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A global perspective on mindfulness-based interventions in schools

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Pepperdine University
Graduate School of Education and Psychology

A GLOBAL PERSPECTIVE ON MINDFULNESS-BASED
INTERVENTIONS IN SCHOOLS

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Philosophy in Global Leadership and Change

by

Rebecca H. Laff

September, 2023

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DOCTOR OF PHILOSOPHY

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DEDICATION

Q and Cas, this was always for the two of you.

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ABSTRACT

The practice of mindfulness, which originated in ancient Buddhist philosophy, has gained popularity in secular society through the work of Western researcher Jon Kabat-Zinn. Kabat-Zinn's focus on using mindfulness to help chronically ill patients cope with stress soon expanded into non-clinical areas, including education. Mindfulness-based interventions (MBIs) adapted from Kabat-Zinn's work, have been utilized in schools since 2005, but there has been a lack of systematic research on the effectiveness of MBIs in classroom settings globally. To address this gap, this critical interpretive synthesis (CIS) study conducted a comprehensive literature review of quantitative and qualitative studies from around the world to examine the types of MBIs utilized in classroom settings and their effects on student outcomes. The review process provided a wide lens on current available literature related to the topic and further allowed for narrowing the focus to include 16 studies reporting specifically on the efficacy of MBIs on student learning, behavior, and emotional well-being, as reported worldwide. The study found that MBIs have a positive impact on these outcomes in school settings globally. However, it also highlights the need for more research on the lasting effects and sustainability of MBIs in schools globally and recommends including evaluators of different categories to improve the representativeness of the results.

Keywords: mindfulness-based interventions, global, schools, student learning, student behavior, student emotional well-being

Chapter I: Background of the Study

Introduction

It is seven o'clock on a Monday morning. Henry is four years old. His blonde hair is freshly cut into a tidy big-boy haircut, and his bright blue eyes reflect the morning sunlight shining in the kitchen. Henry and his mom are packing his lunch for his first day at school. Henry spreads the almond butter on one slice of bread, singing to the tune of "The Farmer in the Dell," "the knife spreads the butter, the knife spreads the butter ... hi-ho the dairy-o the knife spreads the butter." As Henry finishes the song, his sandwich bread slathered end to end in almond butter, he giggles a sweet sound that rings of innocence and childish glee.

It is eight o'clock in the morning. Henry's mother arrives in the 4-year-old preschool classroom with Henry in tow. Before Henry's mother leaves him in the care of his new teacher, she speaks to the teacher explaining that Henry has a new brother on the way, that the family has just moved into the neighborhood, and that this is Henry's first school experience. After Henry's mother leaves, the one teacher in the classroom of twelve 4-year-olds takes a moment to settle Henry in a quietish portion of the room with some Legos. The teacher then steps away to tend to the other bouncing, yelling, running, crying, and playing children in the room. Henry becomes calm and focused, fully absorbed in building with the Legos; his breathing is deep, his eyes focused, and his attention is solely on the jet plane he is building. A bell rings, and Henry looks up from his now near-completed Lego jet plane. He watches as his new teacher raises her hands into the air and begins loudly clapping out a clean-up song, "it is clean-up time today, time to put the toys away ... clean up, clean up everybody everywhere ... clean up clean up."

All the other children in the room begin to put away toys with the teacher's encouragement, "that is right, Ellie, put away the dolls, thank you. Jacob, please put away the

trucks." Henry is frozen in distress, watching the room in its orderly chaos. So much noise. So much activity. So much so new. Tears begin to pool in Henry's eyes. This is not home. This is not quiet. This is not calm. The teacher looks up from across the room as she is helping the other children; she makes eye contact with Henry and gently reminds him it is clean-up time, and can he please put the Legos away? Henry shakes his head adamantly, "no." Henry feels nervous and resistant in the wake of the classroom's buzzing activity. The teacher walks over to Henry and crouches down before him, utilizing a tried-and-true technique of early childhood educators, getting on the child's level. The teacher asks him what is going on; why doesn't he want to clean up and put away his Legos? Henry looks at the teacher with a full expression of distress; tears are rolling down his cheeks; his breathing is labored, and his body is shaking. The teacher reads Henry's distress, and she inhales and exhales deeply ... placing one hand gently on Henry's shoulder; she breathes, showing Henry in and out, big deep breaths. The teacher uses her voice as a tool and says calmly in between breaths, "breath with me, Henry, big breaths ... in and out." the teacher holds Henry's gaze with complete eye contact. Henry begins to take big breaths with the teacher, and his body begins to still as he breathes; his tears stop rolling, his eyes lose the panic and confusion, and he calms as he breathes. The teacher smiles warmly, "that is right, Henry ... nice big breaths ... you are doing great, now tell me, why don't you want to put away the Legos?" Henry's eyes flicker for a moment, almost spilling with tears again, but instead, he breathes, holds the teacher's gaze, and says, "I want someone to see my work ... I want to show my jet plane." The teacher's smile grows expansive; she breaks her gaze from Henry's eyes and focuses down on the Lego jet plane he made; she looks back to Henry with empathy etched across all her features and shining in her eyes. The teacher connects her gaze with his again as she speaks, "I see your jet plane, Henry, I see you." The teacher waits for a beat, letting her

words sink in, then she turns to the other children in the room, seeing they are still busy putting away toys. One child, Ellie, looks at the teacher. The teacher invites Ellie over and says, "Ellie, this is our new friend, Henry; he made a jet plane, do you see?" Ellie looks at Henry's jet plane and breaks into a colossal smile... "I see it, I see Henry's plane!" The teacher softly laughs and encourages Ellie to help Henry begin to pull apart and put away Henry's jet plane with him. Henry smiles, all distress leaving his body and face as he hears the teacher, and then Ellie, acknowledge him and his work. Henry takes another big breath, exhales, and dismantles the jet plane with his new friend. The teacher stands up, singing the clean-up song again; Henry joins in the song and takes apart his plane to put it away with Ellie. This is mindfulness in action.

The story told above is based on the use of mindfulness techniques as a tool for competent early childhood education and training. Mindfulness is not a new term, but rather the term derives from ancient antecedents. In particular, the term mindfulness combines the Pali term *sati* with the Sanskrit equivalent of *smṛti*. A literal reading of these terms clarifies that mindfulness refers to those events and details in life that should be remembered since their vocation is to guide one through life. From this point of view, it is fair to note that the unique synthesis of *sati* and *smṛti* constructs several modern English terms at once similar in semantic function, among which are memory and attention in addition to mindfulness. In turn, awareness, combined with attention, provides the basis for consciousness, that is, that state of the individual's mental life expressed in individual, unique experiences, and perceptions of real-world experiences. This means that awareness allows the individual to analyze his or her own experiences critically and draw conclusions from learned knowledge to develop planning and strategies for future decisions. There is an enormous amount of such knowledge, and each individual is the bearer of his or her unique knowledge accumulated over the years. Without

attention, awareness cannot effectively focus on individual components of the accumulated knowledge base. Attention helps to concentrate and regulate the flow of information to enhance the perception of the real-world experience. In other words, awareness, and attention, as resources of the individual's cognitive system, work together to shape consciousness and govern human thinking and behavior. The synthesis of the two ancient terms also reveals characteristics that in modern English are commonly summarized by the concept of memory. It is recognized that attention and awareness can be faulty for making specific decisions, and thus their outcomes will lead to bad outcomes and ideas on the way to a goal (Meichenbaum, 2017). For this reason, the memory of past experiences is a necessary component of the human cognitive system, creating the opportunity for coordination of awareness and attention.

Despite the ancient origins of the term, mindfulness does not have a single definition that is universal to all authors. Moreover, it is probably the long accumulation of knowledge about mindfulness that has led to a plurality of unique interpretations, with researchers striving to create a broad and novel definition for the term. For example, Kabat-Zinn (1994) suggests linking mindfulness to the practice of intentionally focused attention in the present moment that does not require value judgments (Kabat-Zinn, 1994). In other words, this definition emphasizes living the event right now, focusing on the characteristics and descriptions of that event or phenomenon rather than evaluating its meaning and effects. A more detailed deconstruction of this definition makes it possible to distinguish four main parts of the overall interpretation. First, Kabat-Zinn (1994) refers to the need to focus attention on objects, processes, or phenomena. The researcher often identifies the concepts of attention and mindfulness, which is not correct, according to Rapgay and Bystrisky (2009).

