



# Comparing Indirect and Combined Effects of Mindfulness and Compassion Practice Among Schoolchildren on Inter- and Intra-personal Abilities

Ricardo Tarrasch<sup>1</sup> · Rony Berger<sup>2</sup>

Accepted: 28 July 2022 / Published online: 17 August 2022

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

## Abstract

**Objectives** During the last decade, mindfulness-based interventions have been implemented in the educational system. Such programs could follow several approaches, including an indirect approach, in which interventions are delivered only to teachers and a combination in which interventions are delivered to both teachers and students. Because of the importance of teacher's involvement in programs designed to help children, we compared students' impact of indirect, combined, and control groups over time. The indirect program delivered was the “Call to Care – Israel for Teachers,” and the direct program was the “Call to Care Israel” for students. Both programs employ mindfulness, compassion, and training of social-emotional skills, with a unique emphasis on care.

**Methods** Two hundred 4th and 5th grade students were divided into indirect (2 classrooms), combined (3 classrooms), or control groups (3 classrooms). Each condition was implemented in a different school; schools were randomly divided into groups. The interventions were delivered by trained facilitators and included 20 weekly meetings. Outcomes for students were measured before the intervention, after it ended, and 6 months later.

**Results** Hierarchical linear models revealed that both the indirect and the combined approaches were effective in improving well-being, anxiety, attention, and teacher's availability and acceptance, while only the combined approach was effective in improving mindfulness, somatization, classroom atmosphere, and pro-social behavior.

**Conclusions** Our results suggest that the combined approach is more beneficial than the indirect approach. However, given the scalability and cost of the indirect approach, it should also be considered an effective alternative.

**Keywords** Students · Mindfulness · Compassion · Attention · Classroom atmosphere · Call to Care – Israel

Mindfulness has been conceptualized as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). While originating in Buddhist traditions, it has been embraced by Western culture in the last decades, and it could be understood through modern scientific terms as a process of regulatory training on a cognitive, emotional, and

behavioral level (Griffith et al., 2017). Mindfulness-based interventions (MBIs) encompass the cultivation of awareness and attentional faculties while using mindfulness meditation skills. It was originally applied to adult populations that dealt with various medical conditions, involving chronic pain and stress, and its application was later extended to other populations and disorders in different fields, the field of mental health, in particular (Goyal et al., 2014).

Given its efficacy in adult populations, public interest in MBI adaptations for children has grown in recent years and led to the implementation of mindfulness-oriented practices in school-based settings with empirical support for their efficacy (Felder et al., 2016). Several factors highlight the potential benefits that mindfulness may have for children. First, emotional and attentional regulatory capacities are particularly sensitive to environmental influence during childhood (Obradović, 2016). Second, due to the critical influence that

✉ Ricardo Tarrasch  
ricardo@tauex.tau.ac.il

<sup>1</sup> Jaime and Joan Constantiner School of Education and Sagol School of Neuroscience, Tel Aviv University, Ramat Aviv, 6997801 Tel Aviv, Israel

<sup>2</sup> Bob Shapell School of Social Work, Tel Aviv University, Tel Aviv, Israel

the environment has on children and adolescents, difficulties in regulation may impede learning and development among children, and constitute a prime factor in their vulnerability to psychopathology (Salters-Pedneault et al., 2006). Thus, the practice of mindfulness provides many promising benefits for children (Perry-Parrish et al., 2016).

It is possible that the target population of MBIs in the educational system is the teachers (e.g., enhancing teachers' well-being, performance, and resilience; Hwang et al., 2017), the students (e.g., improving attention and executive functions; Mak et al., 2018, and increasing empathy and compassion; Cheang et al., 2019), both students and teachers, or even the entire school (including school personnel, students, families, and local communities, in order to promote student well-being; Kiehl et al., 2017).

Initial reviews found MBIs to be feasible with children, and effective in treating physiological, psychosocial, and behavioral problems (Greenberg & Harris, 2012; Meiklejohn et al., 2012). Moreover, authors have suggested that the education system is a prominent setting for implementing MBIs for children. Traditionally, the public education system focused on improving students' academic performance. However, nowadays schools are considered to be pivotal in fostering children's social and emotional competence—a term referring to an entire set of mental skills which promotes well-being and facilitates positive and respectful social relationships (Jennings & Greenberg, 2009; Weissberg, 2019). It has been suggested that focusing on children's emotional and social needs, rather than solely on academic performance, enhances academic outcomes (Diamond, 2010), promotes academic motivation, decreases school bullying, and ameliorates mental health problems in youth (Schonert-Reichl et al., 2015). Social and emotional skills encompass inter-personal abilities, e.g., emotional and attentional self-regulation, and inter-personal abilities, e.g., empathy and compassion. Self-regulation, empathy, and compassion are the center of most of the mindfulness programs, and have been shown to develop by practicing mindfulness (Cheang et al., 2019).

Given the surge of enthusiasm in the field, alongside the implementation of MBIs for children without enough supporting evidence (Greenberg & Harris, 2012), empirical studies soon followed. However, studies evaluating MBIs in education are heterogeneous—in study design, intervention characteristics, population, measurement, and outcome—making evaluation of MBIs for children in general rather difficult. Several meta-analyses have been conducted in recent years (e.g., Felver et al., 2016; Zenner et al., 2014). They have found that MBIs are conducted for children of all the age groups in the K-12 education system, with about half of the studies in high-schools, and pertinently to the current study, about a third in elementary schools. However, most of the studies were conducted in the USA, some in Europe, and

a few in Australia and Asia. Interventions are often based on extant mindfulness programs for adults, mindfulness-based stress reduction and mindfulness-based cognitive therapy, in particular, which are adapted to the developmental needs of the participants (Burke, 2009; Felver et al., 2016; Zenner et al., 2014).

Duration and intensity vary greatly between interventions. In a review including 25 studies of programs offered for children aged 5–17 ( $mean = 12.3$ ,  $SD = 3.5$ ), duration ranged from 75 to 2160 min ( $mean = 397$ ,  $SD = 412$ ). The average length of a single session ranged from 5 to 120 min ( $mean = 37$ ,  $SD = 27$ ; Felver et al., 2016). In a systematic review and meta-analysis of 24 studies, MBIs for children were found efficient in three domains of outcome: cognitive performance (mainly assessed by attention tests), stress and coping (perceived stress and coping behavior), and resilience (well-being, positive relationships, self-esteem, and constructive emotions). While the effect size in cognitive performance was generally large, in the domains of stress and resilience the mean effect size was moderate (though still significant). Results were primarily obtained with self-report measures, although some studies also combined physiological measures, and found corresponding changes (e.g., reduced blood pressure). However, we should cautiously consider these findings, as the outcomes of the studies were generally heterogeneous. In the domain of emotional problems (e.g., clinical symptoms of depression and anxiety, maladaptive thinking style and emotion regulation), effect sizes were small, and relatively homogeneous (Zenner et al., 2014). Several (about 25%) studies collected follow-up measures, with an average length of elapsed time post-treatment of 13 weeks (Felver et al., 2016). To conclude, most studies lack objective measures and follow-ups.

While focusing on the students' perspective, the incorporation of mindfulness into the educational system could essentially follow three approaches: a direct approach, in which the intervention is directly delivered to students; an indirect approach, where the teacher develops a personal practice of mindfulness; or the combination of both. On one hand, the direct teaching of mindfulness to students would potentially prove to be more effective in improving self-regulation and fostering resilience, as students experience and practice mindfulness first hand (e.g., Flook et al., 2015). On the other hand, the indirect approach is preferable as it encourages teachers to cultivate the skills of mindfulness in their everyday lives both in the classroom and outside it (Jennings et al., 2017; Meiklejohn et al., 2012). Furthermore, after an MBI for teachers is terminated, the gains remain in the schools and are reflected in the teachers' behavior toward their current and future students. Indeed, the recognition of the crucial effect of the teachers on the emotional and social development of their students is growing (Jennings & Greenberg, 2009). The aforementioned is even more expressed

in terms of the way that teachers relate and behave in daily interactions rather than in formal instruction. More specifically, the principal dimensions of the teachers' emotional and social competence have been posited as mediators in producing these same effects on students (Jennings & Greenberg, 2009). Given the nature of mindfulness as a faculty to be developed and nurtured rather than knowledge to be acquired, reaping its full benefits entails its daily presence and embodiment in classroom activities and social interactions. Moreover, implementation is likely to be facilitated when the teacher embodies mindfulness in its daily classroom activities (Meiklejohn et al., 2012). In addition, an improved management of the classroom may serve as one of the mediators between the teachers' social competence and the students' development. Accordingly, the teachers' classroom management skills have been found to directly affect the students' motivation and indirectly affect the students' achievements (van Dijk et al., 2019). Furthermore, the teachers' interpersonal mindfulness may buffer against the effects of high stress on teachers' emotional supportiveness in the classroom (Molloj Elreda et al., 2019).

In a study of changes in the classroom following an MBI administered to teachers alone, researchers found that it had beneficial effects on depression, anxiety, negative affect, rumination, mindfulness, and positive affect compared to the control group (Jennings et al., 2011). However, surprisingly enough, few studies have explored the beneficial effects of the indirect approach on students, and back on their teachers. Such an approach is of high importance, as the improvement of the children's behaviors positively affects the teachers' well-being and performance, and reduces their stress and burnout (Singh et al., 2013), which, in turn, positively affects the student's learning process as well (Katz et al., 2016). Thus, the indirect effect can be bi-directional and self-reinforcing.

Instead, most studies that assess MBIs administered to teachers measured the way the teachers benefited from the intervention, and the way they perceived changes in classroom management and relationships with students (Meiklejohn et al., 2012; Roeser, 2014). Furthermore, according to a recent meta-analysis, while MBIs for teachers had medium effects on the teachers' psychological well-being, the effects on the measures of classroom climate or the instructional practices were small (Klingbeil & Renshaw, 2018).

