Mindfulness-Based Interventions: An Initial Inquiry into Their Implementation and Benefits in Early Childhood Education

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Abstract. Mindfulness-Based Interventions (MBIs) have been increasingly implemented across various educational levels, including early childhood education. However, teachers have received limited training on this emerging practice. A descriptive literature review serves as a synthesis of foundational information on MBIs, supporting educators in making informed decisions in practice. This text discusses three aspects related to MBIs, including: the definition of mindfulness in educational contexts, the characteristics of MBI programs, and the outcomes of MBIs for preschool-aged children. These insights offer suggestions regarding factors that educators should consider both prior to and during the implementation of mindfulness practices.

Key words: mindfulness-based interventions, mindfulness, early childhood education, preschool.

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1 Introduction

Mindfulness has emerged as a topic of growing interest within the field of education. McCaw (2019) identifies its presence across three key dimensions: policy, practice, and research. In terms of policy, although mindfulness has yet to be formally embedded within centralized curricula in English-speaking countries, it has increasingly featured in educational policy discussions—particularly those concerning social and emotional learning. On the practical level, numerous initiatives have been launched to integrate mindfulness into school environments. Notable examples include the *Mindfulness in Schools Project* in North America and the UK, as well as the *Smiling Mind* app in Australia. An expanding array of books, workshops, and digital applications has been developed to introduce the theory and practices of mindfulness, while also offering strategies and opportunities for classroom integration. From a research perspective, there has been a surge in educational studies examining the impact of mindfulness practices on students' stress levels, anxiety, emotional regulation, and attentional capacities. As a prospective educator myself, I find this increasingly prominent practice to be a compelling area of interest and professional reflection.

Mindfulness and MBIs first captured my attention through two specific cases. During my internship in a pre-primary classroom, I observed that children appeared more relaxed after lying down and listening to guided meditation videos designed for young learners. Following these sessions, the group exhibited increased calmness, relaxation, and responsiveness to the teacher’s instructions. A second case involved a four-year-old boy who initially struggled with activities requiring composure and adherence to teacher guidance. He displayed continuous movement, even during naptime. However, after participating in a pre-naptime yoga routine over a period of time, his engagement improved. While he initially could not follow the instructor for even one minute, he gradually developed the ability to complete a five-minute yoga session.

Based on these two cases, I recognize the potential supportive role of mindfulness-related activities in early childhood education. However, I encountered difficulties in finding guidance on implementing mindfulness practices in preschool and early primary classrooms, because the majority of available resources cater to children aged six and above.

For this reason, I am motivated to conduct this literature review to enhance my own understanding as a future early childhood educator. This review synthesizes scientific findings on mindfulness practices for children aged 0–7 years. Specifically, it addresses the following questions:

1. How is mindfulness defined in the context of education?

2. What are characteristics of MBIs in preschool and pre-primary education?
3. What scientific evidence exists regarding the impact of MBIs on young children?
4. What considerations do existing studies recommend for educators implementing mindfulness practices in early childhood and primary classrooms?

By addressing these questions, I aim to acquire foundational knowledge for planning and evaluating mindfulness-based activities. I also believe that these general insights can support professionals working with children aged 0–7 in exploring MBIs as a potential educational approach.

2 Definition of mindfulness in education

According to McCaw (2019), historically, the concept of mindfulness originates from Buddhism. Jon Kabat-Zinn was a pioneer in introducing mindfulness to Western psychology through Mindfulness-Based Stress Reduction (MBSR) therapy at the University of Massachusetts Medical School in the late 1970s. Subsequently, mindfulness practice has been studied and recognized as a therapeutic approach in psychology. Due to its positive outcomes, such as stress reduction, enhanced empathy, self-awareness, emotional regulation, and attentional capacity in adults and adolescents (Bockmann & Yu, 2022), MBIs have become increasingly prevalent as an intervention for children and adolescents in recent decades (Vekety et al., 2022; Porter et al., 2022). In this way, mindfulness—an Eastern Buddhist concept—has become widely recognized and incorporated into Western education.

All studies on MBIs in education used in this literature review adopt Jon Kabat-Zinn's concept of mindfulness from MBSR therapy. Mindfulness is the intentional regulation of one's awareness, bringing attention to present-moment experiences while acknowledging them without judgment. It consists of three fundamental components: (1) deliberate attention control, (2) exclusive focus on one's present experience during practice, and (3) non-judgmental acknowledgment of the experience (McCaw, 2019). Jon Kabat-Zinn's definition of mindfulness does not explicitly refer to its Buddhist origins. The frequent use of this concept has led to an approach that views mindfulness as a primarily cognitive skill.