Furthermore, Bodhi (2000) reports that equating attention and mindfulness is not correct from the perspective of the Buddhist tradition, from which the practice of mindful living originated. Second, Kabat-Zinn (1994) refers to the need for the intentional focus of attention—in other words, practitioners of mindfulness try to achieve moments of awareness. Third, the definition includes the notion of the present moment, which means they need for awareness to be present in the moment, to the immediate experience, without reference to the future or the past. Finally, Kabat-Zinn (1994) emphasizes the absence of value judgments, thus inhibiting the need for an ambiguous division of objective reality into good and evil. Proper mindfulness practice must include a conscious rejection of preconceived beliefs and past experiences to be open to new information in the present moment. The latter part of this definition poses most of the problems because it is impossible to be completely unbiased (Rapgay & Bystrisky, 2009). According to the authors, the individual can never reach a point of spiritual enlightenment and awareness that eliminates the effects of bias. However, this does not mean that one should not strive for this state.

Many researchers offer definitions of the term mindfulness. One interpretation defines mindfulness as the action of specifically focusing full attention on the existing and immediate experience (Marlatt & Kristeller, 1999). Both Kabat-Zinn (1994) and Marlatt and Kristeller (1999) are similar in what they refer to as mindfulness, by saying that the basis for practicing mindfulness is attention. However, more recent researchers have tended to criticize the definitions of Kabat-Zinn (1994), the founder of the Western philosophy of mindfulness, as they believe that the author's interpretations are often too narrow and do not consider the esoteric aspects of mindfulness practices (Rapgay & Bystrisky, 2009). Another similar assertion of mindfulness is offered in a study by Teasdale et al. (1995), which states that mindfulness is

primarily about controlling attention. Despite the undeniable role of the attention component in mindfulness practices, it would be a mistake to assume that definitions of the term are limited to focusing attention on objects. On the contrary, a literature search provides alternative interpretations of mindfulness as a relaxed state of mind or the ability to create more than one perspective when learning information (Gudykunst et al., 1991). Hirst (2003) views mindfulness in the following way: "mindfulness ... is an awareness of being aware ... this requires both attention and concentration to be present in the present moment" (p. 276). In other words, mindfulness requires the individual to be fully present and aware of a deep connection to self, others, and the environment. Based on the findings, it can be concluded that mindfulness does not tend to be interpreted unequivocally in the academic field. Instead, it is viewed from different angles in relation to specific research tasks. Recognizing the contributions of various authors to the interpretation of the term mindfulness, it is an appropriate option to define the concept of mindfulness as the ability of an individual to focus on and control his or her attention on selected events and sensations.

Since mindfulness has been interpreted extensively in the light of much previous research, it has become possible to enumerate qualities associated with these practices. Among these practices is a range of qualities that enable the realization of mindfulness in the everyday and professional senses. It has been reported that mindfulness is associated with a lack of judgment, focus on the moment, openness to and tolerance of new information, gratitude, friendliness, and boundless love (Shapiro et al., 1998). From this perspective and supported by the definition given by Gudykunst et al. (1991), mindfulness is inextricably linked to critical and analytical thinking, in which the individual tends to be skeptical of knowledge because they are not prejudiced by personal experience or the experiences of others. It is essential to recognize

that openness to new information and skepticism are not mutually exclusive since the conscious individual is ready to learn new knowledge but not ready to take it on faith.

Consequently, it can be postulated that awareness is different from a way of life based on habits, traditions, and archetypal attitudes because it offers a new perspective for living the experience. In discussing the qualities associated with mindfulness, attention should be paid to the views of Asian monks who have studied the concept. For example, Vietnamese Buddhists have established that mindfulness requires maintaining a functioning consciousness of present reality (Hanh & Hoa, 1976). In this definition, the need for living consciousness defines an individual's openness to reality and not being closed off. In addition, the American Buddhist suggests that mindfulness should be interpreted as the need to monitor one's own mind and return to meditation when consciousness goes astray (Vimalaramsi, 2014). This definition may seem more complicated, but it intuitively links mindfulness to the focus of attention mentioned earlier. So, the American Buddhist reports that it is not possible to practice mindfulness until the individual learns concentration and assiduity effectively. A more metaphysical definition of mindfulness is offered by a Sri Lankan monk, who associates the practice of mindfulness with an incomprehensible and indescribable state that is worth experiencing to be able to understand it (Germer & Neff, 2013). As a generalization, another definition of the term, offered by a Buddhist scholar, suggests that mindfulness is a highly vague concept that can include almost anything the researcher wants (Bodhi, 2011). Based on the proposed definitions, mindfulness has several qualities that significantly distinguish it from other psychological phenomena. Being both accessible to everyone and impossible to grasp obviously, mindfulness shapes unique experiences for individuals depending on their degree of preparedness and openness to new

knowledge. Ultimately, mindfulness helps shape an unbiased perception of objective reality based on the absence of preconceptions.

It is a worthwhile question to determine why mindfulness should be studied at all and what the benefits might be of interventions informed by mindfulness practices. Despite the seemingly esoteric and metaphysical nature of the term, mindfulness is a scientifically valid concept for improving quality of life. Studies show that mindfulness-based interventions (MBIs) are beneficial for improving individuals' mental and physical well-being and provide a foundation for strengthening relationships with others; it has also been reported that MBIs can lead to structural transformations at the neural level of the brain (Hölzel et al., 2011). In other words, a conscious person is more likely than others to be satisfied with their quality of life and open to learning new knowledge. Therefore, an important research task is to examine the phenomenology of mindfulness in the context of its historical development.

Historical Notes

In examining the definition of mindfulness, it is logical to examine the Buddhist origins of the philosophical concepts and practice of mindfulness. The founder of the philosophical school of Buddhism is traditionally considered to be Siddhartha Gautama, the spiritual teacher who was able to obtain nirvana and develop knowledge of mindfulness among the adherents of his teachings. Siddhartha Gautama received the title Shakyamuni Buddha for his fundamental contributions to world philosophy, which means awakened of the Shakya lineage (Shonin et al., 2015). Buddhist philosophy is based on the concept of the Middle Way, as the Buddha's teachings fall between two extremes, namely the abandonment of one's own body in favor of the spirit and absolute hedonism. During his lifetime, the Middle Way Buddha urged adherents to hold to fundamental truths that enable them to renounce unhealthy habits and routine life to

attain nirvana, the ultimate Buddhist good. The spiritual teacher recognized that sufferings in the world prevent individuals from satisfying their lives. Examples of such suffering include physical and mental dissatisfaction that impair an individual's quality of life: stress, depression and intrusive thoughts, physical limitations on mobility, and any other factors that reduce life satisfaction. According to Buddhist teachings, recognizing these dissatisfactions as part of one's own experience is the basis for the Middle Way on the path to enlightenment or awareness. It is thus correct to recognize that the phenomenology of mindfulness has its origins in ancient Buddhist philosophy, which encourages meditation and focus as integral parts of the attainment of nirvana.

However, it is fair to acknowledge that it took dozens of centuries before Buddhist philosophy was actively used as the basis for mindfulness practices. In fact, Buddhism is much broader than a theoretical conceptualization of mindfulness, with "Buddhism exhibiting great diversity in its philosophies, meditation techniques, institutional structures, political roles, cultural expressions, and numerous other features" (Dunne, 2011, p. 71). Consequently, there is no need to focus on Buddhism as a religious practice; instead, it is sufficient for the purposes of this dissertation to trace the associative relationship between Buddhist principles and the mindfulness practices used as MBIs today. The desirability of exploring this connection is determined by the desire to discover the effectiveness of techniques and methods in contemporary mindfulness practices rooted in ancient Buddhist practices (Rapgay & Bystrisky, 2009). There is an apparent contradiction that shifts the focus of mindfulness practices and creates a fundamental danger for practitioners, namely, the shift of such practices from a religious to a secular context.