In the model that was recently suggested and assessed by Roeser et al., (2021), mindfulness practice among secondary teachers cultivates self-compassion and emotion regulation that lead to reduced anxiety and burnout and higher well-being, which, in turn, promotes support for autonomy among their students and emotionally supportive relations with them. The effects of the teachers' practice among their students are in line with the attachment theory which posits that children require a secure base with adults to regulate

themselves and to perform in an optimal manner (Al-Yagon & Mikulincer, 2006; Riley, 2010). Teachers may serve as surrogate attachment figures that can provide both a safe haven and a secure base for their students (Verschuere & Koomen, 2012). Accordingly, as classroom settings serve as proximal supports for promoting children's development (Bronfenbrenner & Morris, 2006), improving teachers' interactions with students may enhance behavior management, increase emotional supports, and enable better learning (Pianta et al., 2021). Additional support for the indirect effect of teachers' practice on their students is derived from the prosocial classroom mediational model (Jennings & Greenberg, 2009), according to which the teachers' social and emotional competence and well-being and their relationships with the students affect the students' outcomes, social competence, and mental health. Accordingly, mindfulness-based interventions which are focused on teachers led to improvements in classroom organization (Flook et al., 2013; Hwang et al., 2017), emotional support, positive climate and teacher sensitivity (Jennings et al., 2017) and enhanced atmosphere in the class (DiCarlo et al., 2020) and trait mindfulness of teachers was found to correlate with emotionally supportive interactions with students in their most stressful classroom (Braun et al., 2019). Furthermore, affiliation with teachers was found to positively correlate with students' involvement, and social and school competence, and negatively with delinquency, conduct problems, anxiety, and depression (Murray & Greenberg, 2001).

Although the aforementioned studies are highly valuable considering the important issues of burnout and work-related stress in the educational system, they do not allow practitioners and researchers to consider the unique ways in which students can gain from the indirect approach or from the synergistic combination of both approaches. Meiklejohn et al. (2012) point out that most studies administer interventions either to K-12 educators or to students, but they suggest that an integrated approach that includes both educators and students holds a potential for a deeper, more lasting effect. Similarly, Hwang et al. (2017) who reviewed MBIs for in-service teachers, conclude that future intervention studies should assess both direct and indirect effects of training teachers in mindfulness, and clarify how they can cooperate to create classroom environments that are conducive to effective learning and teaching.

The present study implemented the "Call to Care—Israel for Teachers" (C2C-IT) and the "Call to Care Israel" (C2C-I) programs, which were originally developed by the Mind and Life Institute (Berger, 2014; Condon & Makransky, 2020; Lavelle Heineberg, 2016; Roeser et al., 2018). The programs include practices of mindfulness and compassion and, in particular, target the construct of care and caring, divided into three modes: receiving care, developing self-care, and extending care. The teachers' program (C2C-IT) aims to

foster the types of caring and supportive classroom environments which encourage the students' learning and well-being, while concurrently addressing the issues of work-related stress and burnout. The students' program (C2C-I) aims to cultivate the three modes of care in direct contact with the students, while adapting the intervention to the child's developmental needs (Dodson-Lavelle et al., 2015). For detailed information about the programs see Berger et al. (2018) and Tarrasch et al. (2020).

The present pilot study explored the effects of the C2C-IT and C2C-I programs among children. However, considering the paucity of the research which examined the effects of the indirect approach on students, we chose to include three groups in the study: a combined group, where the intervention was delivered both to the students and to their teachers; an indirect group, where the intervention was solely delivered to teachers; and a control group, where no intervention was delivered. Hence, based on the design of the current pilot study, we can explore how the indirect approach and the added benefits of the combined approach can benefit students. We are aware that the full experimental design should also include a direct approach (where only children practice). However, we opted not to assess that approach because of the importance of the teacher's involvement in any solution that is aimed to affect the children's lives. In this work, neglecting teachers is a recipe for what Seymour Sarason referred to as the predictable failure of the school reform (Sarason, 1990), where the modification of one part of the complex education system without appreciating its dependence on other parts leads to a faulty treatment. This is the intergenerational approach that many refer to—while remembering that schools are systems, and including the adults in any intervention is a key to its success.

Philosophically, the C2C-I program is suitable for children of all ages, following adaptations for its implementation with specific ages. In the current pilot study, we focused on children in the 4th and 5th grade, as at this age children have already adapted to school, and are old enough to answer to self-reported measures. We hypothesized an improvement in both experimental groups (but not in the control group) from pre- to post-program measurements in inter-personal abilities: increased satisfaction with life and mindfulness, decreased anxiety, attentional problems and somatization and intra-personal abilities: Increased perceptions of teachers' availability and acceptance, feelings about the classroom and prosocial behavior. Furthermore, since children in the combined group are assumed to obtain gains both from their own practice and that of their teachers, we predicted that the effects would be more pronounced in the combined group than in the indirect group, and that the effects in both groups would endure from the post-program to the period of follow-up. In addition, we hypothesized that changes in dependent measures will be related to changes in self-reported

mindfulness, as a mediator of the effects of the training of mindfulness (Heeren et al., 2015).

## Method

### Participants

Two hundred pupils from three different schools participated in the study. The number of participants segmented by group, class, and gender is presented in Table 1. All pupils were Jewish Hebrew speakers. A priori power analysis using G\*Power 3.1.9.4 for repeated measures ANOVA with between factors, with parameters set at effect size of 0.3, alpha 0.05, power 0.95, with 3 groups and 3 measures and correlation among repeated measures of 0.8, yielded a total sample size of 153. Accordingly, the sample size used was large enough. Each condition was implemented in a different school. The three schools were from similar middle-class socio-economic backgrounds according to the socio-economic index of the Israeli Central Bureau of Statistics, located in the center of Israel. The principals in these schools showed an interest in implementing a mindfulness and compassion-based program among the teachers and/or the students. Schools were randomly allocated to the groups, using randomly generated numbers. The average age of participating students was not statistically different from one school to another, neither the gender composition of the students. The original number of pupils in the three groups was 87 in the combined group, 60 in the indirect group, and 90 in the control group. However, the percentage of the parents that sign the informed consent was 86%, 85%, and 82%, respectively. All the students whose parents signed the informed consent agreed to fill out the questionnaires. Students in the combined group whose parents did not sign the informed consent still participated in the intervention. The questionnaires were filled out during several consecutive days, so students that were absent in one administration were approached in the following days. In such manner, all the students whose parents signed the informed consent filled out the questionnaires during the three times of the administration. The five teachers of the classes who participated in the C2C-IT training agreed to participate in the study

**Table 1** Number of participants by group, class, and gender

Class	Gender	Group		
		Control	Indirect	Combined
4th	Female	27	15	25
	Male	25	14	27
5th	Female	12	11	14
	Male	10	11	9

with the only incentive of self-improvement. They were all females with a BA degree, secular Jews. Three in the combined group (ages: 31, 35, and 39, with 5, 6, and 8 years of teaching seniority) and two in the indirect group (ages: 33 and 34, with 4 and 5 years of teaching seniority). None had previous experience in mindfulness. Two were previously trained in social and emotional learning (one in the combined group and one in the indirect group).

## Procedures

The C2C-IT and C2C-I programs were spread throughout a full academic year, and each included 20 weekly meetings which were held on pre-defined days of the week. C2C-IT sessions for teachers lasted one hour and a half, and C2C-I sessions for children lasted one academic hour (45 min). The sessions in both programs included psychoeducational materials (e.g., mindfulness and compassion effects on brain activity and anatomy, correlates of mindfulness and compassion, or the concepts of fixed vs. growth mindsets); contemplative practices (e.g., teaching mindful breathing, body scan, or caring-figure meditation); social-emotional skills (e.g., identifying and sharing emotions, learning to receive and give social support, or developing perspective-taking and empathy skills); and group activities (e.g., sharing positive and negative feelings with peers or role-playing difficult situations). These practices were accompanied by homework assignments (e.g., practicing compassion, paying attention to automatic reactions in challenging situations, or body scans). Although the topics of both programs were similar, the C2C-I materials and exercises were adapted for children. Because of the shorter attention span of children and in order to enhance motivation and willingness for practice, the exercises for children were shorter and they included more somatic elements, movement and humor. The explanations were less scientific, and they included storytelling. For a more detailed description of the programs, see Table 2 for the C2C-IT and Table 3 for the C2C-I program.

The facilitators were graduate research assistants with 3–5 years of experience in contemplative practice that worked with teachers and children. For each of the two programs separately, the second author has trained facilitators for 15 h, which included lectures, discussions, and simulations of the contemplative practices and the experiential exercises. To ensure the fidelity of the program, the second author who also supervised them on a weekly basis outside the site, regularly observed the facilitators throughout the administration of the program. However, no formal data ensuring fidelity was collected. Attendance was monitored for the teacher's program, and all the teachers participated in at least 80% of the meetings. No attendance was monitored for children, but all the children who were present in school on the days of the program participated in it.

## Measures

Pupils filled out a questionnaire three times before the beginning of the C2C workshop (“pre-measure”; during the 2 weeks preceding the beginning of the workshop), immediately after its termination (“post-measure”; during the 2 weeks following the termination of the workshop), and 6 months after the workshop was completed (“follow-up measure”; all data collected within a period of 2 weeks). The questionnaire included 7 scales that measured satisfaction with life, mindfulness, anxiety, attentional problems, somatization, attachment to the teacher, and feeling about the classroom. All measures were previously used in Hebrew and as in the present study showed good psychometric characteristics. Research assistants administered questionnaires during class time. Children autonomously completed the questionnaires and were encouraged to request for help in case they did not understand a specific question/word. It took about 30 min to complete a questionnaire. Children which were absent on the day of the administration were approached during the following days. Inter-item consistency of the scales used in the study, as assessed by Cronbach's alpha, and scale reliability as assessed by McDonald's omega (Peters, 2014), in the pre-, post-, and follow-up measures are presented in Table 4. As can be seen, all reliability values are in the mid-high range.

