen, & Zhou, 2007). Interpretation of these results must be done with caution, however. There are no clear existing guidelines for healthy cortisol patterns and patterns seem to vary with different populations (O' Leary, O'Neill, & Dockray, 2015). Nevertheless, there is theoretical and limited empirical support that mindfulness practices may affect HPA functioning (O' Leary et al., 2015; Vago & Silbersweig, 2012), which, therefore, warrants its investigation in studies of MBIs. These measures, by examining prefrontal self-regulatory function and the HPA axis around stress reactivity, afford an objective complement to self- and other-reported measures of students' social–emotional competencies.

Importance of Including Students' Voices in Program Evaluations

A shortcoming in evaluations of preventative interventions for children and adolescents is that researchers frequently do not ask students for feedback regarding the program. Despite the recent proliferation of research on universal school-based MBIs, relatively little is known about children and adolescents' subjective experiences with mindfulness training, particularly in school settings. In general, studies examining both young people's well-being, as well as outcomes of school-based interventions, typically utilize observations or other raters as evaluators (e.g., teachers, parents; Ben-Arieh, 2005). There is a tendency in outcome research to treat young people as if they are "passive objects who are acted on by the adult world" (Ben-Arieh, 2007, p. 7).

There has been a growing appreciation, however, on the role of children and adolescent perspectives in evaluating programs targeting their own well-being (Ben-Arieh, 2008; Mason & Danby, 2011). Young participants should be seen as valued contributors to the research process (Ben-Arieh, 2005). Research supports the validity and reliability of children's self-reports of their experiences, such as subjective well-being, finding children's reports of well-being to be highly correlated with more "objective" measures of well-being, such as family's and friend's observations and reports (Sandvik, Diener, & Seidlitz, 1993). Moreover, asking young people about well-being has also drawn attention to issues in the field of which researchers were previously unaware, giving new meaning to findings (Fattore, Mason, & Watson, 2007, 2009). Further, research studies have shown that adult and children perspectives on services can vary dramatically (Stüntzner-Gibson, Koren, & DeChillo, 1995). Therefore, it is important to include children's and adolescents' perspectives in order to gather a holistic understanding of any program. Asking young people about their perceptions of a program can help researchers and educators understand students' perceived benefits and challenges, assisting in the refinement of program content and implementation to better fit students' needs. It is imperative to understand whether students themselves find mindfulness education programs acceptable and useful, considering it is their well-being and growth that is the target of the interventions.

An additional motivation to accessing young people's voices is honoring their need for belonging and feeling heard (Lind, 2007). There is both a social and a legal obligation for program evaluation to represent the views of participants. According to Article 12 of the United Nations Convention on the Rights of the Child, "Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child." Thus, there is both an empirical and social obligation for researchers to move beyond outcome evaluations to include more descriptive accounts of students' experiences with mindfulness education programs (e.g., Maloney et al., 2014).

Overview of Efficacy Evaluations on MindUP

In addition to process evaluations, Schonert-Reichl and her colleagues have conducted several iterative investigations on the efficacy of the MindUP program. We summarize these studies in the following section.

Quasi-Experimental Study

A quasi-experimental control group pretest/posttest design was used to evaluate program outcomes and implementation fidelity in a pilot study of the first iteration of the MindUP curriculum (Schonert-Reichl & Lawlor, 2010). This evaluation included 246 fourth- to seventh-grade children drawn from 12 classrooms (six program classrooms and six comparison classrooms) attending public elementary schools in Vancouver, BC. The student sample represented a range of socioeconomic statuses and cultural backgrounds (82 % participation rate). Students were administered questionnaires at both pretest and posttest on a series of instruments designed to assess dimensions of their social and emotional understanding (emotional awareness, reflection, and rumination), mindful attention and awareness, optimism, and self-concept. Teachers rated students at pretest and posttest on dimensions of social and emotional competence and aggressive behaviors.