Mindfulness practices are now often part of the organizational activities of Western and European secular enterprises, and the very use of such practices raises questions about the appropriateness and applicability of religious practices to professional settings. It has been reported that "Buddhist meditation has been lifted from its traditional setting in Buddhist doctrine and faith and transplanted in a secularized culture bent on pragmatic results" (Bodhi, 2011, p. 35). From an organizational culture perspective, this transplantation does not seem surprising since the benefits of mindfulness practices have been used in MBIs to enhance employee productivity and well-being. The flip side of this secularization remains a question, namely the possibility of preserving the cultural heritage of ancient world religion in the face of a fragmented, differential transfer of its practices to the organizational environment. Kabat-Zinn, the pioneer of the Western school of mindfulness, reportedly wondered whether a secular shift of Buddhism toward secular rhetoric could lead to the loss of the valuable foundations of the Buddhist religion (Williams & Kabat-Zinn, 2013). There is an alternative view to this shift in initial focus, also described by Williams and Kabat-Zinn (2013). Specifically, the researchers have suggested that the widespread use of mindfulness practices in secular society results from a fusion of the two epistemological disciplines. In other words, there has been an evolution of scientific and religious knowledge with the formation of integrated approaches that take advantage of each discipline. Mindfulness practices are now institutionalized in the mainstream, qualitatively different from both scientific knowledge and religion, but at the same time incorporating characteristics of both predecessors.

Awareness practices began to proliferate in various countries as globalization processes intensified, as frontline leaders sought to replicate their predecessors' successful experiences and create high-performance corporate environments in which employees experience well-being and

workplace comfort. Along with the proliferation of mindfulness practices worldwide is an accumulation of different, often diametrically opposed perspectives on how exactly mindfulness should be interpreted and practiced. Interpretation of these practices on a non-academic level is further complicated by the seeming contradiction between the scientific approaches to increasing productivity and the spiritual foundations of religious rituals. Consequently, discrepancies in practices produce new, modified, or fragmented practices of mindfulness. Referring to the foundation of the Western mindfulness practices developed by Kabat-Zinn, derivative authors of mindfulness practices seek to transfer a comprehensive approach to stress management but instead selectively crafted their own programs (Rapgay & Bystrisky, 2009). Such modifications of the initial teachings have not only resulted in new mindfulness practices but also a significant increase in accessibility to these practices.

The widespread adoption of mindfulness practices, including their incorporation into clinical therapies, do not fail to bring about an apparent academic response, namely the desire to investigate and scientifically substantiate the expected benefits of MBIs. Over the past decades, enough information has accumulated to judge mindfulness practices as a universal tool to improve people's quality of life. In particular, for patients with chronic illnesses and addictions that pose a high risk of relapse, the incorporation of MBIs into existing clinical interventions has yielded positive therapy outcomes (Huijbers et al., 2016; Ma & Teasdale, 2004; Witkiewitz & Bowen, 2010). In addition, mindfulness practice-based interventions improve emotional and cognitive self-regulation, working memory skills, and sustained attention for military personnel in crisis, non-medical students, those new to mindfulness practice, and individuals with increased anxiety (Arch & Craske, 2010; Chambers et al., 2008; Jha et al., 2015; Mrazek et al., 2013). There are also social-emotional benefits to using MBI, as it creates limits to automatic behavioral

responses that often prove undesirable (K. W. Brown et al., 2007). However, mindfulness practices should not be viewed as a universal cure for all illnesses, as research studies have already demonstrated that the effects of MBIs are often moderate or limited (Arch & Ayers, 2013; Hoge et al., 2013). Thus, a supportive environment is being created to study the implementation of MBIs practices in school settings, although it is recognized that the effects of such practices may be limited (Meiklejohn et al., 2012). The following paragraphs explore the possibilities of using MBIs in an academic school setting.

Most past studies and systematic reviews have explored the limits of the applicability of mindfulness practices for adults, with not much information accumulated for juvenile individuals. From what is already known, there is an apparent reduction in aggression and anxiety for adolescents who undergo MBIs as part of their education; for these adolescents, there are increased levels of emotional and cognitive self-control, increased self-regulation, and improved focus of attention (Black et al., 2009; Razza et al., 2015; Schonert-Reichl & Lawlor, 2010; Zenner et al., 2014). These findings create opportunities for widespread implementation of mindfulness practices in non-clinical school settings to enhance the culture of the academic environment and invest in the well-being of those involved.

The school environment turns out to be a dynamic and multidisciplinary one, as many people, from young children to adult teachers and psychologists, are involved in shaping it. In this environment, tacit behavior is expected to be social and emotional competencies in which the child exhibits prosocial, friendly, and disciplined behavior (Riggs et al., 2006). In addition, prosocial behavior includes displays of empathy and reciprocal exchange based not on self-interest but on friendliness; in other words, in such behavior, personal rewards or rewards are never the final goals. Social competence allows an individual to adapt effectively to a rapidly

changing environment and maintain stable relationships with others (Semrud-Clikeman & Schafer, 2000). Additionally, emotional competence helps children recognize their own emotions more carefully and correctly, communicate feelings, and regulate impulsive, emotional reactions in order to comply with norms of social behavior and empathy. Research findings report that fostering children's friendliness and empathy is fundamental to developing an individual's social-emotional competencies and motivation for prosocial behavior in the classroom (Eisenberg et al., 2009; Denham et al., 2009). Furthermore, the development of mindfulness among children has also been shown to increase prosocial behavior among children (Beddoe & Murphy, 2004; Birnie et al., 2010; Dekeyser et al., 2008; Greenberg & Harris, 2012). Mindfulness practice among children also improves a child's emotional competence, allowing the child to recognize and regulate their own emotions and understand their peers' emotions. There is increased emotional self-regulation in children exposed to MBIs, which is reflected in the ability to control the flow of impulsive emotions and thus maintain prosocial behavior (Carson & Langer, 2006). Consequently, the implementation of MBIs, among others, can address the critical need for a friendly and compassionate school environment.

In terms of the school environment, students and teachers can become the objects of research on the effects of MBIs. In particular, the research literature of recent years has increasingly begun to explore the effects of mindfulness practices on teachers. This does not seem surprising since teachers are the bearers of chronic stress caused by the complexity of constant interaction with others. According to Roeser et al. (2012), the teaching profession forces individuals to be mentally flexible and to regulate their emotions carefully. Situations where a teacher emotionally lashes out at children or fails to create discipline in the classroom should be eliminated because they do not lead to desirable outcomes. Research has reported that MBIs

significantly reduce levels of professional burnout among teachers and increase overall well-being (Jennings, 2015). A teacher who has undergone mindfulness practices has increased stress tolerance, better empathy and demonstrates more vitality and energy (Trube, 2017).

Professionals' communication abilities are also enhanced as social-emotional competencies are found to be sufficiently developed through MBI. More specifically, a meta-analysis of thirty-five teacher self-reports demonstrated that mindfulness practices significantly enhance social and emotional classroom characteristics, allowing for the desired atmosphere in an academic setting (Jennings, 2015). Consequently, it is fitting to recognize that the conscious teacher is marked by increased emotional and cognitive self-regulation and is more likely than others to exhibit prosocial, professional behaviors that encourage empathy, friendliness, and gratitude.

A serious barrier to achieving one's desired goal is perceived stress, which creates limits to the organic growth of the individual. Both students and teachers are carriers of this stress, with the causes being constant interaction with others, academic responsibilities, and the need to follow school discipline. It is worth mentioning that stress reduction was the initial focus of John Kabat-Zinn, who developed the concept of Mindfulness-Based Stress Reduction (MBSR) in 1979 (Kabat-Zinn, 1994). The researchers' initial focus was to improve the quality of therapy for patients experiencing regular stress and, as a result, exhibiting the decreased quality of life and therapy effectiveness. It was reported that the MBSR program developed by Kabat-Zinn was based on the use of three exercises to increase an individual's awareness, namely yoga, meditation, and body scanning practices — all of which require an individual to be able to focus their attention (Baer et al., 2012). The MBSR program has become one of the most widely used due to its relative ease of use combined with the benefits offered by Kabat-Zinn. Among these benefits were increased self-compassion, more focused attention, and lower levels of chronic

stress and professional burnout, as shown in a randomized study of thirteen teachers who completed the MBSR course (Roeser et al., 2012). Similar results were reported by another author who reported that MBSR allowed teachers to manage perceived stress and increase self-awareness and self-determination (Crain et al., 2017; Hartigan, 2017). Thus, mindfulness-based intervention practices are effective in managing stress and addressing anxiety, insecurity, and physical and mental health issues.