**Satisfaction with Life** Participants also completed the “*Satisfaction with Life*” Scale which was adapted for children (SWLS-C; Gadermann et al., 2010) and includes 5 items (rated 1–7), and measures cognitive judgments of satisfaction with one's life, including items such as “I am happy with my life.” High values denote high levels of satisfaction with life. The SWLS-C has good convergent validity and internal reliability of 0.86.

**Mindfulness** The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) which is comprised of 39 Likert-type items (rated 1–5) was used to measure self-reported mindfulness. In a previous study, the items were translated into Hebrew and re-worded into simple language in order to ensure the understanding of the children (Ginesin, 2013). The FFMQ yields a total score based on the following five facets: non-reactivity to inner experience, measured by items such as “I watch my feelings without getting lost in them”; observing and attending to experience (e.g., “I pay attention to sensations, such as the wind in my hair or the sun on my face”); describing and discriminating between emotional experiences (e.g., “I'm good at finding words to describe my feelings”); non-judging of experience (e.g., “I tell myself I shouldn't be feeling the way that I am feeling”); and acting with awareness (e.g., “I find myself doing things without paying attention”). High values denote high

**Table 2** C2C-IT program for teachers, basic elements

Week	Mode	Objectives	Skills
1	Introduction	Getting to know the teachers. Introducing the program. Setting the rules for the training	Diaphragmatic breathing
2	Introduction	Introducing the theoretical framework. Teaching imagery of a “safe place”	“Safe place” imagery
3	Receiving Care	Understanding the causes of burnout. Developing burnout prevention strategies. Teaching vagal breathing	Vagal breathing
4	Receiving Care	Introducing the concept of mindfulness. Enhancing motivation to practice mindfulness	Brief mindfulness (5 min)
5	Receiving Care	Introducing attachment theory. Deepening the process of mindfulness	Mindfulness (10 min)
6	Receiving Care	Dealing with destructive feelings. Teaching compassion meditation	Mindfulness (15 min). Compassion meditation—care moment
7	Receiving Care	Dealing with barriers to receiving care. Deepening compassion meditation’s practice	Mindfulness (15 min). Compassion meditation—dear person
8	Receiving Care	Designing experiences for receiving care. Teaching imagery of receiving care	Mindfulness (15 min). Receiving care imagery
9	Self-Care	Introducing the concept of self-compassion. Teaching self-compassion meditation	Meditation—self-compassion
10	Self-Care	Evaluating level of self-care. Identifying needs for self-compassion. Designing daily self-compassion practices	Meditation—self-compassion
11	Self-Care	Learning the differences between self-esteem and self-compassion. Practice self-affirmation	Meditation—self-compassion. Self-affirmation
12	Self-Care	Developing awareness to their self-criticism. Learning ways to combat their self-criticism	Meditation—self-acceptance
13	Self-Care	Identifying barriers for self-compassion. Practicing self-gratitude	Meditation—self-gratitude
14	Self-Care	Introducing the concepts mind-sets. Develop growth mind-set. Learning to flex rigid thoughts	Adopting growth mind-set. Flexing rigid thoughts
15	Extending Care	Exploring the benefits of giving to others. Practicing small care gestures toward others	Meditation—from receiving to giving
16	Extending Care	Introducing the concepts of radical compassion. Learning to practice radical compassion. Learning empathic communication	Meditation—accepting challenging people. Empathic communication
17	Extending Care	Learning the basis of human judgment. Teaching teachers perspective taking	Meditation—accepting “difficult” students. Perspective taking
18	Extending Care	Understanding stereotyping and prejudice. Teaching critical thinking	Critical thinking
19	Extending Care	Introducing the bystander effect	Active bystandership
20	Extending Care	Designing a students’ project focusing on giving to the community	

levels of mindfulness. The five facets of mindfulness have shown good internal consistency and correlations in the expected directions with many variables which are predicted to be related to mindfulness, such as experiential avoidance, thought suppression, openness to experience, and emotional intelligence (Baer et al., 2006). The FFMQ has been previously used in Hebrew with adolescents (e.g., Calvete et al., 2017) and young children with an overall reliability of 0.76 and facets’ reliabilities ranging between 0.63 and 0.77 (Ginesin, 2013).

**Short Version of the Spence Children’s Anxiety Scale** The short version of the Spence Children’s Anxiety Scale (Spence, 1998), which includes eight items (rated 1–4) that assess anxiety levels among children aged 8–12, such as “I worry about things,” was administered. High scores represent high levels of anxiety. The scale has good psychometric properties, including test–retest reliability and convergent and divergent validity (Spence, 1998).

**Table 3** C2C-I program for children, basic elements

Week	Mode	Objectives	Skills
1	Receiving Care	Program introduction. Enhance motivation of the students. Set ground rules. Learn mindful attention	Learn to slow down breath and prolong exhalation (vagal breath)
2	Receiving Care	Learn how mindfulness impacts the brain. Extend mindfulness capacity—focus on breath. Belly breathing	Diaphragm breath (belly breath)
3	Receiving Care	Understand how the body and brain deal with stress. Practice mindfulness. Learn body scan	Body scan (observe and label sensations from head to toes)
4	Receiving Care	Understand the concept of attachment and care. Practice contemplation. Learn mindful walking	Mindful walk, mindfulness care moment
5	Receiving Care	Understand the importance of receiving care. Practice contemplation: care figure. Learn to identify care-givers. Learn to ask for help	Practice receiving care. Communicate the need for help
6	Receiving Care	Become aware of the barriers to receiving care. Recognize negative thoughts and feelings. Learn “Bubble” mindfulness	Identify destructive thoughts and feelings. Practice letting them go
7	Receiving Care	Learn to express needs in a coherent and clear way. Identify underlying needs. Seek help in school. Practice school care-figures	Learn how to identify your needs and to communicate them
8	Self-care	Understand self-care. Practice stable care figure	Soothing rhythmic breathing
9	Self-care	Understand the differences between self-care and self-esteem. Practice self-care. Learn mind–body connection	Hand levitation (demonstrate how students control their body with their mind)
10	Self-care	Identify needs. Set and prioritize self-goals. Practice self-care. Learn somatic self-regulation	Somatic pendulum (how to change body experiences)
11	Self-care	Explore further self-goals. Identify self-care vs. self-aggrandizement. Practice self-care. Learn “lions yoga”	“lions yoga” (teaching students several yoga positions using imagery)
12	Self-care	Identify students’ obstacles for self-care. Practice self-nurturing mindfulness	Brief muscle relaxation (tensing and flexing five groups of muscles)
13	Self-care	Teach students the concepts of fixed and growth mindsets. Explore self-rigid thinking. Practice contemplation regarding self-rigid thinking	Identify and challenge rigid thinking about self
14	Self-care	Constructing a self-care program. Practice stable figure. Learn self-affirmations	Practice self-affirmations
15	Extending Care	Understand the importance of caring for others. Develop environmental awareness. Learn active listening skills	Active listening skills—learning how to mirror and validate
16	Extending Care	Practice extending care to loved ones. Enhance motivation to extend care toward others. Develop empathy skills	Non-verbal empathy skills
17	Extending Care	Develop social awareness. Understand selective attention. Practice extending care to friends. Learn how to offer help	How to offer help in a sensitive way
18	Extending Care	Develop awareness regarding biases in perceiving others. Learn perspective-taking. Practice extending care to children from different backgrounds	Perspective-taking
19	Extending Care	Develop awareness of group stereotyping and prejudices. Practice extending care to children you dislike. Learn to suspend judgment	Suspending social judgment and developing a self-critique part
20	Extending Care	Develop a compassionate mindset (common humanity). Design school/community social action plan. Practice extending care to all humanity	Compassionate mindset—compassionate method acting and imagery

**Attention Problems Questionnaire** Participants also completed the Attention Problems Questionnaire which includes 11 questions (rated 1–5) about attention, concentration, organization, and memory, with items such as “It is hard for me to sit in the class for 45 min.” High values represent more attention problems. The questionnaire was developed

and validated in Hebrew by Amira Bahat and Osnat Ben Canaan (personal communication).

**Somatization** Students’ somatization was measured by using the Seattle Personality Questionnaire for Children (SPQC; Kusché et al., 1988). The scale includes four constructs:

**Table 4** Cronbach's alpha ( $\alpha$ ) and McDonald's omega ( $\omega$ ), before, after the program termination and at follow-up, of the scales used in the study

	Before		After		Follow-up	
	$\alpha$	$\omega$	$\alpha$	$\omega$	$\alpha$	$\omega$
SWLS-C	.82	.82	.87	.87	.88	.88
FFMQ—non-reactivity	.63	.62	.78	.78	.78	.79
FFMQ—observing	.62	.64	.70	.71	.69	.71
FFMQ—describing	.68	.67	.69	.66	.69	.66
FFMQ—non-judging	.72	.72	.69	.68	.67	.67
FFMQ—acting with awareness	.79	.77	.78	.78	.78	.78
FFMQ—overall	.80	.76	.87	.87	.86	.85
Anxiety	.68	.68	.76	.77	.79	.78
Attention problems	.81	.81	.83	.90	.82	.87
Somatization	.67	.70	.76	.77	.78	.79
Teacher availability	.92	.92	.93	.93	.93	.93
Feelings about classroom	.87	.86	.88	.88	.88	.88

(a) conduct problems, (b) anxiety, (c) somatization, and (d) depressive symptoms. We only used the 5-item somatization subscale (rates 1–4; e.g., “I get a lot of aches and pains?”) for the present pilot study. Higher scores represent higher levels of somatization. Evidence exists which supports the validity and the reliability of the somatization subscale of the SPQC (Kusché et al., 1988).