In education, the interpretation of mindfulness as merely a set of new skills, and of mindfulness-related activities as tools for developing specific competencies, improving academic performance, enhancing mood, and supporting mental well-being, has been widely adopted in contemporary educational contexts (McCaw, 2019). Based on previous research, Vekety et al. (2022) conceptualized mindfulness as an activity requiring a set of specific skills, such as attention regulation, concentration, impulse control in response to emotions, and self-exploration of thoughts and feelings. Porter et al. (2022) further emphasized that, in addition to attention regulation, mindfulness practice fosters an attitude of curiosity, openness, and acceptance rather than immediate judgment. Through mindfulness practice, individuals cultivate self-reflection, emotional regulation, empathy, and deeper self-understanding, as well as an understanding of others (Vekety et al., 2022), while also benefiting from its therapeutic effects (Porter et al., 2022). However, according to McCaw (2019), although the secularization and psychologization of the concept of mindfulness have contributed to the widespread adoption of Buddhist-derived practices in schools,

if mindfulness practices are applied merely as tools to train attention and mental focus for the sake of enhancing productivity and efficiency in work and learning, they are subject to significant criticism.

McCaw (2019) argues that if mindfulness practice is solely regarded as a tool for enhancing cognitive skills, it may inadvertently become a source of further distress. The author draws on Buddhist philosophy to support this argument, suggesting that one of the fundamental causes of human suffering is attachment to a desired outcome and the inability to attain it. In other words, when expectations are set, there is an inherent risk of disappointment if those expectations are not met. In this context, skills such as attention regulation, concentration, and emotional control become goals that individuals strive to achieve through mindfulness practice. If these goals are not attained, practitioners may experience negative emotions.

Another criticism of mindfulness activities is that they may encourage children to passively accept the negative emotions they experience and attain a sense of peace, rather than exploring the underlying causes of these emotions (Flores, 2016). The primary goal of mindfulness-related activities is to teach children emotional self-regulation, reducing emotional outbursts such as anger. As a result, emotions are framed as individual psychological issues rather than as responses to the interaction between personal desires, needs, and external circumstances. Consequently, mindfulness practice implicitly conveys the message that, rather than speaking out, confronting, or questioning potential injustices or harmful circumstances that contribute to negative emotions, children should instead focus on managing their own emotional responses.

In summary, although mindfulness originates from Buddhism, the most widely adopted definition in contemporary education is the one used by Jon Kabat-Zinn in MBSR therapy. Understanding mindfulness simply as the practice of focusing attention moment-to-moment experiences in a non-judgmental attitude or response, without emphasizing its Buddhist roots, has contributed to the widespread implementation of mindfulness-related activities in schools. However, this simplified approach to mindfulness has sparked ongoing debates regarding its purpose and effectiveness.

3 MBIs in early childhood education: Key characteristics

Mindfulness-based programs designed for preschool and pre-primary education exhibit specific characteristics regarding age range, instructors, practice settings, time and duration, teaching modal, activity content, and instructional materials. These characteristics will be discussed in detail in the following sections.

3.1 Age

MBIs for early childhood education, as described in the research literature, are implemented for children aged 3 to 7 years. Vekety et al. (2022), Porter et al. (2022), and Sun et al. (2021) reviewed studies and mindfulness-based programs for preschool children, all of which involved participants aged 3–7 years. Some notable intervention programs include the *Mindful Schools Program*, *Mini Mind*, *Calmer Choice*, and *Open Mind Korea* (Porter et al., 2022). Certain programs, such as *Calm Space*, are designed specifically for children aged 5–7 years, while others, such as *Kindness Curriculum and Mindful Yoga*, target children aged 3–5 years (Vekety et al., 2022). The author of the present study was unable to identify any programs targeting children under the age of three in the reviewed literature. Age is the first factor that educators need to consider when exploring and referring to an MBI program.

3.2 Instructors

Mindfulness instructors in these studies included in this literature review exhibit considerable diversity in their mindfulness or yoga proficiency. Porter et al. (2022) reports that there is currently no global standard for the minimum training requirements for instructors teaching mindfulness to children. Mindfulness instructors in MBIs can be teachers, certified professionals, such as certified yoga instructors, researchers, or previously trained students (Vekety et al., 2022; Porter et al., 2022 and Sun et al., 2021). Some instructors have completed formal MBSR training, while others undergo short-term training before program implementation. For instance, in the study by Razza et al. (2013), the mindfulness instructor was a preschool teacher who had obtained a 200-hour training certificate in the *YogaKids* program. In Holt et al.'s (2021) action research study, the instructors were the classroom teachers, who were provided with an opportunity to practice and familiarize themselves with different mindfulness approaches before integrating mindfulness into the classroom routine. This raises the question of who is best suited to effectively facilitate mindfulness practices.

3.3 Settings

The settings for MBIs in studies referred to in the present study vary widely. Sun et al. (2021), in a systematic literature review, reported that mindfulness activities may take place inside the classroom or in separate environments such as unused quiet rooms or gymnasiums. Berti and Cigala (2020) specifically chose a separate space from the main classroom, designed to create a comfortable, peaceful, and warm atmosphere with key features such as balanced lighting (neither too dark nor too bright), warmth, an absence of unnecessary classroom items or materials, and the presence of a door to isolate the space from external distractions during mindfulness activities. In other words, there is no universally established requirement regarding the setting in which mindfulness practices should take place within education.