It is fair to acknowledge that MBIs do not have unidirectional effects but rather create systems of cause and effect that allow goals to be achieved. Thus, mindfulness-based interventions directed at teachers will ultimately affect students and vice versa. The use of MBIs by teachers is reported to have beneficial effects on students (Singh et al., 2013). In addition, it has also been confirmed that the use of MBI practices for teachers leads to an improvement in the teacher-student relationship; that is, it increases the overall level of benevolence and compassion in the classroom (Becker et al., 2017). Practicing mindfulness in an academic setting also reduces judgment and increases opportunities for positive classroom management. A study conducted on a sample of 224 teachers from 36 elementary schools found that undergoing MBI training reduces distress and develops adaptive emotional regulation (Jennings et al., 2019). Consequently, teachers trained with mindfulness practices will demonstrate more secure and long-term relationships with others, including their peers and students, than the control group.

At the beginning of this chapter, the reader was offered the story of a young boy, Henry, who found himself in a previously unfamiliar environment and could not immediately understand the rules of that environment, resulting in the development of intense emotions of fear, frustration, and anxiety. The caregiver in the scenario utilizes mindfulness techniques to listen to Henry's needs, model behavior for him, and to reassure the boy. Since Henry's tears are

caused by wanting other people to see his toy, the teacher intelligently and gently gives the child what he needs at this moment, namely support. By inviting Ellie to participate in a discussion about the airplane Henry built, the caregiver awakens the children's foundations of empathy and allows them to share emotions to enhance each other's social-emotional well-being.

The present study is an in-depth, critical interpretive synthesis of the existing academic and public literature regarding the application of MBIs in school settings and the results of these implementations. The purpose of the study will be to identify common patterns and regularities that allow for a specific, detailed description of features and results of MBI implementations in the academic environment. The functional objective of the study is to identify the conditions under which mindfulness-based practices will have increased effectiveness for all concerned.

Purpose of Research

The once isolated Buddhist philosophy continues its rapid proliferation worldwide, realized not only through an increasing number of adherents of the religion but also through the spread of Buddhist ideas into secular society. Among such ideas are the practices of mindfulness, which are based on the effective integration between scientific knowledge and spiritual practice. The first Buddha, Siddhartha Gautama, was no saint or deity but an ordinary man who managed to achieve enlightenment and moments of awareness through perseverance and good intentions. The rules and concepts developed by the Buddha have been passed down through the generations and in modified forms survive in the modern world, where they are in active use by many people, including non-Buddhists. Mindfulness practices, among others, apply to educational institutions, where there is proven effectiveness for teachers and students. People involved in the educational process benefit from the introduction of mindfulness-based interventions. This

critical interpretive synthesis aims to discover what types of MBIs are being implemented and evaluated in schools around the world and what results are expected from such implementations.

Research Questions

The theoretical framework of this study is most succinctly described by questions designed to shed light on the phenomenology of mindfulness practices:

1. What types of MBIs are used and assessed in schools globally?
2. What impact do MBIs have on academic achievement, attendance, disciplinary problems, and affective performance in schools globally?

Theoretical Focus

In the late 1970s, Western researcher Kabat-Zinn built a philosophical school of mindfulness in the United States based on the principles of ancient Buddhism. The MBSR technology developed by the author made it possible to significantly reduce the level of stress among people practicing mindfulness and improve their quality of life. Kabat-Zinn's (1994) initial focus was on chronically ill patients who needed help coping with stress, but the MBSR concept soon expanded into other areas of life. In non-clinical areas, the benefits of mindfulness practices have been combined with psychotherapeutic characteristics to achieve high results for non-medical individuals. According to the findings, programs using MBIs for school children have been actively used since 2005 (Woods et al., 2016). The results of these programs confirm that the effectiveness of such interventions is as beneficial as the effectiveness of MBIs in a clinical setting. In other words, a supportive environment to implement mindfulness practices in school settings is substantiated.

Definition of Terms

- *Mindfulness* is a cognitive state of being openly aware of the present moment.

- *Mindfulness-Based Interventions (MBIs)* are a series of techniques for teaching mindfulness practices that allow participants to increase their quality of life by focusing on the present moment.
- *Awareness* is the perception of a situation, phenomenon, process, or fact.
- *Prosocial behavior* is a behavior in which the efforts of one individual are directed toward the creation of good for another individual.
- *Self-regulated behavior* is behavior in which the individual can recognize and manage his or her behavior and automatic responses to external factors.

Significance of the Study

Interventions based on mindfulness practices help students live in the present, appreciate life, and reduce stress and anxiety levels, improving their overall quality of life. An initial literature search on the comparative effectiveness of MBIs on school age children and implemented in worldwide school settings, results in a dearth of qualitative knowledge. This study is intended to make a valuable contribution by increasing the number of reliable studies evaluating the comparative types and effectiveness of MBIs on children in academic settings worldwide. The dissertation assists educators in implementing MBI strategies with children in the classroom.

Chapter Summary

Mindfulness-based practices aim to improve the quality of everyday and academic lives, so research on these strategies requires special attention. This chapter offers historical references on how mindfulness practices developed and why they are an exceptional phenomenon for academic settings. In addition, the benefits of MBIs are briefly discussed. The chapter concludes with organizational sections aimed at narrowing the theoretical focus of the study, presenting

research questions, and defining keywords. The organization of the entire dissertation consists of five chapters and includes the following:

1. Chapter I: includes an introduction to the topic.
2. Chapter II: presents the literature review.
3. Chapter III: describes the study design, type, and approach.
4. Chapter IV: presents the results of the study.
5. Chapter V: summarizes the entire study and discusses the findings.

Chapter II: Literature Review

Background

A key characteristic of contemporary society is a positive attitude toward mindfulness practices because of perceived benefits derived from investing in improving one's mental development. However, the literature review does not provide a universal definition of mindfulness, as researchers tend to offer different perspectives in the context of the tasks addressed in their own work. It is correct to emphasize that knowledge about mindfulness and attention has accumulated consistently and expanded over time, resulting in an abundance of thematic work (van Dam et al., 2017). For this reason, one of the conclusions drawn in a plethora of Western clinical studies is the impossibility of a unified definition of mindfulness as a phenomenon. For example, in his book Jon Kabat-Zinn (2013) suggests awareness is the personal awareness arising from focused attention to the present moment without any judgment. It is worth clarifying that Kabat-Zinn is one of the founders of the school of mindfulness in Western culture, so his definition can be seen as a foundation for modern psychology, from which new interpretations have taken the opportunity to develop.

Kabat-Zinn's leadership on the question of developing an understanding of mindfulness has been identified as far back as the last century. Specifically, the researcher opened the academic Center for Mindfulness at the University of Massachusetts Medical School as early as 1979, where Kabat-Zinn sought to answer the question of whether the practice of mindfulness could improve therapeutic outcomes for inpatients. The relationship between these variables was mediated by the perceived stress the patient experienced, the reduction of which was expected to significantly improve treatment outcomes (Kabat-Zinn, 2013). Since then, the Mindfulness-Based Stress Reduction (MBSR) program created by Kabat-Zinn has been extrapolated around

the world, where it has been practiced in both medical and nonmedical settings with the expectation of replicating Kabat-Zinn's success, including for the treatment of not only somatic conditions but also for psychological disorders (Germer et al., 2013). Over the past forty-three years, knowledge of mindfulness practices has evolved considerably, as has the understanding that a single definition of the term is impossible.

At this point, it is useful to consider several interpretations of mindfulness from different perspectives to construct a single, comprehensive view of what is to be understood by the term. For example, mindfulness has been defined as the mental process by which an individual abstracts from a current problem and a previously formed solution in order to consider the situation from a different perspective (Sherretz, 2011). In this definition, it is easy to see the author refers to the practice of critical thinking and seeking alternatives, lumping them into a single term. According to Sherretz, one cannot view the solutions one already has as the only true and, more importantly, stable, so a conscious individual will treat them with skepticism and doubt in order to seek additional answers. On the other hand, mindfulness is a skill that allows individuals to take a closer look inside themselves to explore their own personality traits (Rechtschaffen, 2014). This definition overlaps with that given by Sherretz, as both authors are convinced that practicing mindfulness allows an individual to relax and experience the significance of the present moment without being immersed in past experiences. Better control of life, breaking down pre-existing stigmas and prejudices, and gaining context and perspective are also evaluated by researchers as results of mindfulness (Langer & Moldoveanu, 2000). Ultimately, mindfulness can be perceived as a critical skill that allows one to live a more mindful, analytically literate life and make informed decisions that are not based on emotional or psychosocial patterns.