**Attachment Representations of Teachers** Students completed the availability and acceptance factor (17 items, rated 1–7) from the 25-item Children's Appraisal of Teacher as a Secure Base (CATSB) scale (Al-Yagon & Mikulincer, 2006). It assesses the children's appraisal of the homeroom teacher as a secure base, and includes items such as “My teacher is always there to help me when I need her.” High values indicate stronger attachment to teachers. Evidence supports the reliability of the availability and acceptance factor of the CATSB (Al-Yagon & Mikulincer, 2006).

**Feelings About Classroom Scale** Finally, participants completed the Feelings About Classroom Scale, composed of 12 items (rated 1–5), with items like “My class is like a family.” High values denote better feelings about the classroom. This scale has a good level of reliability and convergent validity (Battistich et al., 1997).

**Behavioral Measure** A behavioral measure was used to assess children's pro-social behavior (at pre- and post-measures only). In the beginning of the year, the teacher told the students that a donor gave a large contribution to help children in need. Goods were purchased with the donation, but help was needed to pack the goods that were given by the donor. She further informed the students that the donor requested that students volunteer to pack the goods and help with distributing them to the poor children. They were also informed that the task would take several days after school,

which means that they would have to give up all their after-school activities. The teacher then left the class and the students filled out the volunteer forms that indicated their willingness to volunteer. On the following day, the teacher told them that there were some administrative problems and that the project was temporarily postponed for a future date. At the end of the year, the teacher told the students that the administrative problems were resolved and that the donation project is ready to start. The students were asked again whether they were still willing to volunteer. They then filled out the volunteer's forms again. This measure is of interest, as in contrast to other collected measures, it is not a self-report, but an actual act of willingness to volunteer to help others. We do not have data regarding the predictive validity of this measure. Students were debriefed at the end of the study and the rationale for the deception was explained to them.

## Data Analyses

To assess whether differences existed between the three groups in the pre-measure, one-way ANOVAs were performed. Hierarchical linear models (HLM) were performed with repeated factors of subjects and time, and fixed effects of condition, grade, gender and interactions between condition and time, condition, time and grade and condition, time and gender. This analysis was performed separately for each of the indexes that were assessed. Significant interactions were followed by Bonferroni post hoc tests. Since there is no consensus regarding the calculation of effect sizes in HLM models, effect sizes of the interactions were calculated by partial eta squared, computed from general linear models (GLM), as recommended by Olejnik and Algina (2003). Partial eta squared values of 0.01 are considered small, 0.09 medium, and 0.25 large (Cohen et al., 2003). To assess non-independence of observations, the intraclass correlation



coefficient (ICC) was calculated. This was carried out by running a null model (intercept-only model) and by dividing the between-cluster variance by the sum of the between- and within-cluster variance. In order to assess whether the increase in mindfulness in the indirect and combined groups was concomitant with changes in other psychological measures, Pearson's correlation coefficients were calculated between the difference in mindfulness between the pre- and post-measures and the pre-post difference in other scales, only for participants in the intervention groups. We calculated all the differences while aiming to obtain positive numbers; i.e., variables which were expected to decrease (e.g., anxiety) post-intervention were subtracted from pre values, while for variables which were expected to increase (e.g., teacher availability and acceptance), pre-values were subtracted from post-values. In order to assess whether the willingness to volunteer changed between the pre- and post-measures, the McNemar test was performed separately for each of the three experimental groups.

## Results

### Differences Between Pre-, Post-, and Follow-up Measures Between the Groups

One-way ANOVAs which were performed on the pre-test measures revealed no significant differences between the groups in any of the dependent measures (all  $ps > 0.08$ ). As can be seen in Table 5, HLM analyses yielded significant interactions between time of measurement (pre-, post-, and follow-up) and group for all the variables that were assessed (all  $ps < 0.001$ ). Effect size of the interactions ranged between 0.060 and 0.201, while most values were in the range of medium to large. The results of Bonferroni post hoc comparisons are presented in Table 6. The means and the standard errors of the variable of the study segmented by time and group are presented in Table 7. Since all the five

factors of the FFMQ questionnaire showed similar trends, only the results of the overall measure are presented.

As can be seen in Fig. 1, significant improvements were observed in the combined and indirect groups and were maintained at the follow-up measure. In cases where the control group improved between the pre- and post-measures, the improvement was smaller. In detail, post hoc tests revealed that (a) the control, the indirect, and the combined groups reported a higher satisfaction with life at the post ( $p = 0.01$ ,  $p < 0.001$ , and  $p < 0.001$ , respectively) and follow-up ( $p = 0.023$ ,  $p < 0.001$ , and  $p < 0.001$ , respectively) measures as compared to baseline; however, there was a smaller increase in the control group; (b) both the indirect and combined groups reported a significantly higher mindfulness score at the post (both  $p < 0.001$ ) and follow-up ( $p = 0.002$  and  $p < 0.001$  respectively) measures as compared to baseline; (c) both the indirect and combined groups reported lower anxiety at the post (both  $p < 0.001$ ) and follow-up ( $p = 0.006$  and  $p < 0.001$  respectively) measures compared to baseline; (d) both the indirect and combined groups reported less attention problems at the post ( $p = 0.004$  and  $p < 0.001$  respectively) and follow-up measures ( $p = 0.005$  and  $p < 0.001$  respectively) as compared to baseline; (e) both the indirect and combined groups reported lower somatization at the post ( $p = 0.001$  and  $p < 0.001$ , respectively) and follow-up ( $p = 0.002$  and  $p < 0.001$ , respectively) measures compared to baseline. The control group also reported a significantly lower somatization at post-test compared to baseline ( $p = 0.013$ ); (f) the three groups showed higher teacher availability and acceptance at post and follow-up measures compared to baseline (all  $ps < 0.001$ ); and (g) the control, indirect, and combined groups significantly improved in class atmosphere at the post ( $p = 0.001$ ,  $p < 0.001$ , and  $p < 0.001$ , respectively) and follow-up ( $p = 0.003$ ,  $p < 0.001$ , and  $p < 0.001$ , respectively) measures as compared to baseline; however, the improvement was lower in the control group. For more details on Bonferroni post hoc comparisons, see Table 6.

**Table 5** Results of hierarchical linear models performed on the dependent variables in the study, including main effects of time (pre, post, and follow-up), group (indirect, combined, and control) interaction between time and group, partial eta squared (from GLM analyses) and intraclass correlation coefficient (ICC)

	Main effect of time		Main effect of group		Interaction		Partial eta squared	ICC
	<i>F</i> (2,382)	<i>p</i>	<i>F</i> (2,191)	<i>p</i>	<i>F</i> (4,382)	<i>p</i>		
SWLS-C	52.0	*	0.3	.770	5.9	*	.060	0.89
FFMQ	112.3	*	14.1	*	41.0	*	.369	0.71
Anxiety	47.5	*	6.0	.003	11.8	*	.159	0.75
Attention problems	30.4	*	5.4	.005	15.3	*	.170	0.88
Somatization	55.2	*	9.5	*	10.3	*	.132	0.77
Teacher availability	179.7	*	2.2	.112	8.6	*	.094	0.67
Feelings about classroom	110.0	*	0.7	.51	20.7	*	.201	0.82

\*  $p < .001$

**Table 6** Results of Bonferroni post hoc comparisons following group by time interactions, comparing between pre and post measures (Pre-post), pre and follow-up measures (pre-FU), and post vs. follow-up measures (Post-FU), separately for each group