3.4 Time and duration

MBIs vary significantly in terms of implementation timing, session duration, program length, and practice frequency across different studies. Mindfulness can be approached either as an intervention or program, or as a way of engaging with everyday activities (Holt et al., 2022). Differences in how mindfulness is conceptualized lead to variations in the duration and frequency of practice.

Specifically, when mindfulness is treated as an intervention or program, mindfulness-related activities can be delivered through dedicated sessions (Berti & Cigala, 2020; Dial et al., 2019; Porter et al., 2022; Sun et al., 2021; Vekety et al., 2022). Sessions vary in duration and frequencies. It can range from two times per week to daily. Each session typically lasts between 15 and 40 minutes with the possibility of increasing over time (Sun et al., 2021; Porter et al., 2022). For example, in the mindfulness yoga study by Razza et al. (2013), the session length progressively increased from 10 minutes per day to 30 minutes per day over 25 weeks.

However, the study by Holt et al. (2021) provides evidence that practicing mindfulness for up to 10 minutes at least twice a day can help children calm down and focus their attention, thereby fostering a relaxed and productive learning environment. Holt et al. (2021) and Nadler et al. (2017) argue whether it is necessary to have mindfulness or yoga sessions lasting up to 30 minutes at a time. Regarding program length, some MBIs in the form of structured programs may last as little as three weeks or extend up to two academic years (Sun et al., 2021). Current MBIs vary significantly in terms of program length, session duration, and session frequency. This remains a topic of ongoing debate in research literature.

When mindfulness is approached as a way of engaging with daily life activities, practice includes both formal lessons and informal exercises (Holt et al., 2021). Accordingly, some studies aim to integrate mindfulness-related activities into regular classroom routines rather than conducting them solely in dedicated sessions. Razza et al. (2013) designed an intervention based on the *YogaKids* program, in which children practiced daily breathing exercises and sun salutation yoga poses during morning circle time, followed by literacy-related yoga postures in the afternoon. During classroom transitions, children engaged in short breathing exercises, such as inhaling while raising fingers from one to five and exhaling while folding each finger down. It is evident that mindfulness practice can be embedded into daily activities, such as transition times, and even integrated into academic subjects like literacy.

3.5 Teaching modality

A common characteristic of MBIs is that they are all delivered in person (Porter et al., 2022). The authors also support the consideration of online programs, even if learning materials need to be sent to families, due to the potential benefits such programs offer, such as overcoming physical barriers, increasing accessibility for remote participants, and reducing costs. However, the researchers also caution that mindfulness interventions should not become an additional burden alongside academic subjects such as mathematics. In conclusion, there are currently no online MBI programs designed for the early childhood stage. At the same time, when designing online intervention programs to leverage the advantages of digital mindfulness practice, educators must consider how to engage kindergarten and pre-primary children in remote activities in a way that does not make them feel coerced.

Another factor to consider, as discussed in the literature, is whether mindfulness should be taught in small groups or to the entire class. Teachers in Holt et al.'s (2021) study suggested that certain activities, such as mindful walking, may be more beneficial when conducted in smaller groups, as this structure allows children to engage more attentively. However, Holt et al. (2021) also advocate for whole-class mindfulness instruction, emphasizing its role in fostering peer support and creating a psychologically safe environment. When mindfulness is practiced as a class-wide activity, children may feel more secure and able to concentrate. Educators should consider the nature of the activity, children's individual capabilities, and contextual factors when making decisions about group size to optimize student engagement.

3.6 Activity contents

The content of mindfulness-related activities for preschool children is highly diverse. According to Bockmann and Yu (2022) and Sun et al. (2021), MBIs for young children can be categorized into four primary types: those centered on mindfulness activities, those grounded in yoga practices, interventions that integrate mindfulness with social-emotional learning (SEL) components, and those that combine both yoga and mindfulness elements. Among these, SEL-integrated MBIs were the most prevalent, with six out of sixteen studies following this approach. The following provides details on four types of activities.

Yoga-based MBIs incorporate yoga postures, movements, and breathing techniques (Sun et al., 2021; Bockmann & Yu, 2022). Mindfulness activity-based MBIs include practices that encourage children to develop awareness of the present moment, emotions, and current tasks (Bockmann & Yu, 2022), as well as to become more attuned to their physical sensations, breathing, thoughts, and feelings (Sun et al., 2021). SEL-integrated MBIs not only incorporate mindfulness activities but also provide instruction on gratitude, kindness, empathy, emotional recognition, and self-reflection (Sun et al., 2021), aiming to enhance emotional, behavioral, and attentional awareness, and social-emotional skills (Bockmann & Yu, 2022).

Vekety et al. (2022) identified 11 specific activities with varying frequencies across different MBIs. The table below presents these 11 activities, along with their definitions, frequency of occurrence in MBI programs, age-related practice characteristics according to the authors' record and specific activity examples. In certain instances, references were made to Vekety et al. (2022) instead of the original sources, due to the unavailability of detailed information in the primary materials. To address this limitation, the authors contacted the original researchers during the research process to obtain additional information regarding the activity content.