Results revealed that students who participated in the program, compared to those who did not, showed significant improvements on all four dimensions of teacher-rated school behaviors, including attentional control, aggression, behavioral dysregulation, and social competence. Significant improvements were also found for students' self-reported optimism and mindful attention. Although positive statistical trends in positive affect were observed for MindUP students in comparison to control students, no differences were observed in negative effect. Preadolescents (grades 4 and 5) who participated in MindUP also demonstrated significant improvements from pre- to posttest in general self-concept compared to those in the control group, who experienced significant decreases. Interestingly, the reverse was found for early adolescents (grades 6 and 7): Whereas the control condition increased in self-concept from pre- to posttest, the MindUP group *decreased* in self-concept, a finding to be further explored in the analysis of Schonert-Reichl and colleagues' latest study on MindUP (see RCT 2 Fig. 20.2).

Randomized Controlled Trial

Next, a collaborative study was conducted in order to assess outcomes of an earlier version of the MindUP program in a randomized controlled trial (RCT; Schonert-Reichl et al., 2015). Drawn from four classrooms (two program classrooms, two comparison classrooms) in British Columbia, Canada, 99 fourth- and fifth-grade classrooms were randomly assigned to receive a 12-week version of the MindUP program or serve as an active control, which implemented a "business as usual" social responsibility program. This research included assessments of students' EF, stress physiology (obtained via diurnal salivary cortisol), and year-end math grades as rated by teachers. Additionally, students filled out questionnaires that included peer-reports of prosociality and self-reports of well-being, social and emotional competencies, school self-concept, and mindful attention and awareness. Both MindUP and comparison teachers completed program implementation calendars to keep a daily record of study-related activities completed in class.

Analyses of student- and peer-report data indicated that after exposure to MindUP, participants had significant increases in optimism, emotional control, empathy, perspective taking, prosocial goals, and mindful attention, along with decreased depressive symptoms compared to those in the active control group. Conversely, the control group demonstrated significant decreases in scores on each of these measures. MindUP participants were also more likely to improve than control group on peer-rated sociality with significant improvements in sharing, trustworthiness,

helpfulness, and taking others' perspectives, and significant decreases in aggressive behavior, as rated by classmates. As predicted, both MindUP and control groups improved on self-reported social responsibility, demonstrating no significant difference between groups at posttest. Regarding academic-related outcomes, in comparison to control groups, MindUP participants had a significant increase in self-reported school self-concept (i.e., perceived academic abilities and interest and enjoyment thereof) and demonstrated a 15 % gain in teacher-reported math achievement.

On EF tasks, students in MindUP had significantly shorter response times (RTs) on average, while maintaining equal accuracy compared to control children on tasks that required inhibition, working memory, and selective attention, suggesting MindUP participants were better able to pay attention and inhibit distractions during these computer tasks. Furthermore, researchers found that the MindUP participants' diurnal cortisol patterns maintained a steep slope throughout the school year. Conversely, control children demonstrated changes from a steeper diurnal pattern to a flatter, blunter pattern. This change may have indicated greater allostatic load in control students over time (i.e., an inefficient response to stressors that creates negative health effects over time; Gunnar & Vazquez, 2001). Interestingly, the MindUP participants had significantly *higher* morning cortisol than the control group at posttest, despite their overall steeper pattern, indicating a need for future studies to investigate the nuances of MBIs on cortisol functioning, and the association with other indicators of stress (i.e., students' perceived stress, health functioning).

Study of Students' Perceptions of MindUP

To address the gap in the literature regarding pre- and early adolescents' perceptions of MBIs, Maloney et al. (2014) sought to understand participants' perceptions of the MindUP program and the application of the program to other areas of their lives by analyzing responses from a post-program participant satisfaction survey. The survey was administered to 189 grade 4–7 students (52 % female) drawn from eight classrooms across seven schools in British Columbia as part of a larger RCT conducted by Schonert-Reichl and her colleagues (data currently under analysis). The goal was to learn about students' perceptions of specific program components, any skills they perceived to have gained from participating in the program, and their experiences with mindfulness practices in their own words. Thus, in addition to close-ended yes/no or Likert-Scale questions, the participant satisfaction survey included several open-ended questions to which children were encouraged to write their opinions.