Variable	Group	Comparison	Mean difference	Std. error	<i>p</i>	Lower bound	Upper bound
SWLS-C	Control	Pre-post	−0.161	0.054	0.01	−0.292	−0.03
	Indirect	Pre-post	−0.229	0.06	<.001	−0.375	−0.084
	Comb	Pre-post	−0.425	0.054	<.001	−0.554	−0.296
FFMQ	Control	Pre-post	−0.051	0.022	0.062	−0.103	0.002
	Indirect	Pre-post	−.096	0.024	<.001	−0.154	−0.038
	Comb	Pre-post	−.355	0.021	<.001	−0.407	−0.304
Anxiety	Control	Pre-post	0.067	0.03	0.077	−0.005	0.138
	Indirect	Pre-post	0.130	0.033	<.001	0.05	0.209
	Comb	Pre-post	0.268	0.029	<.001	0.197	0.338
Attention problems	Control	Pre-post	−0.011	0.027	1	−0.075	0.054
	Indirect	Pre-post	.097	0.03	0.004	0.025	0.168
	Comb	Pre-post	.211	0.026	<.001	0.147	0.275
Somatization	Control	Pre-post	0.134	0.047	0.013	0.022	0.246
	Indirect	Pre-post	0.196	0.052	0.001	0.071	0.321
	Comb	Pre-post	0.421	0.046	<.001	0.31	0.531
Teacher availability	Control	Pre-post	−.409	0.059	<.001	−0.55	−0.268
	Indirect	Pre-post	−.577	0.065	<.001	−0.733	−0.42
	Comb	Pre-post	−.763	0.058	<.001	−0.902	−0.624
Feelings about classroom	Control	Pre-post	−.106	0.03	0.001	−0.178	−0.035
	Indirect	Pre-post	−.160	0.033	<.001	−0.239	−0.081
	Comb	Pre-post	−.408	0.029	<.001	−0.478	−0.337
SWLS-C	Control	Pre-FU	−0.145	0.054	0.023	−0.276	−0.015
	Indirect	Pre-FU	−0.260	0.06	<.001	−0.405	−0.115
	Comb	Pre-FU	−0.493	0.054	<.001	−0.622	−0.364
FFMQ	Control	Pre-FU	−0.051	0.022	0.055	−0.104	0.001
	Indirect	Pre-FU	−.084	0.024	0.002	−0.142	−0.027
	Comb	Pre-FU	−.371	0.021	<.001	−0.422	−0.319
Anxiety	Control	Pre-FU	0.032	0.03	0.843	−0.039	0.104
	Indirect	Pre-FU	0.103	0.033	0.006	0.023	0.182
	Comb	Pre-FU	0.299	0.029	<.001	0.229	0.370
Attention problems	Control	Pre-FU	−0.012	0.027	1	−0.076	0.053
	Indirect	Pre-FU	.094	0.03	0.005	0.022	0.165
	Comb	Pre-FU	.264	0.026	<.001	0.201	0.328
Somatization	Control	Pre-FU	0.103	0.047	0.084	−0.009	0.216
	Indirect	Pre-FU	0.180	0.052	0.002	0.055	0.304
	Comb	Pre-FU	0.488	0.046	<.001	0.377	0.599
Teacher availability	Control	Pre-FU	−.359	0.059	<.001	−0.5	−0.218
	Indirect	Pre-FU	−.527	0.065	<.001	−0.683	−0.37
	Comb	Pre-FU	−.812	0.058	<.001	−0.951	−0.673
Feelings about classroom	Control	Pre-FU	−.100	0.03	0.003	−0.171	−0.029
	Indirect	Pre-FU	−.170	0.033	<.001	−0.249	−0.091
	Comb	Pre-FU	−.422	0.029	<.001	−0.492	−0.351
SWLS-C	Control	Post-FU	0.016	0.054	1	−0.115	0.146
	Indirect	Post-FU	−0.031	0.06	1	−0.176	0.114
	Comb	Post-FU	−0.068	0.054	0.617	−0.197	0.061
FFMQ	Control	Post-FU	−0.001	0.022	1	−0.053	0.051
	Indirect	Post-FU	0.011	0.024	1	−0.047	0.069
	Comb	Post-FU	−0.016	0.021	1	−0.067	0.036
Anxiety	Control	Post-FU	−0.035	0.03	0.74	−0.106	0.037

**Table 6** (continued)

Variable	Group	Comparison	Mean difference	Std. error	<i>p</i>	Lower bound	Upper bound
Attention problems	Indirect	Post-FU	−0.027	0.033	1	−0.107	0.052
	Comb	Post-FU	0.032	0.029	0.836	−0.039	0.102
	Control	Post-FU	−0.001	0.027	1	−0.066	0.063
Somatization	Indirect	Post-FU	−0.003	0.03	1	−0.075	0.069
	Comb	Post-FU	0.053	0.026	0.133	−0.01	0.117
	Control	Post-FU	−0.031	0.047	1	−0.143	0.081
Teacher availability	Indirect	Post-FU	−0.016	0.052	1	−0.141	0.109
	Comb	Post-FU	0.067	0.046	0.434	−0.043	0.178
	Control	Post-FU	0.05	0.059	1	−0.091	0.191
Feelings about classroom	Indirect	Post-FU	0.05	0.065	1	−0.107	0.206
	Comb	Post-FU	−0.049	0.058	1	−0.188	0.09
	Control	Post-FU	0.006	0.03	1	−0.065	0.078
	Indirect	Post-FU	−0.01	0.033	1	−0.089	0.069
	Comb	Post-FU	−0.014	0.029	1	−0.085	0.056

**Table 7** Means and standard errors (in parentheses) of study variables by time (pre, post, and follow-up) and group (control, indirect, and combined)

Measure	Control			Indirect			Combined		
	Pre	Post	Follow-up	Pre	Post	Follow-up	Pre	Post	Follow-up
SWLS-C	4.99 (0.131)	5.151 (0.131)	5.136 (0.131)	4.867 (0.146)	5.097 (0.146)	5.127 (0.146)	4.657 (0.13)	5.082 (0.13)	5.15 (0.13)
FFMQ	3.039 (0.039)	3.09 (0.039)	3.091 (0.039)	3.171 (0.044)	3.267 (0.044)	3.256 (0.044)	3.107 (0.039)	3.463 (0.039)	3.478 (0.039)
Anxiety	2.034 (0.05)	1.967 (0.05)	2.002 (0.05)	1.908 (0.055)	1.778 (0.055)	1.805 (0.055)	1.972 (0.049)	1.704 (0.049)	1.673 (0.049)
Attention problems	2.802 (0.061)	2.812 (0.061)	2.814 (0.061)	2.667 (0.068)	2.57 (0.068)	2.573 (0.068)	2.708 (0.06)	2.497 (0.06)	2.444 (0.06)
Somatization	2.086 (0.079)	1.952 (0.079)	1.982 (0.079)	2.095 (0.087)	1.899 (0.087)	1.915 (0.087)	1.895 (0.078)	1.475 (0.078)	1.407 (0.078)
Teacher availability	4.96 (0.096)	5.368 (0.096)	5.318 (0.096)	4.995 (0.106)	5.572 (0.106)	5.522 (0.106)	4.954 (0.094)	5.718 (0.094)	5.766 (0.094)
Feelings about classroom	3.222 (0.066)	3.328 (0.066)	3.322 (0.066)	3.172 (0.073)	3.332 (0.073)	3.342 (0.073)	3.102 (0.065)	3.509 (0.065)	3.523 (0.065)

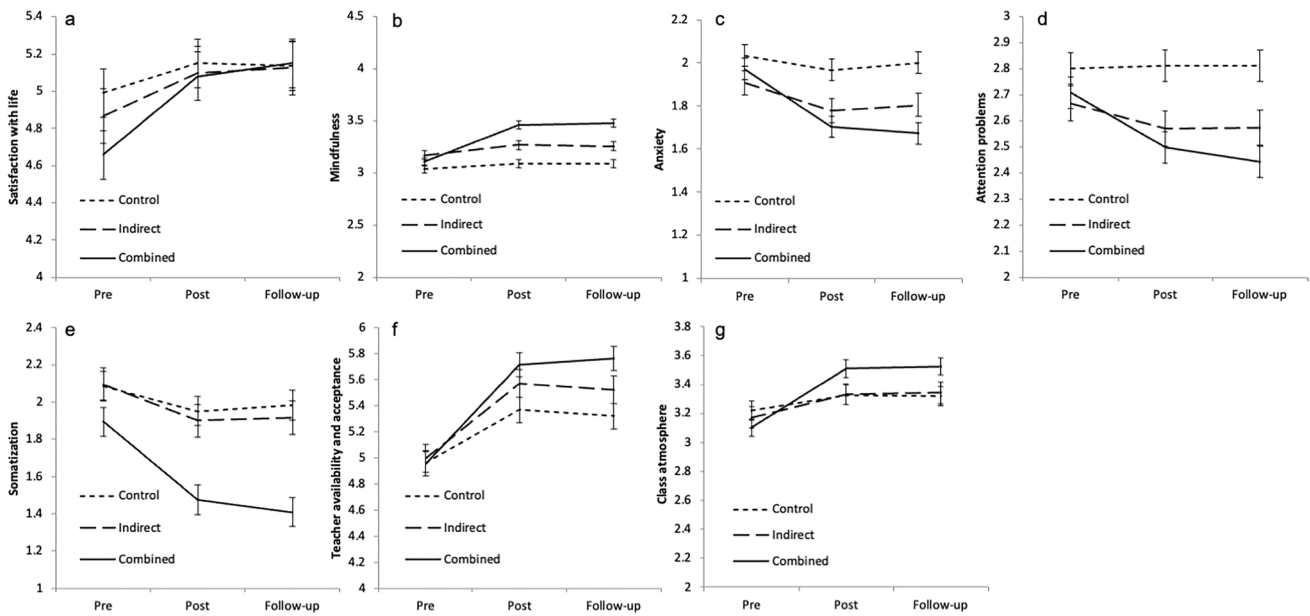
### Correlations Between Difference in Mindfulness and Other Scales

As can be seen in Table 8, among the intervention groups, we obtained significant correlations between improvements in mindfulness and improvements in teacher's availability and acceptance, feelings about the classroom, attention problems, satisfaction with life, anxiety and somatization.

### Differences in the Willingness to Volunteer

In the combined group, the changes in the willingness to volunteer significantly differed from symmetry

(McNemar test,  $p < 0.001$ ; i.e., the percentage of pupils who changed from non-volunteering to volunteering was significantly higher than that of those who changed from volunteering to non-volunteering). In the control and indirect groups, we observed no significant increase in the willingness to volunteer. As can be seen in Fig. 2, in the combined group, a larger percentage of children chose to volunteer at the end of the year, but they were not willing to volunteer in the beginning of the year (27%) as compared to the control (8%) and the indirect groups (10%).