Because mindfulness has already been postulated as a skill, researchers are similarly of the opinion that this skill can be developed. It has been reported that to develop mindfulness, an individual needs regular practice to improve mastery of this skill (Yeo, 2015). However, it is recognized that practicing mindfulness is not a simple task, as mastering it requires breaking down pre-existing socio-cultural and traditional attitudes invested in the individual through upbringing. Additionally, as Yeo (2015) reports, it is normal for an individual to be eccentric and judgmental; traits which must be inhibited to develop mindfulness.

The development of mindfulness has traditionally been offered through several wide-ranging practices distributed in various fields, both medical and non-clinical. Some of the most widely used techniques are concentrating on an event, whether breathing, observing, or feeling (Hornich-Lisciandro, 2013). These practices find application in sports, education, daily decision-making, and organizational tasks. Mindfulness breathing is actively practiced as one of the easiest and least costly in the context of time and effort: an individual only needs to take about ten deep breaths, concentrating on the tempo of each breath, to feel renewal and relaxation of thought (Brady, 2008). Meanwhile, it was reported that mindfulness practice, implemented through any method, allows an individual to concentrate on moments in the present, thus increasing the ability to learn and exist effectively (Rechtschaffen, 2014). Since the academic understanding of the need to develop mindfulness and the development of practices to implement it has expanded, there has also been an extrapolation of this knowledge into the realm of public discourse.

Popular literature and media actively broadcast the mindfulness agenda, suggesting it as a universal means to improve the mental and emotional well-being of the population. Such advocacy of conscious living could not help but influence the behavior of the masses. For

example, by 2018, eighteen million Americans reported they regularly practiced meditation as a tool for developing mindfulness, with a 10.1 percentage point increase in the number of citizens engaging in meditation and yoga (Clarke et al., 2018). This marked increase in the number of active proponents of mindfulness practices could not help but affect the industry market as well: according to Elflein, the meditation market reached \$1.21 billion by 2017 and is projected to nearly double, to \$2.08 billion, by 2022 (Elflein, 2019). The structure of this market is intuitive, with developers creating mobile apps for mindfulness practices and training courses, and sports organizations investing in teaching Americans to be mindful of their lives. However, the commercial sector's widespread focus on mindfulness practices, while it may bring some restrictions related to monopolization and unfair use, is not generally harmful to society. Mindfulness practices show excellent results for reducing stress levels and increasing focus, consequently improving quality of life (Birtwell et al., 2019). Mindfulness training has also been reported to have a positive effect on reducing professional burnout among medical professionals, which increases academic and public interest through the phenomenon (Birtwell et al., 2019). Thus, from the increased interest in the study of mindfulness practices, there are enough favorable consequences and evidence to illustrate the need to develop this field and extrapolate the results to different areas of life.

One such area in which the results of mindfulness practices and the resulting improvement in the overall quality of life and work of those involved can be applied is the field of education. Research shows mindfulness training for professors and teachers through a variety of methods, including focusing on breathing, reduces the likelihood of professional burnout and increases overall well-being (Wigelsworth & Quinn, 2020). Because working with students, lesson planning, and extracurricular activities require significant resources of time and mental

energy, teaching is directly associated with high levels of perceived stress. High stress levels not only negatively impact teachers' mental and physical health but also lead to a deteriorating academic classroom environment, subsequently affecting students' motivation to learn. It was reported that the teaching profession is inextricably linked to the ability to control one's own emotions and mental flexibility; however, in a highly stressful and irritable environment, these skills may be uninvolvement (Roeser et al., 2012). In turn, research demonstrates that teaching mindfulness practices to current or prospective teachers significantly reduces their stress levels, increases empathy for students and the work process, and benefits employees' resilience (Trube, 2017). Meanwhile, a cross-sectional thematic analysis of self-reports from 35 practicing pre-school teachers has already demonstrated mindfulness training positively impacts staff psychosocial qualities and favors the development of a healthy academic classroom environment (Jennings, 2015). Consequently, there is sufficient academic evidence to encourage the use of mindfulness practices to train stress-resistant and emotionally stable teachers to build healthy relationships with students and maintain a desire for knowledge.

Perceived stress is a significant challenge to carry out domestic and work activities effectively, and for social professions— those involving the need to interact with others— stress is a key limiting factor. The motivation for choosing teachers as the focus within these paragraphs is not accidental, considering how the further life development of the students depends upon how successfully and smoothly the teacher shapes the working environment of the classroom. Wellness programs for teachers in this context are a one-stop solution to enhancing the professionalism and emotional resilience of the employee and, as a result, improving the academic environment. To exemplify, a randomized controlled trial showed that mindfulness-based teacher wellness programs are positively associated not only with a decrease in perceived

stress levels but also with increased professional well-being (Crain et al., 2017). Additionally, stress should be viewed as a complex problem leading to an overall decrease in worker productivity, particularly in education centers. During mindfulness practices, teachers can assess their stress tolerance critically and are more likely to overcome any barriers to effective work performance (Weinstein et al., 2009). Furthermore, Weinstein et al. report that when using mindfulness practices, individuals have increased levels of recourse to stress coping strategies along with stress avoidance strategies, which are known to have the potential to accumulate destructive emotions and inhibit effectiveness.

It is fair to say wellness programs to reduce perceived stress levels offered to teachers have proven positive effects on students as well. It is paramount to recognize that for an academic environment, student behavior is an important factor which either contributes to constructive classroom development or wastes valuable educational resources by lowering overall motivation to learn. Student behavior in the classroom not only affects personal performance and interest in the subject matter, it affects the teacher's ability to allocate time and resources wisely to teach knowledge rather than discipline in the classroom. Research reports that the use of mindfulness practices during instruction, which include a propensity for self-reflection, has a positive effect on students' classroom behavior, thus contributing to a constructive academic environment (Singh et al., 2013). It is worth clarifying that over the past few years, there has been an increase in the number of research papers focusing on mindfulness in relation to young people. This trend reliably indicates that mindfulness practices already demonstrate proven effects in adults, so some shift in focus should be seen in terms of approximating useful conclusions for more demographic groups. Meditative techniques within mindfulness practices are reported to improve psychosocial, behavioral, and physiological

outcomes in younger audiences (Black et al., 2009). Practices used by Black et al. include mindfulness meditations, cognitive therapy, and transcendental meditation. Additionally, mindfulness practices had a positive impact on cognitive learning abilities: statistically, students trained in mindfulness practices are more likely to attend school and demonstrate improved academic performance (Zenner et al., 2014). Furthermore, mindfulness training also positively impacts adolescents' emotional well-being by improving self-regulation and mental independence, as well as improving their communication abilities (Burke, 2014). Moreover, practicing mindfulness helps adolescents become more self-aware and understand their personalities more deeply (Brady, 2008). This is especially important for adolescents, when individuals are just beginning to learn about the adult world and face barriers that can hinder the development of a healthy formed identity. Conscious adolescents demonstrate satisfaction with their own lives and the ability to be critical of information they receive, thus avoiding undesirable outcomes of adolescent experiences and emotional turmoil (Waters & Higgins, 2022). As a result, adolescents who have undergone mindfulness practices are less likely to exhibit aggressive and antisocial behavior and are less likely to suffer from increased anxiety and stress. As a general corollary, mindfulness has a desirable effect on students because it is shown to increase overall academic and personal performance, as well as contribute to an emotionally and cognitively healthy community.

Brain Development

The academic analysis of mindfulness practices is inextricably linked with neurobiological research that provides insight into the brain's mechanisms and the functioning and development of the nervous system. Neurobiology is complex and multidisciplinary; it encompasses many subdisciplines that intersect to reveal new knowledge and patterns of brain

function both at the molecular and cellular levels and at the level of large organic systems, be they cerebellum, cerebral cortex, or hypothalamus. Understanding how the brain in particular, and the nervous system in general, works allows us to hypothesize and gain new evidence regarding the cognitive and emotional patterns of individual behavior, which in turn is directly associated with the study of mindfulness practices — for this reason, it is necessary to build understandings of neurobiological structures in order to study mindfulness convincingly and comprehensively. A literature search has shown that the number of thematic contributions has multiplied in recent years, indicating a growing academic interest in the fundamental problems of neurobiology. The massive accumulation of information has allowed the scientific understanding of brain structure to evolve consistently so that several functional models of the brain have succeeded each other over the decades. One recent realization is that the brain is a dynamic and evolving system, which means that the brain structures established during embryonic development tend to undergo significant changes over the course of human maturation and psychophysiological development (Stiles & Jernigan, 2010). Thus, it has become clear that the study of the brain and the factors influencing brain development requires much more attention than previously thought.