Descriptive statistics (frequencies) were performed to summarize students' responses to the close-ended questions. The data from each individual open-ended question were coded by independent raters via a six-step thematic analysis (Braun & Clarke, 2006). Themes were refined over the cycles of coding until the two coders achieved a 90 % inter-rater reliability on a subsample of data (Hruschka et al., 2004). Next, the entire data set was independently coded by the two coders and subsequently compared. Any discrepancies in the final round of coding were discussed until the coders reached consensus.

Students' Perceptions of the General Program

> The best part about the MindUP Program was learning about things that can help other people to calm down and think positive.[2]—Grade 7 Girl

Overall, 88 % of the participants found the program acceptable with 43 % reporting they

[2] A note on quotations: This study included many children new to Canada; therefore, English language skills varied among participants. No participants' comments were excluded from the study based on language ability unless we could not understand them. The quotations here appear exactly as written on student surveys unless we felt that spelling might hinder understanding. In those cases, words are placed in brackets.

"liked it a lot," 35 % "liked it," and 10 % reporting the program was "OK." Of the 148 students who answered the open-ended question, "Was there anything you liked about MindUP?," many cited mindfulness activities as the part of the program that they enjoyed the most ($n=79$, 53 %[3]). Specifically, students enjoyed the mindful sensing activities ($n=55$, 37 %), especially mindful eating ($n=37$; 25 %). Many participants cited the Core Practice as being their favorite aspect of the program ($n=29$; 20 %). For example, one participant commented, "I liked the breathing exercises, it helped me calm down in situations and also calm down my amygdala." Another remarked enjoying the "moments of silence." The neuroscience component was also popular among participants ($n=15$, 10 %). Several other students mentioned other favorite program components, including optimism ($n=8$, 5 %), and prosocial components, such as acts of kindness and perspective taking ($n=6$, 4 %) and gratitude ($n=3$, 2 %).

In addition to program components, several themes arose related to outcomes students perceived as a result of participating in MindUP. Many students mentioned that they appreciated the increased sense of well-being that they gained from participating in the program ($n=27$, 18 %). For example, several participants reported that the program helped them feel calm and relaxed. Some specific comments included, "We can have about 10 min everyday that we can use to calm down," "after PE, it feels really good and relaxed," and MindUP was "a calming period in some hectic days." One student mentioned that participating in the program "ma[d]e me feel more positive about myself." Others reported gains in mindful awareness of one's self and others ($n=12$, 8 %). A few students made comments related to self-awareness, including "the ability it gave me to calm down and to understand myself and others," and "you can learn a lot about yourself."

Some participants also reported that they appreciated the improvement in their self-regulation skills, such as the ability to calm down when experiencing overwhelming emotions and feeling overly excited ($n=8$, 5 %). For example, one student wrote, "I liked that I can now be calm in a minute or 2 as opposed to an hour or so." Another noted appreciating to be able to go "from [hyper] and energetic to mindful and calm." Yet another remarked enjoying "the calming down part because I am really impatient when I am waiting." One participant noticed the effect the practice had on the class: "I thought that it really had a positive energy and a good affect on everyone, making some of the more energetic students calmer."

Less frequently mentioned outcomes that students appreciated were improved focus, concentration, and memory ($n=5$, 3 %). One student remarked, "It got everyone focused at the beginning of the day." Another stated, "I liked that it teaches you how to pay attention to what you're doing." Two students mentioned that they found the program helpful for schoolwork. For example, one stated, "I could finish and do works efficiently and more happily than before I learned about mindfulness."

In answer to the closed-ended yes/no question, "Was there anything you did not like about MindUP," 29 % of students reported that there was an aspect of the MindUP program that they did not like. Remarkably, in response to the open-ended question regarding what students did not like, there were more mentions of positive experiences with the program ($n=48$, 55 %) than negative ($n=39$, 45 %).