**Fig. 1** Averages and S.E. of the dependent measures before (pre), immediately after (post), and 6 months after the manipulation (follow-up) among controls and C2C combined and indirect participants

**Table 8** Pearson correlations between changes (pre vs post) in mindfulness and changes in other variables among participants in the interventions’ groups

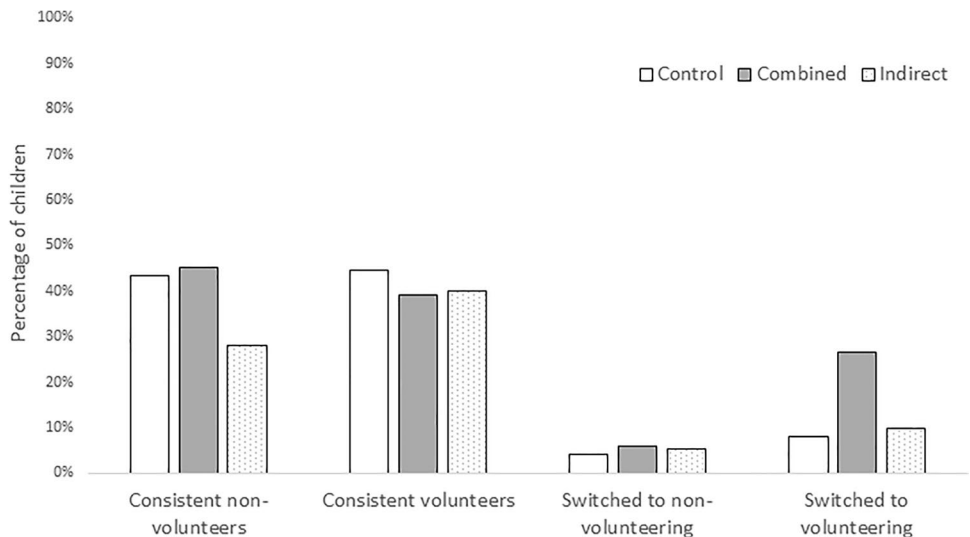
Variable	<i>r</i>
SWLS-C	.20*
Anxiety	.41**
Attention problems	-.29**
Somatization	.38**
Teacher availability	.39**
Feelings about classroom	.31**

\*  $p < .05$ , \*\*  $p < .001$

## Discussion

According to the results of this preliminary study, significant improvements were obtained in all the three groups with respect to satisfaction with life, somatization, teacher’s availability and feelings about classroom, but the changes in the control group were smaller. Such overall changes may be partly explained by the fact that the first measure was collected in the beginning of the year, and the students’ perceptions of classroom environments develop over time and tend to improve throughout the year (Turner et al., 2013). In line with our hypotheses, improvements in mindfulness, anxiety,

**Fig. 2** Willingness to volunteer before and after the manipulation among controls and C2C combined and indirect participants



and attention problems were significant among both the indirect and the combined groups rather than among controls. As predicted, the combined method yielded the best outcomes, although based on post hoc comparisons, its advantage over the indirect one varied among the different measures.

Beyond the differences between the direct and the indirect approach, the general results which were obtained in the present pilot-study may be especially relevant for the present, while anxiety levels among children rise to unprecedented levels due to the COVID-19 pandemic (Racine et al., 2021). As effective MBIs may address the new challenges that face the children of today, it is important to address which types of interventions are the most cost-effective. In the present study, the most notable advantage of the combined method was observed in mindfulness faculties, anxiety-related measures (including somatization), and class atmosphere. The intensification of mindfulness and the decrease in anxiety levels were significantly higher in the combined group compared to the indirect group. In terms of somatization and class atmosphere, the results which were obtained in the indirect group were similar to those in the control group.

One possible explanation for the stronger effect of the combined intervention about mindfulness and anxiety may be their subjective nature that stems from specific attentional biases (Bar-Haim et al., 2007). Although benign teacher's behavior can reduce the students' anxiety levels and improve their ability to concentrate, our results do not support the findings of Murray and Greenberg (2001), since in our study, the practice of mindfulness among teachers was not enough to affect their students' anxiety. The stark difference between the two experimental groups in somatization suggests that physiological symptoms may be less affected by the indirect effect of the teachers' practice, but susceptible to personal practice of mindfulness. This effect could also be related to an increase in attentiveness to bodily sensations developed by personal practice (Kabat-Zinn, 1990, pp 47–93).

The advantage of the combined method is not as salient with regard to attention problems and becomes notably reduced with satisfaction with life and attachment to the teacher measures, where similar improvements were recorded between pre- and post-program measurements for both experimental groups. This result, however, is consistent with the rationale that was presented in the introduction, as attachment to the teacher is related to the teachers' practice and their support of their students. The way students feel about their teachers is significantly affected by the way teachers carry themselves in and around the class (Jennings & Greenberg, 2009; Jennings et al., 2017; Meiklejohn et al., 2012), and teachers affect their students' behavior through both role modeling and direct instruction (Framework for twenty-first century learning, 2012). In the model proposed by Roeser et al. (2012), the cultivation of the teachers' habits of mind, such as tolerance for uncertainty, attentional focus,

cognitive flexibility, and emotion regulation, improves the teachers' well-being, occupational health and engagement. In turn, the relationships with their students improve, and they enhance the engagement of the students in learning and reduce their disruptive behavior. Such changes in the students' behavior affect the teachers' behavior while forming a positive loop. Our results support the model and go beyond in terms of changes in students' not only inter-, but also intra-personal qualities. Since both interventions included the practice of the teachers, the addition of the practice of the children in the combined group in terms of attachment to the teacher may be small. However, the similar improvement following both interventions in satisfaction with life is surprising and does not fit our predictions.

The trend that emerges from our preliminary results is an overall advantage of the combined method alongside significant benefits which are produced by the indirect one. While taking this last point into account, it may be worthwhile to further assess the indirect approach that relates to the implementation of MBIs in the educational settings. Such an approach complies with the model of Jennings and Greenberg (2009), which alludes to the enhancement of the teachers' emotional and social competence as a mediator of improvements in their students' emotional and social capabilities. First, the collateral benefits of devoting resources to the development of the teachers' emotional competence and contemplative capabilities should be taken into account. As part of the earlier description of a global effect (Meiklejohn et al., 2012), teachers can serve as agents of change inside the classroom, while cascading down the ameliorative benefits of the training and practice that they themselves undergo. Specifically, the current pilot study joins previous evidence in the literature (Jennings et al., 2011, 2017) in demonstrating the beneficial effects that indirect MBIs can have for the classroom climate and the students' well-being. From this perspective, mindfulness-based programs that focus on the teachers can have a combined effect, while improving the lives of both teachers and students and focusing the efforts on just one group. The C2C-IT program in particular stresses the inseparability of caring for oneself and having the availability to openly and freely extend care to others (Dodson-Lavelle et al., 2015), and thus, it seems to fit this kind of benign mechanism. Thus, the focus of efforts on the teachers can contribute to the longevity and the resilience of the benefits of the program. In their role as agents of change, bought-in teachers can foster an enduring cultural shift in their classrooms and schools, thus, prolonging the benefits of the program beyond the immediate time of the intervention. As adults, teachers are also more likely to continue developing and nurturing their newly acquired skills as compared to their students (Quach et al., 2017), and thus, to maintain a mindful and compassionate attitude in their interactions with students.

## Investing in Teachers

Another consideration for investing in teacher-based MBIs is the organizational utilities that arise from teachers who are better equipped for dealing with the stress and the hardships of the profession. Educational systems throughout the world are plagued by teachers' stress-induced attrition and the resulting high percentage of dropouts (Brackett et al., 2010; Ingersoll, 2002). Consequently, several MBIs which were specifically designed for teachers were developed, implemented and shown to be effective in ameliorating teachers' job-related stress and in reducing burnout (e.g., Emerson et al., 2017; Flook et al., 2013; Hwang et al., 2017). The failure to keep teachers in the profession has severe pedagogical and financial implications. When schools fail to sustain a stable core of a teaching faculty due to high attrition, new teachers suffer from a lack of guidance and mentorship (Alliance for Excellent Education, 2004). Dropout teachers also take the institutional and professional knowledge that they have acquired with them, while necessarily influencing the level of teaching that the students receive. Research supports the common-sense belief that teachers require time to become effective in their craft (Berliner, 2000). Thus, it is not surprising that high rates of dropouts negatively impact student achievements (Alliance for Excellent Education, 2004). In addition to this pedagogical price, high levels of attrition impose a substantial economical burden on the educational system. In the USA alone, for instance, schools were estimated to spend an annual sum of more than US\$ 2.6 billion on replacing teacher dropouts (Alliance for Excellent Education, 2004). When taking all these different factors into account, the clear outcome is that reducing teacher burnout and the resulting dropout is an important organizational interest.

While all the aforementioned considerations are relevant to the comparison with the direct approach of incorporating mindfulness into the educational system, they do not apply to the combined one, since all the important benefits of investing resources in the training of teachers will be gained by it as well. However, it could be assumed that there is an advantage of the indirect approach compared to the combined approach, and that is the potential of the scalability and the sustainability of the programs, while taking the lower cost of the indirect approach as compared to the direct one into consideration. In its use here, scalability is similar to Meiklejohn et al. (2012) reference to the "transportability" of the intervention—the degree to which it is "feasible, flexible, socially valid, and sustainable in real-world settings." An important issue to consider in this regard is the issue of cost. Implementing an effective mindfulness-based program on a school-wide scale requires significantly greater resources than exclusively focusing on the teaching staff, primarily due to the number of participants and the resulting

required personnel. These assumptions should be assessed in future studies. In a recent detailed cost analysis of the implementation of an MBI program for teachers, Doyle et al. (2018) estimate the cost of coordination and facilitation of a 30-h program that is provided by the CARE for Teachers program delivery organization to be US\$10,000. This includes one facilitator that can lead a group of up to 30 teachers, and it does not incorporate additional costs, such as training material, workbooks, travel expenses, etc. Whatever the exact cost of the facilitators may be, given that the average class size in the primary and the lower secondary education in OECD countries ranges between 21 and 23 students (OECD, 2017) and that effective student-oriented interventions are likely to require a higher ratio of facilitators to participants than teacher-oriented ones, the implementation costs of a school-wide program are bound to be much higher than those that are teacher-based.