Table 1: Mindfulness-based activities for early childhood education

Name	Definition	Frequency	Feature	Example
Breathing awareness	Observing one's breath naturally without attempting to alter or control it (Vekety et al., 2022). Aim: Maintain a state of focused attention while promoting a sense of calmness (Vekety et al., 2022).	100%	Limited to a maximum of five minutes; facilitated by attention-engaging objects such as toys or auditory stimuli; requires continuous teacher guidance during practice due to underdeveloped metacognitive abilities in young children (Vekety et al., 2022).	Blowing on a pinwheel; Rocking a stuffed animals on belly (Flook et al., 2015, as cited in Vekety et al., 2022). Counting breaths using five fingers alongside the teacher (Razza et al., 2013).
Mindfulness movement and body practice	Being mindful of bodily movements (e.g., walking) and/or engaging in physical practices such as yoga or tai chi.	100%	Duration: Extends up to 30 minutes; frequently incorporates playful elements (Vekety et al., 2022); emphasizes awareness of bodily sensations both before and after movement (Lo et al., 2019, as cited in Vekety et al., 2022).	Engaging in movement-based play, such as dancing or imitating animal movements (Flook et al., 2015, as cited in Vekety et al., 2022). Practicing yoga-inspired poses, including animal postures (e.g., downward dog) and nature-related poses (e.g., mountain) (Razza et al., 2013).
Awareness of senses and practices of daily life	Focusing on here-and-now sensory experiences (e.g., sight, sound, touch, smell, taste) and/or maintaining mindful awareness during daily routines (e.g., eating, brushing teeth) (Vekety et al., 2022) Aim: To cultivate mindful awareness of the environment through sensory perception involving all five senses (Vekety et al., 2022).	78%	Based on exercises to practice sensorial awareness including mindful auditory, visual, gustatory, olfactory, and tactile experiences. Incorporates various sensory stimuli, such as sound-producing tools (e.g., bells), elements from nature (e.g., leaves, seashells), food items, and a variety of tactile surfaces and materials (e.g., leather, sand). Often introduced in the initial sessions of most early childhood mindfulness programs (Vekety et al., 2022).	Mindful listening: Children close their eyes and listen to a bell sound, then raise their hand when the sound is disappears (Viglas, 2015). Tactile exploration: Identifying three different food items hidden inside boxes using only the sense of touch (Dial et al., 2019). Mindful eating: Consuming a raisin with full sensory awareness under the guidance of facilitators (Dial et al., 2019); Mindful walking (Holt et al., 2021).
Working with thoughts	Engaging in activities that develop understanding, expression, and regulation of emotions, as well as	78%	Utilize puppet shows and storybook narratives to model and label thoughts and emotions through character-based	Self-soothing practices: Engaging in physical exercises such as shaking out bodily tension to release nervous energy

Name	Definition	Frequency	Feature	Example
and emotions	metacognitive awareness (Vekety et al., 2022). Aim: To develop emotional awareness by recognizing and labeling emotions, fostering positive emotional experiences, and effectively managing negative emotions (Vekety et al., 2022).		storytelling. Incorporate self-soothing somatosensory exercises to support emotion regulation and reduce reactive responses. Introduce visualization techniques, such as imagining thoughts as clouds moving across the sky and floating bubbles, to illustrate their transient nature. This approach encourages decentering, a cognitive skill that helps individuals disassociate from their thoughts and emotions, thereby reducing emotional reactivity (Vekety et al., 2022)	(Flook et al., 2015, as cited in Vekety et al., 2022). Mindful observation of clouds: Lying outdoors and calmly observing cloud formations, followed by a discussion on how certain cloud shapes evoke specific feelings (Janz et al., 2019).
Psychoeducation	Providing structured psychoeducation through informative sessions on mindfulness and its related skills, such as how to cope with stress for children or their parents (Vekety et al., 2022.).	70%	Incorporates the acquisition of fundamental concepts related to mindfulness (Vekety et al., 2022).	Introduces foundational knowledge on mindfulness, focusing attention, and regulating emotions (Flook et al., 2015, as cited in Vekety et al., 2022).
Kindness practices	Cultivating kindness and a non-judgmental attitude toward oneself and others, and/or participating in activities that promote prosocial behaviors (e.g., empathy, sharing) (Vekety et al., 2022). Aim: Primarily aimed at fostering unconditional positive qualities such as kindness and compassion, while also encouraging the development of prosocial behaviors, including empathy, gratitude, forgiveness, sharing, and cooperation (Vekety et	67%	Integrated within playful activities and a narrative-based framework, utilizing storytelling elements to enhance engagement (Vekety et al., 2022).	Children received seed-shaped stickers as a reward when demonstrating acts of kindness within the group, such as fair play, turn-taking, inclusive behavior, honesty, and empathetic listening. These stickers were placed on a "Kindness Garden" poster, symbolizing the growth of friendship trees from the collected seeds (Flook et al., 2015, as cited in Vekety et al., 2022). Prosocial behavior was further reinforced through modeling, where teachers, puppets, and storybook