Some participants found aspects of the program boring ($n=15$, 17 %) or too time-consuming ($n=6$, 7 %). Of these students, four of the students who mentioned it was boring and two who mentioned it wasted time had taken part in the MindUP program previously. The most frequently mentioned activity that students did not like was the Core Practice, some finding it boring while others too challenging ($n=8$, 9 %). For example, one student mentioned, "sometimes I would get bored or I couldn't calm down enough." Yet another child reported not liking "closing my eyes and breathing because after I want[ed] to fall asleep." Another did not like "[d]eep breathing. It

[3] Note that percentages are calculated based on the number of students who answered the question, not the entire sample of 189 students.

seemed ridiculous how you could find a complete mental stillness in your mind, even after weeks of practice." This observation may indicate that if the Core Practice is introduced or perceived as a method for finding mental stillness, rather than a non-judgmental observational practice, it could undermine young people's desire to explore and investigate their inner lives.

There were quite a few comments made regarding the implementation of the program ($n = 11$, 13 %). Some reported finding the behavior of other students during the program disruptive. For example, one participant stated, "Lots of others disturbed and judged the way I did my mindfulness. Others act disrespectfully (read, laugh, play on phone or iPod, etc.)." There were a few mentions of not liking how teachers implemented the program, for example reports that the lessons went on too long, that the breathing practice was offered too frequently or was taking away from other activities in class, and that some of the lessons were given for homework. One student offered insight into how the Core Practice was taught: "I didn't like how in the middle of meditating, [my teacher] started giving us instructions even though [the teacher] said we should ignore everything we hear."

Some positive comments reiterating what children did like in response to this question were: "The things we learned are all helpful in life," "I loved everything because it fits the situation I was stuck in and helped me a lot," "It helps you express your feelings about you and your friends," and "I liked doing everything because it helped me be happy."

Children's Reports of Learning

> I learnt how to be alot more self-aware and to be able to understand myself. I also liked how we learnt to enjoy things.—Grade 6 Boy

Overall, 96 % of students reported they learned something new in the program. Children were asked to evaluate what they had learned in specific program components by reporting whether the MindUP program helped them learn about: the brain, mindfulness, being mindful of the senses, perspective taking and being mindful of others, gratitude, acts of kindness, how to be more optimistic, how to help themselves be happy, and how to focus their attention and calm down. They responded using a four-point Likert scale (1 = *not at all true*, 2 = *a little bit true*, 3 = *true most of the time*, and 4 = *true all of the time*). The most frequent response across all 10 questions was "true most of the time." See Table 20.1 for a summary of the results.

In response to the open-ended question regarding what students had learned in the program, 117 children provided specific responses that expanded upon the close-ended questions. Similar to the open-ended question about what children liked, children reported learning skills that promoted their well-being ($n = 53$, 45 %), self-regulation ($n = 35$, 30 %), and mindful awareness ($n = 22$, 19 %). Learning specific mindfulness practices ($n = 19$, 16 %), such as breathing and mindful sensing, was also mentioned frequently, as well as learning about the brain and nervous system ($n = 39$, 31 %).

Developing a Practice in Life

> I learned how to do mindfulness by myself and now every morning I do it when I wake up.—Grade 6 Girl

In response to a close-ended question, the majority of students (40 %) reported using "a few things" outside of the program (e.g., in their school or home life), while 24 % of students reported using "quite a few things" and 14 % of students reported using "a lot." Only 6 % of students reported that they did not use the skills learned in MindUP outside of the program. Participants were also asked whether they tried to help others more often since participating in the MindUP program. The response was an overwhelming "yes" ($n = 83$ %), with 30 % students reporting that "it was a little bit true" that they tried to help others more often after participating in the program, 37 % participants reporting it was true for them "most of the time," and 17 % children reporting that it was "true all of the time."