Experience-Expectant and Experience-Dependent Development

The foundations for the formation of the human brain are laid during the first stages of embryonic development and continue to form throughout ontogenesis. Although the brain turns out to be sensitive to environmental factors, the embryonic foundation remains fundamental. It has been reported that the brain at birth contains about 100 nerve cells, called neurons, and their number slowly decreases over the course of life (Hulme, 2018). Postnatally, the biological patterns of brain development do not cease, but new factors, namely patterns of interaction with

the environment, join them. The infant learns its environment, interacts with its parents and others, and grows and develops, all of which forms new neural connections between pre-existing nerve cells over the course of life (Twardosz, 2012). The formation of new connections, however, does not mean that this pathway is conditioned solely by their creation, as connections in the individual's brain can also be lost over time. A literature search allowed us to determine that there is no reliable evidence demonstrating the removal of pre-existing neural connections, so a deficit of qualitative knowledge is relevant on this issue. Thus, human brain development is realized through two strategies of structural transformations, namely enrichment, characterized by the creation of new neural connections, and their removal due to the lack of necessity to use them.

Studying the formation of postnatal neural connections has resulted in a necessity for creating two terms describing the quality of the infant's interaction with the environment. The first is the concept of "experience-expectant" development, implying factors of the infant's interaction with the environment surrounding them in the first few days after birth (Greenough et al., 2002). Typical early experience practices include receiving care and nurturing from adults, feeding, and playing: these patterns allow the infant to form qualitatively new neural connections typical of the population. When there is a deficit of quality care and nurturing from parents, the child is deprived and underdeveloped, which is realized at the neural level since the necessary neural connections have not been built, so the growing individual is likely to have a deficit of cognitive and emotional abilities compared to peers who received sufficient parental attention during this stage of development. Greenough et al. (2002) postulate the critical need for healthy early experiences for the functional development of the individual. A person with developed

neural connections in the context of "experience-expectant" development is more likely to adapt to a changing world and demonstrate adaptability and mental flexibility.

Additionally, Greenough et al. (2002) introduced a second term to describe the patterns of interaction between the individual and the environment during ontogenesis; it refers to "experience-dependent" development, in which the experience of interaction with specific events rewrites existing neural connections. In contrast to "experience-expectant" development, this type of structural transformation of the brain system is individual and unique since it is realized through the individual's interaction with events atypical for the community in which the individual was raised (Greenough et al., 2002). "Experience-dependent" development is conditioned by other interactions with the environment that the individual was not previously prepared for due to lack of necessity. Thus, it could be argued that every time a grown individual goes through novel events and experiences, the patterns of "experience-dependent" development are triggered, improving the human brain fiber tissue.

As has become clear, changes in the structure of neural connections, whether they are formed or removed, occur throughout life, and are mediated by experience. Researchers argue that it is early life, including school time, makes one of the most important contributions to brain tissue development (T. T. Brown & Jernigan, 2012). Additionally, T. T. Brown and Jernigan (2012) argue the most intense growth in an individual's mental, cognitive, and communication abilities occurs during the early school years when the individual is faced with a new organizational environment. It is in the large hemispheric prefrontal cortex and temporal areas that the most severe structural changes occur during this period (T. T. Brown & Jernigan, 2012). Consequently, it is during the early school years that the greatest attention should be given to the

healthy development of the individual, as further life success and cognitive functionality of the individual directly depend on it.

The Interaction of Gene Expression and the Environment

However, for a deeper understanding of neurobiological patterns, researchers needed to look even further to determine the biological factors of brain tissue development. Fundamental to the living organism is the function of gene expression which determines the development of organ structures. Gene expression is the formation of polypeptide molecules and proteins of vital importance to all systems of the organism on the DNA matrix involving the intermediary RNA, as postulated by the central dogma of molecular biology (Crick, 1970). Many more molecules are involved in gene expression since these mechanisms must be regulated and precise to avoid unwanted mutations and the accumulation of protein material unnecessarily. In other words, the brain of an individual is formed during the embryonic phase of development according to a genetically determined program that not only determines the organoleptic characteristics of the brain but also the inherited thinking patterns and cognitive functionality of the growing organism.

Gene expression as a property of the human body does not end upon birth, but instead carries out its activities throughout ontogenesis. Therefore, the growth of the individual, which entails the need to interact with the environment, forms a system of genetic-social factors necessary for the natural development of the individual. It has been reported that healthy development of brain tissue can only be realized when gene expression and environmental interaction factors are effectively combined (Kolb et al., 2014). Notably, social factors do not necessarily have a positive effect on the formation of neural connections because, as stated earlier, there are also negative patterns within this environmental interaction. For example, lack

of parental attention or experiencing severe emotional distress as a child can lead to impaired gene expression and thus, the functional health of brain tissue. Consequently, even identical twins with the most similar brain structure begin to differ over time as they accumulate different environmental factors. Hence, individuals encountering different environments eventually exhibit different patterns of behavior and cognitive function, as the social factor of experience is as fundamental as gene expression.

Regarding specific structural interactions between gene expression mechanisms and social factors, it is worth paying particular attention to DNA methylation; modifications of DNA in which the nucleotide sequence is not changed, but methyl as a free radical is attached to the cytosine chain, which implements such transformation at the epigenetic level (Singal & Ginder, 1999). Singal and Ginder (1999) report that DNA methylation is realized through condensation of some areas of the DNA molecule through promoters, which prevents translational biosynthesis mechanisms from efficiently reading the information, and therefore the corresponding genes will not be expressed into proteins. Research by the National Scientific Council on the Developing Child demonstrated that early experiences could have a disruptive effect on gene expression in the context of methylation (National Scientific Council on the Developing Child, 2010). In particular, the child's social experiences can lead to irreversible epigenetic consequences, which in turn affect the quality of gene expression. In other words, in combination with natural expression factors, healthy early experiences are overly important for normal functional development and determine the epigenetic architecture of the brain.

Neural Development Affects Behavioral Development

By now, it has become clear that the formation of neural brain tissue is mediated by environmental influences, but the opposite is also true. Gene expression mechanisms and

epigenetic factors influence the behavioral patterns of an individual. In turn, such influences can explain patterns in human behavior and link social lifestyles to biological structures. This section examines how neural tissue development affects an individual's behavioral development.

Executive Functions

One of the main properties of human thinking is the ability to plan effectively, and this ability is mediated by neurobiological activity in the brain. More specifically, the center of the executive system, or otherwise the system of high-level processes, is localized in the prefrontal areas of the large hemisphere cortex. The executive system should be understood as the brain system responsible for the cognitive processes of event planning, adaptation to environmental changes, and selective attention to individual details (Diamond, 2010). Specifically, executive functions define a multidimensional set of skills related to analytical thinking, processing incoming information, and high-level problem-solving. The goal of such a system is to effectively plan for and execute such planning to achieve a desired goal, and thus executive functions are inextricably linked to goal-setting inherent in human thinking. The executive function system exhibits a long process of formation because its architecture requires basic experience, including experience interacting with the environment (Blair, 2010). Consequently, it is correct to postulate the executive system of the frontal lobes is not only formed based on biological features of the structure of nervous tissue, but also through social and cultural experiences obtained by the individual during early development.

In terms of the chronology of executive system development, the functions of cognitive planning processes are established immediately after birth. Intensive development of this system is observed in the child during the first year of life, after which the rate of development declines slightly until the next peak (Diamond, 2002). The next stage in the development of this system

occurs when the child enters school, where the individual encounters a previously unknown organizational structure, meets new people, and develops communication and educational skills (Riggs et al., 2006). Diamond (2010) also reported a basic executive system is necessary for an individual to learn effectively, meaning it can be postulated it is high-level functions that are one of the fundamental predictors of high performance and learning gains at various stages of education (Diamond et al., 2007). Another peak is observed before the executive system's final stage of development, with the onset of adolescence (Rhoades et al., 2009). This is hardly surprising because, in adolescence, the individual enters a new phase of life, learns previously unknown skills, and encounters an environment that prepares them for adulthood. Finally, the high-level system of processes will be formed by the age of twenty, when the individual is an adult, sexually mature individual with expectedly developed cognitive and emotional intelligences (Zhou et al., 2007). It has also been shown that a developed executive system improves an individual's self-regulation abilities and is inextricably linked to social, academic, personal, and emotional achievement (Flook et al., 2010). Therefore, it is expected that from this age, the individual is already capable of effective planning, is prepared with experience in educational programs, and is able to process information and make independent decisions.