Name	Definition	Frequency	Feature	Example
	al., 2022).			characters demonstrated acts of kindness (Viglas, 2015).
Group discussion	Engaging in group discussions, facilitated by a mindfulness instructor, that involve reflection and conversations about mindfulness experiences (Vekety et al., 2022.).	56%	Educators facilitated discussions by prompting children with reflective questions regarding their experiences with mindfulness activities (Vekety et al., 2022).	Children were motivated to share their emotions about the exercises and identify the aspects they found most enjoyable or engaging, like how did they feel during an exercise, what they liked the most in the exercise (Vekety et al., 2022).
Playfulness	Participating in playful and spontaneous mindfulness activities, such as role-playing or puppet shows (Vekety et al., 2022.)	56%		Engaging in the “Follow Me” game, where one group member performs a movement for others to imitate, followed by a discussion about the feelings of being observed or followed (Flook et al., 2015, as cited by Vekety et al., 2022).
Story-based context	Integrating mindfulness practices into storytelling, or reading stories that highlight mindfulness-related themes (e.g., sharing) (Vekety et al., 2022.).	56%	Primary objective: To tailor mindfulness exercises for children, making them suitable for their developmental stage, focusing on activities such as breath awareness, and managing thoughts and emotions (Vekety et al., 2022).	After reading the story of Sumi, children were asked to tell the kind actions performed by others for Sumi (Flook et al., 2015, as cited by Vekety et al., 2022). Lauren Alderfer’s story book "Mindful Monkey, Happy Panda" encourages children to emulate the behaviors of Happy Panda and adopt the mindfulness practices of Mindful Monkeys (Janz et al., 2019).
Body scanning	Directing attention to bodily sensations or relaxation by progressively focusing on different body parts (Vekety et al., 2022.)	44%	Duration: Up to 5 minutes; Use concrete aid used as a “scanner,” such as a hula hoop; Focus on feeling of body while exercising and resting to highlight the contrast between these states (Vekety et al., 2022).	
Home	Encouraging mindfulness practice	44%		Children were given a ‘Mind Jar’ to take

Name	Definition	Frequency	Feature	Example
practice	at home by engaging parents and family members join in some capacity (Vekety et al., 2022.)			home along with a letter for parents explaining the new skills learned. When feeling upset, children could shake the 'Mind Jar' and observe as their emotions and thoughts gradually settled at the jar's base (Flook et al., 2015, as cited by Vekety et al., 2022).

3.7 Instructional materials

These activities are also present in MBIs designed for older age groups. When adapted for preschool-aged children, they are specifically designed to align with age-appropriate practice. Specifically, activities are supported by concrete materials physical objects such as toys, natural materials, and sounds like bells. Concepts like emotions, thoughts, mindfulness, kindness are visualized or conveyed through story characters and engaging playful activities (Vekety et al., 2022). Planning and preparing concrete instructional materials are essential prior to introducing mindfulness practices to preschoolers.

In summary, a number of MBIs are now specifically designed for children aged 3–7 years. These MBIs vary significantly in terms of age groups, instructors, implementation settings, duration, teaching modal, activity content, and accompanying materials. While this diversity offers both benefits and challenges for educators, it may pose implementation difficulties, particularly given that MBIs are not yet formally integrated into preschool and early childhood curricula.

4 MBIs: Benefits for early childhood education settings

4.1 Perceived benefits of MBIs

MBIs have been demonstrated to be effective in fostering SEL. The key indicators of SEL encompass executive function, attentional capacities, emotional regulation, behavioral self-regulation, peer and prosocial behaviour, attention deficit hyperactivity disorder (ADHD) symptoms, and other related factors (Sun et al., 2021). However, the extent of their impact on various SEL components varies.

4.1.1 Benefits on behavioral self-regulation, attentional capacity and ADHD symptoms.

Among indicators of SEL, behavioral self-regulation, attentional capacities, and ADHD symptoms have shown the most significant improvements following the implementation of MBIs. Both Sun et al. (2021) and Bockmann & Yu (2022) concur that numerous studies have provided evidence of positive changes in behavioral regulation among children participating in MBIs. This improvement is assessed through a reduction in hyperactivity, aggression, and behavioral issues, alongside an enhancement in impulse control (Bockmann & Yu, 2022). Additionally, a systematic review by Sun et al. (2021) identified four studies that reported a link between MBIs, particularly yoga-based interventions, and a decrease in ADHD symptoms. The authors explain that MBIs may foster greater bodily awareness, enhance concentration, and encourage relaxation, ultimately leading to improved attentional capacities and a reduction in ADHD-related difficulties. Systematic review studies have demonstrated fairly consistent evidence for the effectiveness of mindfulness practices in supporting behavior change among kindergarten children, thereby suggesting the potential applicability of such practices in early childhood education settings.