Table 20.1 Student reports of learning program components in MindUP (closed-ended)

Program Components	Responses in percentages			
	Not at all true	A little bit true	True most of the time	True all of the time
Brain	6	29	46	19
Mindfulness	3	19	43	35
Mindful of my senses	7	21	45	28
Perspective-taking	7	23	50	20
Optimism and Thinking Positively	9	27	38	26
How I Can Help Myself to be Happy	14	26	41	19
Savoring (Making a Happy Movie in my Mind)	16	29	38	17
Gratitude	8	31	35	26
Acts of Kindness	5	24	46	25
Focus my Attention and Calm down	9	24	37	30

Throughout the survey, there were some individual comments that offered unique insight into the program. One child wrote, "It teaches you something that you can't really explain." Another stated, "It made my life sort of easier." One student remarked, "I find that MindUP has helped me see life differently." Teacher observations echoed those of students (see Table 20.2).

Discussion

The studies presented here have attempted to build on current strengths in the field of mindfulness education and address some of the limitations (see Felver et al., 2015; Greenberg & Harris, 2012). One shortcoming in the field has been the paucity of replication studies on existing interventions; the majority of published studies have evaluated different mindfulness education programs with a variety of components, making it difficult to compare results across studies (Felver et al., 2015). The studies presented here have focused on one program that has changed and evolved over time informed by the results of previous studies.

The reviewed studies have included both process and outcome evaluations employing experimental designs. They included multiple informants (teachers, students, and peers), as well as multiple methods (questionnaires, computer tasks, cortisol, participant satisfaction surveys, math grades, and implementation calendars). Triangulating data in this way contributes to reliability and validity of the findings presented.

Overall, these findings suggest that participating in MindUP may offer several benefits to grade 4–7 Canadian students, including: increased mindful awareness; improved social and emotional competencies; increased proficiency in EF; better relationships with teachers and peers; improved academic achievement and engagement; and improved psychological and physiological well-being. MindUP has proven to be an acceptable and effective universal mindfulness-based SEL program that was successfully implemented in public elementary schools across neighborhoods made up of culturally diverse populations, ranging from low to high social economic statuses. Similarly, classroom teachers included in these studies came from a range of cultural backgrounds, had various years of experience teaching, and differed in prior exposure to and experience with contemplative practices. These encouraging findings from two cities with diverse populations warrant further investigation of the effectiveness and acceptability of the MindUP program with other populations.

Several similar themes were identified from student and teacher responses to participant satisfaction surveys that corroborate quantitative findings. Both teachers and students made frequent mentions of students learning *self-regulation skills* in the program; that is "self-control of thought, action, and emotion" (Zelazo & Lyons, 2012, p. 154). Students made comments concerning all three of these aspects of self-regulation. In particular, many mentioned that they learned how to quickly find calm after experiencing overwhelming emotions so that they could think before acting. Similar findings have been reported by older adolescents in previous qualitative investigations of mindfulness practices (e.g.,

Table 20.2 Teachers' Perceptions of MindUP

Theme	Comments
Program Components	"The core breathing is very well received by the students and I truly believe it has helped all the students… It especially helped them after recess/lunch when there was a wild soccer match"
	"The sensory activities and optimism lessons were well received. They really enjoyed learning about the brain"
	"Sometimes they felt bored by the lessons as they had done something similar before (i.e., smelling, tasting, etc.). They enjoyed the brain lessons and most of them, the Core Practice"
	Students "appreciated the sophisticated yet accessible background information. They felt guided and respected"
	"They LOVED our mindfulness practices. We now have a 'do not disturb, we are practicing mindfulness' [sign] at our door"
Observations of Student Behavior	"Mindful behavior in general was a positive method to avoid classroom conflicts for some students"
	"One boy who had a major melt-down in September listened intently every lesson, for him it was an epiphany! No more meltdowns!"
	"MindUP leads to better work ethic, kindness, better learners, happy kids"
	"Great program for all classrooms. Mindful kids → Peaceful schools"
Challenges	"It was difficult to explain the 2 aspects of mindfulness: paying close attention was easy, but being non-judgmental was hard. I used empathy instead"
	"I feel that MindUP has the potential to be very powerful in a child's learning. However, to be implemented effectively, I feel that teachers need more time, training, and resources"
Extensions into Regular Curriculum and Classroom Life	"We used the mindfulness terminology and philosophy across the board. In English, French, and Math. [We used mindfulness practices] as a calming tool/strategy before tests"
	"I noticed how I quickly went further and deeper and followed my own inspiration when guiding breathing exercises. I was able to do a lot of classroom management and address problems and difficulties"