Self-Regulation

Particular attention should be paid to self-regulation, mentioned in the previous section, as a phenomenon of a human cognitive system. Broadly speaking, self-regulation should be understood as a property of living systems to respond to external stimuli and to adapt to them in order to maintain internal stability. In the context of neuropsychology, self-regulation refers to an individual's ability to adapt their own behaviors based on emotional, social, and cognitive environmental conditions (Rueda et al., 2010). Self-regulation is common to all individuals, but

it occurs in varying degrees depending on the development of the executive system. For students, therefore, self-regulation also applies as a cognitive adaptive capacity. From an academic perspective, students' self-regulation is realized through their ability to memorize knowledge and teacher's guides for execution, discipline, to control their own behavior, and concentrate on specific tasks, especially mathematical tasks (McClelland et al., 2007). It is fair to note that the ability to self-regulate is also inextricably linked to the regulation of individuals' emotional behavior: the ability to manage emotions and, by extension, behavior (Buckner et al., 2009). Consequently, it is correct to postulate that self-regulation is a critically important adaptive function of the cognitive thinking system which determines the implementation of executive functions.

Working Memory

In the learning of individuals, the critical skill is the ability to remember, because the successful recall of information ultimately determines the effectiveness of learning and the utilization of retained information. Memory is multidisciplinary in its manifestation, so the focus in this section is predominantly on working memory. This type of memory should be understood as a cognitive system with limited capacity, responsible for the temporary storage of memory, with functions of processing acquired knowledge (Wass et al., 2012). Working memory is directly involved in organizational tasks, including learning; therefore, working memory should be viewed as a key factor in adolescent learning success. Specifically, developed working memory is a predictor of a child's successful learning in reading and math (Welsh et al., 2010). This does not seem surprising, as learning should result in students possessing the ability to accumulate the necessary knowledge and utilize it to find creative solutions when presented with a task. Working memory knowledge, therefore, overlaps with long-term memory results, thus

stimulating the synthesis of information, allowing for problem-solving, and building a long-term understanding of the material. Furthermore, working memory is directly associated with an individual's emotional regulation, as acquired and memorized knowledge allows inhibition of unwanted effects of emotional expression (Teasdale & Chaskalson, 2011). Thus, working memory is a fundamental predictor not only of successful learning but also of an individual's emotional regulation.

Stress

Stress is an important factor that impedes effective learning in individuals. Stress should be understood as a bodily state in which emotional and physical exhaustion is caused by exposure to various adverse factors. From the point of view of neurobiology, the local effect of stress on brain structures is paramount. Thus, in the white matter of the temporal lobe is located the amygdala body (*corpus amygdaloideum*), whose direct function is caused by the formation of human emotions. Research proves that during stressful experiences, the body's neurohumoral system releases cortisol, a hormone produced in the adrenal cortex; cortisol triggers biochemical reactions in the amygdala, contributing to states of flight and fear (Davidson & McEwen, 2012). Therefore, the chronic experience of stress modifies the structural characteristic of this part of the brain, thus affecting the behavioral characteristics of the individual. Furthermore, a link has been found between a cortisol-activated amygdala and inhibition of executive functions — negatively affecting a student's ability to plan, and problem solve effectively (Diamond, 2010). This is supported by Davidson and McEwen (2012), who confirmed that chronic stress leads to disruptive effects in the context of healthy brain tissue development. Additionally, experiencing stress is shown to impair an individual's working memory functions, further reducing the ability to learn effectively (McEwen, 2008). In addition, the destructive effects of stress on cognitive

and emotional self-regulation have also been reported (Blair, 2010). Thus, stress is a destructive, negative factor that interferes with adolescent learning and creates barriers to healthy functional brain development.

Inhibitory Control

Regarding emotion regulation, it is fair to note that the human cognitive system possesses inhibitory control. The functional essence of such control boils down to the inhibition of impulsive emotions and automatic reactions to use the control, attention, and logic to generate decisions. Inhibition refers to the cognitive ability to think in order to interrupt reactive responses, and subsequently use subdominant reactions to achieve a goal (Bierman et al., 2008). In adolescents, this means that inhibitory control prevents unwanted displays of emotional expression or patterns of undesirable behavior. It is well known that teachers and peers turn out to be most favorable toward individuals who are able to restrain excessive emotions and are guided by logical motives to achieve goals (Rhoades et al., 2009). Furthermore, Rhoades et al. (2009) report that inhibition can be enhanced by learning interventions at an early age, which promotes more effective personal development and adequate communication skills as an adult.

Attentional Network

The executive functions of the cognitive system also include the attentional network. When an individual is confronted with new information, which is particularly relevant in academic settings, they may be dealing with excessive amounts of new data that inhibits effective remembering and processing of that data. The attention network is a multidisciplinary phenomenon of human thinking and consists of orientation, alerting, and executive attention (K. W. Brown et al., 2007). In this sense, the attention network is a restraining mechanism that allows one to regulate the flow of information and control focus. The attention network

organizes large-scale neural networks of the brain in order to accomplish a goal (Posner et al., 2006). Consequently, forming the ability to regulate the flow of information is not an easy task, requiring long-term development of this skill through training.

Effortful Control

During learning, individuals will encounter errors which either shapes their understanding of the material and allows them to construct a more profound understanding, or causes them to ignore such learning, thus reinforcing the gap between expected and observed knowledge. Within an executive function, researchers have emphasized the concept of effortful control: the ability to inhibit dominant responses to detect errors and further plan solutions (Rothbart, 2007). However, effortful control should not be viewed unequivocally, as this control does not have a universal function for executive attention; instead, this type of control can both inhibit and catalyze an individual's behavioral patterns. A high fixation on detected errors can elicit an emotional response that is destructive to learning, so effortful control aims to reduce emotion for the sake of reorganizing academic behavior. Effortful control aims to instill within the child the foresight to identify when a stressor from their learning of a new task may be mediated by unwanted physical behavior, therefore effortful control intends to suppress such behavioral patterns in order to allow the individual to live out the emotion effectively, but most importantly, verbally. It follows that effortful control selectively suppresses both behavioral and emotional responses of individuals, forming freedom for subdominant responses.

In conclusion, the behavioral characteristics of the individual are directly influenced by the neurobiological features of brain structure and development. A substantial spike in this development is seen in early childhood when the child is confronted with an unfamiliar environment, such as the school setting. Unwanted behavioral and emotional patterns, along with

the stress experienced, can negatively affect an individual's socialization and personality, so building cognitive restraint and coping skills is critical. From this perspective, implementing mindfulness practices at an early age is an effective response to children's unwanted emotional displays. Mindfulness practices can be taught to children either in the home setting where parents are mentors, or in an academic setting where a teacher guides and instructs the students. The result of such instruction will not only manifest a restrained and socially encouraged tendency toward self-regulation but also the child's deeper understanding of their own personality and emotions brought about through their lived experience. Among others, a child who has undergone mindfulness practice is more likely to have empathy for peers and adults, which is favorable for communication.

Theoretical Framework

In the context of the current research, the theoretical framework serves as the intellectual groundwork that informs and structures the dissertation. Just as a building's framework supports its walls and roof, a theoretical framework provides the essential system for understanding, investigating, and interpreting the subject matter of the dissertation. In the subsequent section, the foundation upon which this study is constructed – the theoretical framework – is explored.

Attachment

The parent-child connection is fundamental to the study of healthy early experiences and learning, and this connection reflects the complex multidimensionality of this communication system. The seminal author in the study of this bond was John Bowlby, who developed his own attachment theory (Bowlby, 1978). Attachment theory is not focused only on the parent-child relationship system and allows for the study of long-term attachments between any significant other. However, the present study specifically examines the bond between a parent

(predominantly the mother) and a growing child. Bowlby's (1978) research proved early attachment experiences are critical to an individual's development in later life and identified three elements of attachment, the fulfillment of which stimulated the child's mental and cognitive well-being, namely proximity to the caregiver, the security of the child's home environment, and a secure opportunity to explore their environment (Fairchild & Finney, 2006). Among others, Bowlby (1978) described the stress perceived by the child when separated from their mother for an extended period and how this stress affects the child's further personal development.