4.1.2 Benefits on emotional regulation, executive functions, peer and prosocial behavior

In contrast, findings regarding emotional regulation, executive functions, peer and prosocial behavior have been inconsistent. Both Sun et al. (2021) and Bockmann & Yu (2022) highlight the mixed outcomes of MBIs in supporting emotional regulation. Sun et al. (2021) note that while one study reported positive effects, another found no significant impact. Similarly, in their review of six studies, Bockmann & Yu (2022) found that three studies indicated higher scores in emotional awareness, self-soothing abilities, and empathy among children in the intervention group compared to the control group. However, the remaining three studies did not find statistically significant improvements in emotional regulation. Therefore, while MBIs may hold promise in enhancing

children's emotional regulation skills, their effectiveness remains inconclusive (Sun et al., 2021). Accordingly, the effectiveness of MBIs in enhancing emotional regulation skills warrants further investigation and evaluation.

Regarding executive functions, Porter et al. (2022) suggest that research indicates notable improvements in executive functioning among preschool children following participation in MBIs. However, Sun et al. (2021) highlight inconsistencies across studies, with one out of three studies reporting no significant effects. Similarly, findings on the impact of MBIs on peer interactions and prosocial behavior are inconclusive. Consequently, Sun et al. (2021) conclude that while MBIs show potential benefits for executive functions and prosocial behavior, their effectiveness remains uncertain. Similarly, the impact of MBIs on preschool children's executive function also requires additional empirical evidence.

4.1.3 Other benefits

Additionally, MBIs may offer other benefits for both children and teachers. Mindfulness practice is believed to foster self-regulation and promote a calm classroom environment by helping children relax, regain focus, and smoothly transition back into learning activities (Holt et al., 2021). Sensory-based mindfulness practices can enhance children's attentional skills, observational abilities across multiple senses, and descriptive language. In a study by Dial et al. (2019), children participated in six mindfulness sessions that involved guided sensory exploration of food and mindful eating exercises. Following the intervention, children in the experimental group demonstrated improved descriptive skills when discussing toys, utilized multiple senses to explore food, and exhibited a richer vocabulary in their post-intervention assessments. Besides, the beneficial impact of MBIs is not limited to students but also extends to teachers' psychological well-being (Holt et al., 2021). This aligns with earlier findings by Schussler et al. (2018), which indicate that mindfulness practices contribute to stress reduction and help prevent teacher burnout. Therefore, studies examining the impact of mindfulness practices should remain open to observing and documenting outcomes beyond those initially anticipated or planned.

4.2 Factors influencing the benefits of MBIs

Studies have also examined and identified several factors that may influence the outcomes of MBIs, including children's backgrounds, the duration and frequency of interventions, and whether teachers receive mindfulness training and adopt mindful teaching practices.

4.2.1 Children's background

Regarding the impact of children's background characteristics on MBI effectiveness, Sun et al. (2021) investigated whether differences in nationality, gender, and ethnic or racial identity affected intervention outcomes. Their findings indicated no significant variations in results based on these demographic factors (Sun et al., 2021). However, literature reviews conducted by Sun et al. (2021) and Bockmann & Yu (2022) highlighted that children with lower social competence, weaker executive functions, difficulties arising from second-language acquisition, social-emotional skill deficits, or significant ADHD symptoms experienced the most notable improvements following participation in MBIs. This implicitly suggests that children's responsiveness to mindfulness practice may vary.

4.2.2 Duration and frequency of practice

Two other key factors frequently discussed in research for their impact on MBI effectiveness are intervention duration and frequency. Bockmann and Yu (2022) argue that both factors play a crucial role in determining MBI outcomes. Longer interventions and more frequent sessions are associated with greater improvements in self-regulation, self-awareness, and executive functions. The following section provides evidence underscoring the significance of ensuring an adequately extended duration.

Research by Thierry et al. (2016), which followed children over two years and integrated MBIs into daily activities, reported significant benefits in fostering skills of emotional and cognitive regulation as well as improvements in vocabulary and reading skills. Bockmann and Yu (2022) cite five studies where interventions lasting between six and twelve months demonstrated positive results compared to control groups. Sun et al. (2021) similarly assert that interventions continuing no fewer than six weeks consistently yield at least one positive outcome related to social-emotional learning, whereas shorter interventions ranging from 15 minutes to four weeks tend to produce null results.

Moreover, the greater significance of intervention frequency over duration has been emphasized. Holt et al. (2021) argue, based on their research findings, that the benefits of mindfulness activities can be observed after only a few weeks of implementation, provided that children receive daily interventions. They suggest that the frequency of practice opportunities afforded by daily implementation may be a key factor contributing to the positive outcomes. This indicates that consistent and sustained mindfulness practice is necessary to achieve meaningful outcomes.