Milligan, Badali, & Spiroiu, 2013; Monshat et al., 2012; Wisner, 2014). These findings are in line with the theoretical and empirical literature that suggests mindfulness training may improve emotion regulation and EF (Diamond, 2012; Lyons & Delange, this volume; MLERN, 2012). The findings that MindUP participants were significantly more proficient at objective EF tasks than controls (Schonert-Reichl et al., 2015) lend further support to this theory.

A related theme that emerged was *well-being*. This included mentions of mental well-being, such as increased positive affect, optimism, and gratitude, as well as fewer experiences of anger and impatience. Quantitative self-report measures supported these findings. Additionally, students commented on improved physical well-being, such as feeling calmer and more relaxed after practicing mindfulness. Also relevant are students' mentions of finding a sense of calm more quickly after experiencing emotional or physical distress, following their participation in the MindUP program. Not only do these results coincide with previous findings in the literature (e.g., Kuyken et al., 2013), but they also provide qualitative support for the theory that mindfulness practices may have a balancing effect on the autonomic nervous system (i.e., homeostasis; Tang, Yang, Leve, & Harold, 2012; Vago & Silbersweig, 2012).

Perhaps the most frequent theme that appeared across the participant satisfaction surveys was that students experienced increases in *mindful attention and awareness*. Many reported gaining

an understanding of the importance of mindful awareness. Some students talked about an increased ability to pay attention and concentrate on what was going on in the present moment. Others discussed a newfound awareness of themselves, of their surroundings, and of the consequences of their actions, especially in relation to interactions with family and friends. A few students mentioned the importance of not judging their experiences, but being open and grateful for every moment. These findings indicate that students gained a comprehensive understanding and appreciation of the somewhat intangible experience of mindfulness, something that, as one student and one teacher noted, can be challenging to describe.

These students' descriptions of their experience of mindfulness fall in line with current working definitions of the construct mindfulness (see Cullen, 2011). This finding provides support that mindfulness practices, such as mindful breathing and mindful sensing, are accessible and developmentally suitable throughout pre- and early adolescence when introduced within a SEL framework. This finding is further corroborated by significant improvement in MindUP students' self-reported mindful attention and awareness compared to controls as measured by an adaptation of the Mindful Attention Awareness Scale appropriate for this age group (Lawlor, Schonert-Reichl, Gadermann, & Zumbo, 2013).

Students and teachers consistently mentioned increases in *prosocial behavior* throughout the consumer satisfaction surveys, noting that participating in the program made them kinder, more respectful of others, better able to understand other people's perspectives, and more likely to help others. Peer-, teacher- and self-reports corroborated these findings. Increased prosocial behavior is linked to mindfulness practices in both theoretical and empirical research (see MLERN, 2012). The findings from the presented studies suggest that integrating mindfulness practices into an SEL program may be an effective way to cultivate secular ethics as a basis for mindfulness.

Equally important as investigating the perceived benefits of the program are reported dissatisfaction and challenges with the program. Similar to the recent studies on mindfulness practices for adolescents (Britton et al., 2014; Milligan et al., 2013), the most frequent comment among the students who disliked components of the program was that they found aspects of the program boring, particularly the Core Practice of watching the breath.