In addition to the financial resources that are required, a large-scale implementation can be logistically and institutionally complex. It requires the assignment of specific time blocks during the day at the expense of other classes and activities as well as a supportive physical environment for the delivery of the program. As mentioned, it also requires sufficient qualified personnel, and it might involve the need to communicate the objectives and rationale of the program to parents and to other members of the community. Although we believe that the significant benefits that a mindfulness-based SEL program can produce for the children's well-being are worth the investment of necessary institutional resources, practical considerations alongside the financial burden might deter many schools from implementing a mindfulness-based program for children unless they have another easier-to-implement alternative, which is supported by the necessary scientific evidence.

The results of this pilot study provide evidence for the advantage of working simultaneously with teachers as well as with students. Therefore, it provides support to choosing a combined, integrated method wherever possible, while aiming at improving the children's functioning and perceptions of the classroom climate. However, given (a) the difficulties of scalability that come with this method, (b) the significant benefits that were produced by the indirect approach among children in the current pilot study, (c) the rationale of investing in teachers as change agents inside the school, and (d) the positive effects of the practice of mindfulness that previous studies have shown on the teachers themselves, it may be suggested that the primary focus of implementing MBIs in the education system could be the teaching staff.

## Limitations and Future Research

Although promising, the pilot study's findings should be interpreted in light of the following limitations. The design

of our study precluded the employment of the full randomization of the sample; the sample had to be randomized to the study groups at the school level, rather than at the participant level. Although such allocation of participants could help in preventing indirect effects within schools, it is also possible that it introduced a bias into our sample.

The sample (in both the experimental and the control groups) was recruited from schools whose principals had previously expressed interest in implementing a program of mindfulness and compassion. Therefore, it is possible that school administrators were especially interested in the successful implementation of the program, while principals who are less inclined to run such programs may not be so attentive to the program's implementation and fidelity. In addition, no data related to fidelity was collected. As a result, the findings may not be generalizable to environments in which the school administration is not equally dedicated to practice.

Both the volunteering measure and the outcome measures were assessed through self-report, which might be subject to a bias of response. Furthermore, we have no validity data for the volunteering measure that was designed for the current study. In addition, we used an adaptation of the FFMQ to assess mindfulness among children, a measure that was developed for adults, and there are no conceptual properties of this measure for this age group. Another limitation is that we conducted a 6-month follow-up assessment to determine the long-term impact of the intervention; however, future studies should use longer follow-up times to evaluate the extended durability of the intervention.

It is unclear what the specific elements of the interventions that led to the results that were obtained were. The change from the baseline could be the result of several variables, their interactions, and doses (e.g., mindful breathing, compassion-based mindfulness, SEL psychoeducation, guided imagery, acceptance, SEL skills, etc.). At last, the size of our sample was small, and the design of the study did not include all the possible interventions (e.g., a direct approach, training only children). Future studies could isolate the elements of the interventions to allow their methodical assessment.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s12671-022-01955-y>.

**Author Contribution** RT and RB designed and executed the study and wrote the paper. RT analyzed the data. All authors approved the final version of the manuscript for submission.

## Declarations

**Ethics Approval** All procedures performed in this study were in accordance with and received the approval of the Tel Aviv University Ethics

Committee and the Office of the Chief Scientist of the Ministry of Education.

**Informed Consent** Informed consent was obtained from the parents of the individual participants included in the study.

**Conflict of Interest** The authors declare no competing interests.

## References

- Al-Yagon, M., & Mikulincer, M. (2006). Children's appraisal of teacher as a secure base and their socio-emotional and academic adjustment in middle childhood. *Research in Education*, *75*, 1–18.
- Alliance for Excellent Education. (2004). *Tapping the potential: Retaining and developing high-quality new teachers*. <https://all4ed.org/wp-content/uploads/2007/07/TappingThePotential.pdf>
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- Bar-Haim, Y., Lamy, D., Pergamin, L., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (2007). Threat-related attentional bias in anxious and nonanxious individuals: A meta-analytic study. *Psychological Bulletin*, *133*, 1–24.
- Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities. *Educational Psychologist*, *32*(3), 137–151. [https://doi.org/10.1207/s15326985sep3203\\_1](https://doi.org/10.1207/s15326985sep3203_1)
- Berger, R. (2014). The Erase-Stress (ES) programmes: Teacher-delivered universal school-based programmes in the aftermath of disasters. In D. Mitchel & V. Karr (Eds.), *Crises, conflict and disability: Ensuring equality* (pp. 96–104). Routledge.
- Berger, R., Brenick, A., & Tarrasch, R. (2018). Reducing Israeli-Jewish pupils' outgroup prejudice with a mindfulness and compassion-based social-emotional program. *Mindfulness*, *9*, 1768–1779. <https://doi.org/10.1007/s12671-018-0919-y>
- Berliner, D. C. (2000). A personal response to those who bash teacher education. *Journal of Teacher Education*, *51*(5), 358–371. <https://doi.org/10.1177/00224871000510050004>
- Brackett, M. A., Palomera, R., Mojsa-Kaja, J., Reyes, M. R., & Salovey, P. (2010). Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers. *Psychology in the Schools*, *47*(4), 406–417. <https://doi.org/10.1002/pits.20478>
- Braun, S. S., Roeser, R. W., Mashburn, A. J., & Skinner, E. (2019). Middle school teachers' mindfulness, occupational health and well-being, and the quality of teacher-student interactions. *Mindfulness*, *10*(2), 245–255. <https://doi.org/10.1007/s12671-018-0968-2>
- Burke, C. A. (2009). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies*, *19*(2), 133–144. <https://doi.org/10.1007/s10826-009-9282-x>
- Calvete, E., Gámez-Guadix, M., & Cortazar, N. (2017). Mindfulness facets and problematic Internet use: A six-month longitudinal study. *Addictive Behaviors*, *72*, 57–63. <https://doi.org/10.1016/j.addbeh.2017.03.018>
- Cheang, R., Gillions, A., & Sparkes, E. (2019). Do mindfulness-based interventions increase empathy and compassion in children and adolescents: A systematic review. *Journal of Child and Family Studies*, *28*(7), 1765–1779. <https://doi.org/10.1007/s10826-019-01413-9>

- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Routledge.
- Condon, P., & Makransky, J. (2020). Sustainable Compassion Training: Integrating meditation theory with psychological science. *Frontiers in Psychology, 11*(September), 1–16. <https://doi.org/10.3389/fpsyg.2020.02249>
- Diamond, A. (2010). The evidence base for improving school outcomes by addressing the whole child and by addressing skills and attitudes, not just content. *Early Education and Development, 21*(5), 7800–8793. <https://doi.org/10.1080/10409289.2010.514522>.The
- DiCarlo, C. F., Meaux, A. B., & LaBiche, E. H. (2020). Exploring mindfulness for perceived teacher stress and classroom climate. *Early Childhood Education Journal, 48*(4), 485–496. <https://doi.org/10.1007/s10643-019-01015-6>
- Dodson-Lavelle, B., Berger, R., Makransky, J., & Seigle, P. (2015). *A call to care: Professional development guide* (Unpublished manual).
- Emerson, L. M., Leyland, A., Hudson, K., Rowse, G., Hanley, P., & Hugh-Jones, S. (2017). Teaching mindfulness to teachers: A systematic review and narrative synthesis. *Mindfulness, 8*(5), 1136–1149. <https://doi.org/10.1007/s12671-017-0691-4>
- Felver, J. C., Celis-de Hoyos, C. E., Tezanos, K., & Singh, N. N. (2016). A systematic review of mindfulness-based interventions for youth in school settings. *Mindfulness, 7*(1), 34–45. <https://doi.org/10.1007/s12671-015-0389-4>
- Flook, L., Goldberg, S. B., Pinger, L., Bonus, K., & Davidson, R. J. (2013). Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy. *Mind, Brain and Education, 7*(3), 182–195. <https://doi.org/10.1111/mbe.12026>
- Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J. (2015). Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness-based kindness curriculum. *Developmental Psychology, 51*(1), 44–51.
- Framework for 21st century learning. (2012). *Partnership for 21st Century Skills*. <http://www.battelleforkids.org/networks/p21/frameworks-resources>
- Gademann, A. M., Schonert-Reichl, K. A., & Zumbo, B. D. (2010). Investigating validity evidence of the satisfaction with life scale adapted for children. *Social Indicators Research, 96*(2), 229–247. <https://doi.org/10.1007/s11205-009-9474-1>
- Ginesin, E. (2013). *The influence of the mindfulness-based 'Language of mindfulness' program on attentiveness, anxiety and positive emotions among primary school students (in Hebrew)*. Tel Aviv University.
- Goyal, M., Singh, S., Sibinga, E. M. S., Gould, N. F., Rowland-Seymour, A., Sharma, R., Berger, Z., Sleicher, D., Maron, D. D., Shihab, H. M., Ranasinghe, P. D., Linn, S., Saha, S., Bass, E. B., & Haythornthwaite, J. A. (2014). Meditation programs for psychological stress and well-being. *JAMA Internal Medicine, 174*(3), 357–368. <https://doi.org/10.1001/jamainternmed.2013.13018>
- Greenberg, M. T., & Harris, A. R. (2012). Nurturing mindfulness in children and youth: Current state of research. *Child Development Perspectives, 6*(2), 161–166. <https://doi.org/10.1111/j.1750-8606.2011.00215.x>
- Griffith, R. L., Steelman, L. A., Wildman, J. L., LeNoble, C. A., & Zhou, Z. E. (2017). Guided mindfulness: A self-regulatory approach to experiential learning of complex skills. *Theoretical Issues in Ergonomics Science, 18*(2), 147–166. <https://doi.org/10.1080/1463922X.2016.1166404>
- Heeren, A., Deplus, S., Peschard, V., Nef, F., Kotsou, I., Dierickx, C., Mondillon, L., Robinaugh, D. J., & Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A controlled study using the French translation of the Five Facet Mindfulness Questionnaire. *Mindfulness, 6*(3), 553–559. <https://doi.org/10.1007/s12671-014-0287-1>
- Hwang, Y. S., Bartlett, B., Greben, M., & Hand, K. (2017). A systematic review of mindfulness interventions for in-service teachers: A tool to enhance teacher wellbeing and performance. *Teaching and Teacher Education, 64*, 26–42. <https://doi.org/10.1016/j.tate.2017.01.015>
- Ingersoll, R. M. (2002). The teacher shortage: A case of wrong diagnosis and wrong prescription. *NASSP Bulletin, 86*(631), 16–31. <https://doi.org/10.1177/019263650208663103>
- Jennings, P. A., Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., Rasheed, D., DeWeese, A., DeMauro, A. A., Cham, H., & Greenberg, M. T. (2017). Impacts of the CARE for teachers program on teachers' social and emotional competence and classroom interactions. *Journal of Educational Psychology, 109*(7), 1010–1028. <https://doi.org/10.1037/edu0000187>
- Jennings, P. A., Foltz, C., Snowberg, K. E., Sim, H., & Kemeny, M. E. (2011). The influence of mindfulness and emotion skills training on teachers' classrooms: The effects of the cultivating emotional balance training. Paper presented at the American Psychological Association Annual Convention.
- Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research, 79*(1), 491–525. <https://doi.org/10.3102/0034654308325693>
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Delacorte Press.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology Science and Practice, 10*, 144–156. <https://doi.org/10.1093/clipsy/bpg016>
- Katz, D. A., Greenberg, M. T., Jennings, P. A., & Klein, L. C. (2016). Associations between the awakening responses of salivary  $\alpha$ -amylase and cortisol with self-report indicators of health and wellbeing among educators. *Teaching and Teacher Education, 54*, 98–106. <https://doi.org/10.1016/j.tate.2015.11.012>
- Kielty, M. L., Gilligan, T. D., & Staton, A. R. (2017). Whole-school approaches to incorporating mindfulness-based interventions: Supporting the capacity for optimal functioning in school settings. *Childhood Education, 93*(2), 128–135. <https://doi.org/10.1080/00094056.2017.1300491>
- Klingbeil, D. A., & Renshaw, T. L. (2018). Mindfulness-based interventions for teachers: A meta-analysis of the emerging evidence base. *School Psychology Quarterly, 33*(4), 501–511. <https://doi.org/10.1037/spq0000291>
- Kusché, C. A., Greenberg, M. T., & Beilke, R. (1988). *Seattle Personality Questionnaire for young School-aged children*. Unpublished personality questionnaire.
- Lavelle Heineberg, B. D. (2016). Promoting caring: Mindfulness- and compassion-based contemplative training for educators and students. In K. A. Schonert-Reichl & R. W. Roeser (Eds.), *Handbook of mindfulness in education: Integrating theory and research into practice* (pp. 285–294). Springer. <https://doi.org/10.1007/978-1-4939-3506-2>
- Mak, C., Whittingham, K., Cunnington, R., & Boyd, R. N. (2018). Efficacy of mindfulness-based interventions for attention and executive function in children and adolescents - A systematic review. *Mindfulness, 9*, 59–78. <https://doi.org/10.1007/s12671-017-0770-6>
- Meiklejohn, J., Phillips, C., Freedman, M. L., Griffin, M. L., Biegel, G., Roach, A., Frank, J., Burke, C., Pinger, L., Soloway, G., Isberg, R., Sibinga, E., Grossman, L., & Saltzman, A. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness, 3*(4), 291–307. <https://doi.org/10.1007/s12671-012-0094-5>
- Molloy Elreda, L., Jennings, P. A., DeMauro, A. A., Mischenko, P. P., & Brown, J. L. (2019). Protective effects of interpersonal mindfulness for teachers' emotional supportiveness in the



- classroom. *Mindfulness*, 10(3), 537–546. <https://doi.org/10.1007/s12671-018-0996-y>
- Murray, C., & Greenberg, M. T. (2001). Relationships with teachers and bonds with school: Social emotional adjustment correlates for children with and without disabilities. *Psychology in the Schools*, 38(1), 25–41.
- Obradović, J. (2016). Physiological responsivity and executive functioning: Implications for adaptation and resilience in early childhood. *Child Development Perspectives*, 10(1), 65–70. <https://doi.org/10.1111/cdep.12164>
- Olejnik, S., & Algina, J. (2003). Generalized eta and omega squared statistics: Measures of effect size for some common research designs. *Psychological Methods*, 8(4), 434–447. <https://doi.org/10.1037/1082-989X.8.4.434>
- Perry-Parrish, C., Copeland-Linder, N., Webb, L., & Sibinga, E. M. S. (2016). Mindfulness-based approaches for children and youth. *Current Problems in Pediatric and Adolescent Health Care*, 46(6), 172–178. <https://doi.org/10.1016/j.cppeds.2015.12.006>
- Peters, G.-J.Y. (2014). The alpha and the omega of scale reliability and validity. *The European Health Psychologist*, 16(2), 56–69.
- Pianta, R. C., Lipscomb, D., & Ruzek, E. (2021). Coaching teachers to improve students' school readiness skills: Indirect effects of teacher–student interaction. *Child Development*, 92(6), 2509–2528. <https://doi.org/10.1111/cdev.13600>
- Quach, D., Gibler, R. C., & Jastrowski Mano, K. E. (2017). Does home practice compliance make a difference in the effectiveness of mindfulness interventions for adolescents? *Mindfulness*, 8(2), 495–504. <https://doi.org/10.1007/s12671-016-0624-7>
- Racine, N., McArthur, B. A., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19. *A Meta-Analysis. JAMA Pediatrics*, 175(11), 1142–1150. <https://doi.org/10.1001/jamapediatrics.2021.2482>
- Riley, P. (2010). Attachment theory and the teacher-student relationship: A practical guide for teachers, teacher educators and school leaders. *Routledge*. <https://doi.org/10.4324/9780203845783>
- Roeser, R. W. (2014). The emergence of mindfulness-based interventions in educational settings. *Motivational Interventions*, 18, 379–419. <https://doi.org/10.1108/S0749-742320140000018010>
- Roeser, R. W., Colaianne, B. A., & Greenberg, M. A. (2018). Compassion and human development: Current approaches and future directions. *Research in Human Development*, 15(3–4), 238–251. <https://doi.org/10.1080/15427609.2018.1495002>
- Roeser, R. W., Mashburn, A. J., Skinner, E. A., Choles, J. R., Taylor, C., Rickert, N. P., Pinela, C., Robbeloth, J., Saxton, E., Weiss, E., Cullen, M., & Sorenson, J. (2021). Mindfulness training improves middle school teachers' occupational health, well-being, and interactions with students in their most stressful classrooms. *Journal of Educational Psychology*. <https://doi.org/10.1037/edu0000675>
- Roeser, R. W., Skinner, E., Beers, J., & Jennings, P. A. (2012). Mindfulness training and teachers' professional development: An emerging area of research and practice. *Child Development Perspectives*, 6(2), 167–173. <https://doi.org/10.1111/j.1750-8606.2012.00238.x>
- Salters-Pedneault, K., Roemer, L., Tull, M. T., Rucker, L., & Mennin, D. S. (2006). Evidence of broad deficits in emotion regulation associated with chronic worry and generalized anxiety disorder. *Cognitive Therapy and Research*, 30(4), 469–480. <https://doi.org/10.1007/s10608-006-9055-4>
- Sarason, S. B. (1990). *The predictable failure of educational reform: Can we change course before it's too late?* Jossey-Bass.
- Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., & Diamond, A. (2015). Enhancing cognitive and social – emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental Psychobiology*, 51(1), 52–66. <https://doi.org/10.1037/a0038454.supp>
- Singh, N. N., Lancioni, G. E., Winton, A. S. W., Karazsia, B. T., & Singh, J. (2013). Mindfulness training for teachers changes the behavior of their preschool students. *Research in Human Development*, 10(3), 211–233. <https://doi.org/10.1080/15427609.2013.818484>
- Spence, S. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy*, 36(5), 545–566. [https://doi.org/10.1016/S0005-7967\(98\)00034-5](https://doi.org/10.1016/S0005-7967(98)00034-5)
- Tarrasch, R., Berger, R., & Grossman, D. (2020). Mindfulness and compassion as key factors in improving teacher's well being. *Mindfulness*, 11, 1049–1061. <https://doi.org/10.1007/s12671-020-01304-x>
- Turner, J. C., Gray, D. L. L., Anderman, L. H., Dawson, H. S., & Anderman, E. M. (2013). Getting to know my teacher: Does the relation between perceived mastery goal structures and perceived teacher support change across the school year? *Contemporary Educational Psychology*, 38(4), 316–327. <https://doi.org/10.1016/j.cedpsych.2013.06.003>
- van Dijk, W., Gage, N. A., & Grasley-Boy, N. (2019). The relation between classroom management and mathematics achievement: A multilevel structural equation model. *Psychology in the Schools*, 56(7), 1173–1186. <https://doi.org/10.1002/pits.22254>
- Verschueren, K., & Koomen, H. M. Y. (2012). Teacher-child relationships from an attachment perspective. *Attachment and Human Development*, 14(3), 205–211. <https://doi.org/10.1080/14616734.2012.672260>
- Weissberg, R. P. (2019). Promoting the social and emotional learning of millions of school children. *Perspectives on Psychological Science*, 14(1), 65–69. <https://doi.org/10.1177/1745691618817756>
- Zenner, C., Herrleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools-A systematic review and meta-analysis. *Frontiers in Psychology*, 5, 603. <https://doi.org/10.3389/fpsyg.2014.00603>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.