4.2.3 Teachers' training

Teachers' mindfulness training may lead to benefit increases of interventions. Singh et al. (2013) suggests that providing teachers with mindfulness training leads to a decrease in negative interactions among children and enhances their compliance. Holt et al. (2021) suggest that teachers after mindfulness training may adopt mindful teaching, which enable regulate themselves better to response to children's needs in a calmer manner, then positively influences children's self-regulation ability in the situations. These authors also argue that as teachers enhance their proficiency and confidence in implementing mindfulness practices, they are better able to integrate mindfulness into daily routines, thereby increasing opportunities for children's engagement in practice. These arguments implicitly support the notion that having the classroom teacher serve as the mindfulness facilitator is appropriate and may yield greater benefits for students.

5 Considerations for Implementing MBIs in Educational Settings

This section discusses several key factors that should be considered both before and during the implementation of MBIs, including the purpose of integrating mindfulness in education and practical aspects such as instructors, location requirement, duration and frequency of practices, and planning activity content.

5.1 Purpose of MBIs

While MBIs have been shown to enhance social-emotional competencies essential for the transition to primary school, there is ongoing debate regarding their role and how to approach mindfulness in education. MBIs can be treated merely as tools or strategies to achieve schoolification objectives. As a result, in many studies, mindfulness practices are structured as interventions or programs consisting of a series of lessons delivered over a specific period (Holt, 2019, as cited by Holt et al., 2021). Focusing solely on measurable skill development may risk turning MBIs into an additional burden for both students and teachers, particularly if expected outcomes are not met (McCaw, 2019).

On the other hand, when mindfulness can be understood as an approach that permeates all aspects of daily life, it is practiced in both formal and informal contexts (Kabat-Zinn, 2003). This approach emphasizes awareness and engagement in the present moment rather than focusing on specific performance outcomes. Teaching mindfulness in this way can be both a goal and a challenge, especially since young children often prioritize tangible achievements over appreciating the process itself (Holt et al., 2021).

Therefore, an essential consideration for educators is whether the primary aim of integrating mindfulness is to align with schoolification objectives or to foster a holistic balance between individual child development and the overall well-being of the classroom community. Defining this objective is crucial, as it shapes the criteria for evaluating the effectiveness of MBIs and significantly influences teachers' experiences during implementation.

5.2 Instructors

Several scholars advocate for classroom teachers to serve as mindfulness instructors rather than relying on external mindfulness practitioners. Holt et al. (2021) concerns what happens after an intervention concludes and how this discontinuation affects children's ability to integrate mindfulness into their daily lives. If MBIs depend heavily on external facilitators, their long-term

sustainability in educational settings may be compromised. A lack of sustained practice may limit the effectiveness of mindfulness interventions, as both the frequency and duration of practice are believed to influence outcomes.

Besides, Holt et al. (2021) argued that teachers, as the individuals who best understand what is effective for their students, are well-suited to adapt and deliver mindfulness activities in a way that meets the specific needs of their classrooms. Their action research provided evidence that having the opportunity to practice mindfulness daily, model mindfulness approaches, and tailor activities to the children's developmental levels and interests enhanced student engagement, thereby improving the overall effectiveness of the intervention. However, for teachers with limited experience in mindfulness instruction, developing confidence and motivation to integrate MBIs into daily classroom practices requires ongoing support. Teachers and teaching assistants in Holt et al.'s (2021) study expressed concerns about their lack of expertise. To address this, Holt et al. (2021) identified two key factors that enhance teacher commitment and sustainability in MBI implementation.

The first factor is a collaborative approach, where teachers are actively involved in designing mindfulness activities based on the specific needs of their students and school environment. This participatory approach encourages open dialogue about challenges and allows teachers to seek guidance while retaining decision-making authority (Holt et al., 2021). The second factor is a gradual approach, which allows teachers to participate in mindfulness at individual pace, reducing pressure and providing them with the necessary time to build confidence before introducing new practices. Focusing on a single mindfulness activity over an extended period, as in Holt et al.'s (2021) study, enables teachers to refine their skills and gradually develop proficiency. Regular discussions and problem-solving opportunities further support teachers in maintaining mindfulness practices over time (Holt et al., 2021).

These findings have practical implications, particularly for the long-term integration of mindfulness into daily classroom routines. They suggest that teachers require initial support to develop the basics of mindfulness and its benefits. Throughout the process, they need opportunities to make independent decisions, practice consistently, reflect on their experiences, identify challenges, and consult experienced colleagues to refine their skills. This gradual, reflective approach fosters teacher confidence and enables the natural integration of mindfulness into teaching practices.

5.3 Location requirements

The setting in which MBIs take place is another critical consideration. Hooker and Fodor (2008, as cited by Holt et al., 2021) argue that a quiet space is not necessarily required for effective mindfulness practice. However, teachers in Holt et al.'s (2021) action research study reported that minimizing external noise distractions significantly improved children's ability to engage in mindfulness exercises. Similarly, Berti and Cigala's (2020) study implemented mindfulness sessions in a carefully prepared environment characterized by tranquility, separation from other activities, comfort, warmth, and minimal clutter. Their intervention, which consisted of six 30-minute sessions over six weeks, led to improvements in children's self-regulation, prosocial behavior, and perspective-taking in both emotional and cognitive aspects. These findings provide evidence that reducing environmental distractions can enhance young children's mindfulness engagement. Consequently, educators should consider the spatial conditions of their classrooms, observe the impact of external noise, and children's susceptibility to distractions when planning mindfulness activities.