Encountering boredom seems to be part and parcel of mindfulness practice: Even experienced adults who have practiced mindfulness meditation for years report finding the practice boring at times (Lomas, Cartwright, Edginton, & Ridge, 2014). In fact, a fundamental aspect of mindfulness practice is being able to develop a clarity of awareness that enables the practitioner to recognize and embrace obstacles, such as restlessness, and notice their impermanence (Monteiro et al., 2015). For example, with guidance and practice, students may recognize that while practicing mindfulness, they experience moments of boredom and moments of engagement, rather than perceiving the activity as uniformly boring. The question is: How can we engage these students in practice in order to help them sit with boredom rather than disengage from practice? Future studies should address this phenomenon through qualitative inquiry with participants. Additionally, observational data of program implementation (e.g., videotaping lessons) could investigate whether specific instructional strategies are related to student engagement and their willingness to explore the experience of boredom.

It is noteworthy that participants mentioned no iatrogenic effects in relation to mindfulness practices; that is, there were no mentions of mindfulness training causing harm or distress. In studies of MBIs for adults and older adolescents, participants have mentioned feeling distressed or overwhelmed when first introduced to mindfulness training (e.g., Lomas et al., 2014; Mason & Hargreaves, 2001; Monshat et al., 2012). It should be noted, however, that students in the present study were not asked whether their perceptions of mindfulness practices changed throughout the program. Future studies should investigate pre- and early adolescents' experiences with mindfulness practice over time.

Future Directions

The research conducted on MindUP inspires several potential areas of investigation for future studies on MindUP and other mindfulness-based SEL programs.

Physiological Effects and Mechanisms: Given teachers' and students' mention of mindfulness practices contributing to recovery from emotional and physical stress and post-practice feelings of calm and relaxation, future studies should explore potential neurobiological mechanisms underlying this phenomenon by employing other physical measures to monitor autonomic nervous system (ANS) activity, such as heart rate, respiratory rate, oxygen intake, oxytocin, and skin conductance, especially in relation to stress. Having additional measures of ANS activity would contribute to a better understanding of how mindfulness practices may affect stress responses during this transitional developmental period. Additionally, students frequently mentioned that practicing the core breathing practice helped them experience a sense of calm and relaxation. Such mentions may point to a causal relationship between mindful breathing and activation of the parasympathetic nervous system (i.e., the "rest and digest" system). Future experimental studies should explore the effects of deep belly breathing and observing the breath on the nervous system to illuminate a potential mechanism for reported sensations of calm.

Variation Among Individuals and Specific Populations: Research is needed that specifically explores the effects of mindfulness-based SEL programs on different populations of students, for example those with different personalities (e.g., big five personality traits), from special populations (e.g., students living with mood disorders, students diagnosed with attention deficit and hyperactivity, students on the autism spectrum, students with developmental delays), and with special learning needs (e.g., students with learning differences). It is unclear whether specific mindfulness practices may be more or less suitable for students with different needs and personalities. For example, some articles have suggested that practicing mindfulness may not be appropriate for people experiencing extreme anxiety and that some mindfulness practices, such as observing one's thoughts and feelings, can exacerbate symptoms of anxiety (Lomas et al., 2014). Because school-based MBIs are intended for universal populations, it is important to explore whether the programs are appropriate for *all* students to ensure that they do no harm, a fundamental ethical guideline for mindfulness practice.

Motivation and Autonomy: Students' motivations for practice and their relations to program acceptability and efficacy also need to be explored. Whereas outside of institutions people generally have the autonomy to choose whether they would like to take part in mindfulness practices or not, one of the cautions of integrating mindfulness practices into regular school curricula is that it could result in students not being given a choice whether to take part in mindfulness practices or not. Similarly, it is conceivable that, similar to other SEL programs, MindUP could become mandated at a school or district level, requiring that teachers implement the program. Autonomy is both theoretically and empirically linked to motivation (Ryan & Deci, 2000). Research should investigate whether offering students autonomy in relation to mindfulness practices (e.g., whether they wish to participate or not, choosing the type of mindfulness practice, choosing the length of practice, choosing when to practice) has an effect on their engagement with mindfulness practices and/or the outcomes of practice. Similarly, program efficacy in relation to teacher autonomy should also be explored. Further investigation into the dissemination and implementation of MindUP as it is currently being employed in schools is also necessary to understand how the program is being applied in schools outside of monitored intervention research, and how implementation under "real

world" conditions affects acceptability and efficacy of the program.