5.4 Time and duration of practices

Studies show the significance of both the duration and frequency of mindfulness practice shaping the outcomes of such interventions (Sun et al., 2021; Holt et al., 2021). Sun et al. (2021) and Bockmann & Yu (2022) suggest duration of at least six weeks. Holt et al. (2021) emphasizes the importance of daily practice. These authors argue that daily mindfulness practice has two benefits. First, opportunities for regular practice are associated with improvements in cognitive and socio-emotional outcomes. Second, having daily practice opportunities encourages the application of learned skills across various contexts and environments. Research of Holt et al. (2021) and Razza et al. (2013) also show evidence that integrating short MBI activities, such as 10-minute daily sessions at different times, can still yield positive outcomes. Moreover, certain mindfulness exercises for young children, such as breathing awareness, may be most effective when limited to just a few minutes, with a recommended maximum duration of five minutes (Vekety et al., 2022). These findings suggest that teachers should tailor MBI implementation time based on children's attention spans, the specific activities chosen, and practical classroom time constraints. Scheduling mindfulness sessions at an appropriate time, which allows children to remain engaged throughout and teachers to maintain consistent implementation over a sufficiently long period is essential consideration.

5.5 Contents and supporting materials

The selection of mindfulness activities and teaching materials is another key consideration for educators. While numerous structured, manualized MBI programs exist, Carsley et al. (2018) caution that rigidly applying these pre-designed interventions may not fully address the specific needs of students. Effective mindfulness instruction requires flexibility and adaptation (Wood et al., 2018). Additionally, incorporating children's perspectives into activity selection can enhance engagement by ensuring that mindfulness exercises are enjoyable, inclusive, and aligned with students' interests (Holt et al., 2021). This highlights the importance of designing MBIs that are adaptable rather than strictly adhering to predefined curricula.

Furthermore, teachers in Holt et al.'s (2021) study emphasized the need for a diverse range of mindfulness activities to maintain children's interest and reinforce skill development. Research by Vekety et al. (2022) indicates that numerous mindfulness activities are available for preschool-aged children, including basic mindfulness exercises and those integrated with SEL. Mindfulness experts suggest starting with awareness exercises of senses or body through movement (Hooker & Fodor, 2008). Activities can be enhanced with playful and story-based elements to better align with young children's developmental stages and increase engagement (Vekety et al., 2022). Diversifying mindfulness activities should be considered an objective to support sustained practice and achieve the desired outcomes.

While this variety provides educators with multiple options, it may also be overwhelming for teachers with limited experience. As previously discussed, teachers require time to practice and refine mindfulness activities to ensure their effectiveness. Therefore, decisions regarding activity selection, level of variation, and practice timing should be based on both student needs and practical considerations for implementation.

Finally, the use of instructional props and concrete materials is essential. Many studies (Holt et al., 2021; Vekety et al., 2022) recommend incorporating physical objects to facilitate mindfulness activities for young children. Holt et al. (2021) agree that props and multisensory tools enhance engagement, curiosity, and understanding of mindfulness. However, they also acknowledge the perspective of practicing teachers, who emphasize the need for careful and appropriate selection of stimulating objects to prevent distractions among children. Thus, teachers should carefully select only essential resources to support mindfulness practices effectively.

6 Conclusion

This literature review synthesizes relevant information on MBIs with the aim of drawing implications for preschool teachers who wish to implement MBIs in their classrooms. Originally rooted in Buddhist traditions, mindfulness has increasingly been applied in educational settings through MBIs at various levels, including early childhood education for children aged 3–7. Numerous studies have demonstrated the clear benefits and promising effects of MBIs in preparing young children for formal schooling by enhancing behavioral self-regulation, attentional capacities, and social-emotional skills. Additionally, MBIs contribute to fostering a more supportive preschool environment and improving the well-being of students, teachers, and staff.

However, multiple factors related to MBI implementation, such as children's age, instructors' expertise, duration and frequency of practices, setting, activity contents, teaching modality and materials, vary considerably and may influence both the practice and outcomes of MBIs. This diversity necessitates that teachers carefully consider these elements to identify an approach that aligns with their students' needs and classroom context.

This literature review is based on a limited selection of studies published in English. Furthermore, its primary objective is to gather information on MBIs to assist teachers, including the author, in making informed decisions about their implementation. As a result, this review may not provide an exhaustive overview of all aspects related to MBIs, such as specific program designs for a particular age range and their effectiveness. Lastly, although the author initially aimed to explore information on MBIs for children aged 0–7, this study ultimately focused on the 3–7 age group due to the absence of relevant findings on MBIs for children aged 0–3 in the selected studies. This raises the question of whether mindfulness can and should be practiced in the care of infants and toddlers aged 0–3. Addressing these gaps remains a subject for future research.

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