Training and Experience: The results presented here provide some insight into the discussion of how much training and experience with mindfulness practices teachers require to successfully introduce mindfulness practices to students. As Felver et al. (2015) noted, "the amount of training and experience needed to implement MBI[s] with full fidelity has yet to be determined. It could be that more simplistic MBI[s] require less extensive training than a more comprehensive MBI such as MBSR" (p. 8). It is helpful to know that even teachers who have had no previous experience with mindfulness practices (as was the case with several teachers across these studies) were able to safely and effectively implement mindfulness practices in their classroom with minimal training and a detailed, evidence-based curriculum. However, several teachers commented over the studies that they would have preferred more training. Future studies on MindUP should examine the length of training and the types of on-going support needed for individual teachers to be able to feel secure in effectively implementing the program. Further, studies that observe teacher implementation could provide valuable information on best practices for introducing mindfulness practices in schools. To date, we know of no published studies that have examined this important topic.

Because the published MindUP curriculum is now publically available without training, new contexts and questions for investigation have arisen: Are teachers likely to seek out training and on-going support in addition to the manual? Is additional training necessary to successfully implement the program? Do teachers need their own mindfulness practice to be able to effectively implement the program? Do teachers need to embody specific qualities associated with mindfulness (e.g., kindness, compassion, caring, openness, acceptance, present-centered focus, patience, calm) to be able to effectively implement the program? These important questions remain to be empirically explored. To investigate some of these questions, Schonert-Reichl and colleagues are currently analyzing data from RCT 2 (see Fig. 20.1) that examined the implementation and efficacy of MindUP among teachers who participated in a mindfulness-based SEL program designed specifically for educators—Stress Management And Relaxation Training-in-Education (SMART; see Roeser, this volume; Roeser et al., 2013)—compared to those who did not. Longitudinal observational studies of MindUP that include teachers with various amounts of training and personal experience with contemplative practices are also essential.

Effects Over Time: Longitudinal studies are necessary to better understand potential long-term developmental effects of practice and to determine whether there are any sleeper effects from mindfulness training as have been observed in some recent studies on MBIs in schools (Kuyken et al., 2013; Van de Weijer-Bergsma et al., 2014). Additionally, it is important to know whether students continue to use the practices even after they are no longer practicing mindfulness training at school given that the immediate benefits associated with mindfulness training appear to come with consistent and frequent practice (Tang et al., 2012).

Qualitative Inquiry: The studies on MindUP described here investigated student perceptions solely through written responses to participant satisfaction surveys. Future studies should include other methods of obtaining participant insights, including focus groups and one-on-one interviews. Doing so could illuminate many currently unanswered questions concerning whether particular practices are more effective for different populations of youth, what young people experience during mindfulness practice, and how their experiences with and perceptions of mindfulness practice may change with repeated practice. Neurophenomenological studies that employ think-aloud descriptions of participants' experiences during and immediately following mindfulness practices in conjunction with

measurements of neurobiology could further illuminate underlying neurological mechanisms related to mindfulness practice.

Conclusion

The question of whether mindfulness practices are suitable as universal preventative interventions in schools has been raised by researchers, mindfulness practitioners, and educators. In this chapter, we overviewed studies that have found myriad beneficial outcomes to individuals participating in a mindfulness-based SEL program. The vast majority of students and teachers in the studies presented here reported favorable impressions of the MindUP program, providing support that schools may indeed be a suitable venue for introducing mindfulness practices. Our findings also provide support that, when combined, mindfulness practices and SEL can lead to positive improvements in social relations. Thus, MBIs that also teach secular ethics, such as kindness, perspective-taking, and gratitude, may offer benefits that transcend the individual and extend to others as well. Research on mindfulness education, however, is still in its infancy, and much work has yet to be done before any conclusions regarding generalizability of programs can be made.

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