In the late 1960s and early 1970s, Bowlby's theory served as a reference point for the development of additional concepts examining the importance of early attachment. In particular, some of the researcher's followers included Ainsworth, Blehar, Waters, and Wall, who in 1978 created a classification of attachment types, thereby significantly expanding academic and public understanding of the reciprocal nature of the parent-child relationship (Fairchild & Finney, 2006). These researchers argued a child could only learn more about aspects of their personality, emotional management, and develop empathy when they have grown up experiencing a supportive, constructive relationship with their caregivers. It is pertinent to clarify, however, that attachment theory is not limited to the infant-parent bond but looks at the growing child's natural property in knowing other adults; the most common adults in the child's early life journey are caregivers and pre-school teachers. The quality of these relationships also determines how successfully the child will function as a healthy social unit in the future (Rutherford & Whittington, 2013). Meanwhile, it is recognized that the child, at an early age, learns the world around them through the lens of internal representations (Pianta, 1997). Internal representations should be understood as a visual image of an object or phenomenon that emerges in the individual's mind based on data from past experiences. Internal representations form internal

working cognitive models that allow an individual to predict and interpret the actions of others based on the child's own perceptions of them. With the help of internal working models, the child can distinguish the self from other people, analyze the nature of relations between them, and unconsciously predict their own behavior or the behavior of others on the basis of past experience. Internal emotional and behavioral patterns are inextricably linked to attachment theory, since the child's early experiences with adults conceptualizes patterns of expected behavior which the child can enact throughout their life. Moreover, in attachment theory, working patterns allow the child to judge himself in terms of whether he deserves attention and care based on patterns of receiving that attention and care throughout past experiences (Pianta, 1997). Pianta (1997) argues that when combined with attachment theory, internal working patterns shape a child's future behavior and cognitive self-presentation. For example, if a child has received insufficient parental attention and has not built relationships based on healthy attachment, it is likely they will build future relationships on a foundation of distrust; the opposite is also true. Shaping a myriad of possible outcomes and behavioral patterns in the future, early attachment experiences are crucial to a child's successful development, and so attachment theory has been extensively researched (Fairchild & Finney, 2006).

Bronfenbrenner's Bio-Ecological Theory

Another view, which does not exclude Bowlby's concept, is Bronfenbrenner's ecological theory of personality. The American psychologist developed his own theoretical ideas about how a personality develops in terms of relations with the environment. According to Bronfenbrenner, the ecological environment of a child's development consists of four nested systems that are usually graphically depicted as rings (Krebs, 2009). The use of the term "ecological" is not coincidental to Bronfenbrenner's theory, as he deliberately emphasized the biological context —

ecology studies the relationships of organisms in ecosystems, and thus the same thinking can be extrapolated to the mutual relationship between the child and the environment in which he is raised. Bronfenbrenner suggested that the ecology of individual development consists of two key figures, namely the growing child, the bearer of his own socio-cultural and moral notions, and the constantly changing environment in which this child grows and develops (Krebs, 2009). Notably, the environment is not constant because the individual does not exist in the same place all the time; instead, the expansion of experience with the environment characterizes the environment as changeable and unstable. Thus, the child becomes familiar with and differentiates between the ecosystem of the home, kindergarten, school, work, and the company of friends, all of which compel the individual to learn new information and form renewed ideas about their environment.

Bronfenbrenner's theory answers the question of how the emotional and mental well-being of the growing individual and the environment within which he is raised are related. Specifically, the individual is confronted from childhood with various social environments in which he is forced to adapt in order to achieve comfort. If the family environment is dysfunctional and the child experiences chronic stress and emotional turmoil, this affects the behavioral patterns of the individual in other environments, such as school or work, and in their future generally. In other words, Bronfenbrenner's theory makes clear that an individual's behavioral and emotional patterns stem primarily from the individual's relationship with the environment in which they were raised.

Elder's Life Course as Development Theory

Bronfenbrenner's theory served as an essential foundation for the development of additional research that would extend the theoretical and practical framework of human

development ecology. Thus, in 1998, Glenn Elder developed a theory that studied an individual's life course from the perspective of personal development. The basis for Elder's conclusions was practical: in particular, the researcher studied longitudinal materials showing the development of children during the Great Depression (Elder, 1998). He hypothesized that inattention deficits under chronic stress caused by a severe economic crisis should have led to specific behavioral patterns in adulthood. Elder's (1998) findings supported the hypothesis — the life course of individuals depends mainly on the historical context within which they develop; therefore, it is impossible to truly study an individual's personality without placing it in the context of time and place. It is fair to acknowledge that Elder's writings inspired Bronfenbrenner to expand his theory and introduce a new term, namely chronosystem. Bronfenbrenner referred to the chronosystem as the ecosystem in which a child is raised, taking into consideration the temporal changes in the individual's life path (Pinkerton, 2021). Sublingual birth, school entry, and the death of a parent are just some of the examples of chronosystem manifestations which undoubtedly contribute to an individual's personal development.

Temperament

The unique combination of environmental factors with the genetic predisposition of the individual forms the temperament of the individual. Temperament should be understood as an individual's behavioral sustained style of thinking and responding to the outside world and other people (Thomas & Chess, 1977). Temperament should not be mistakenly viewed as a product of genetic patterns of development or interaction with the environment because, in fact, temperament is established in response to a unique synthesis of these factors. A child's temperament influences, but does not absolutely condition, the behavioral and thinking patterns with which the child learns about the world: making friends, reacting to events, and learning

(Eisenberg et al., 2009). The flexibility of temperament makes it possible for the child to deviate from specific patterns of behavior depending on outside interventions. Such an intervention could be mindfulness practice, which develops the individual's personal orientation and allows behavior patterns to be demonstrated not based on temperament but on the cognitive system and learnt thought processes.

The Purpose of Education

Decades of research has been conducted to identify the purpose and essence of education, and to develop theoretical ideas about processes of learning. The American philosopher of the pragmatic school, John Dewey, argued the essence of education is the ability to capture cultural and social knowledge in order to pass it on to future generations (Dewey, 1966). Dewey saw practical meaning in educating individuals, from the perspective of a civilizational approach to societal development. McCullough held a similar view of the purpose of education, arguing that learning helps an individual consolidate useful research and analytical thinking skills in order to improve working practices for the benefit of society (McCullough, 2007). It is noteworthy that both authors primarily argued education achieves some level of well-being for society through influencing the efforts of specific individuals.

The shifting focus of theoretical research from the vector of social development to individual personal growth is indicative. Recent research on education distinguishes two concepts through which the individual learns, namely fixed mindset and growth mindset (Dweck, 2016). The fixed mindset is assumed to be an innate state of an individual's cognitive system and does not change over time, whereas the growth mindset is driven by the desire to change and accumulate new knowledge, for which effort and regular practice allow for improvement. These concepts can easily be extrapolated to the academic environment: students with a developed

growth mindset are eager to gain new knowledge and develop both personally and academically, and thus are willing to work hard and practice regularly to achieve their goals. According to Dweck (2016), for these students, mistakes are just another barrier to overcome and offer useful life lessons they must learn from in order to achieve their goals.

Effective learning is impossible without perseverance, with which the student embarks on new tasks and does not despair if the solution does not turn out to be correct. Courage or perseverance research refers to ongoing work on tasks, combined with a continued interest in solving them even over a long time period, without a particular need for encouragement or recognition (Duckworth et al., 2007). This definition of the growth mindset also highlights the fact that an individual's cognitive apparatus maintains academic persistence over a long period of time, from which it follows that the student is unconditionally motivated and personally interested in the knowledge he or she receives.

A new perspective on educational purpose was offered in 2016, in Amy Fast's interpretation of the essence of academic programs. Fast developed the concept of Nobel Purpose, according to which learning is not only about gaining quality knowledge, attending taught programs, and increasing personal interest in the discipline, but also the development of additional soft skills (Fast, 2015). Investing in the development of soft skills determines an individual's deep understanding of personal behavioral patterns and emotional thinking, improves communication abilities, and allows for more reliable solutions to everyday and academic challenges. There is an intuitive connection between the development of soft skills techniques and mindfulness practices. Mindfulness practices is one method of building soft skills in students, shaping desirable effects, and improving the quality of life and emotional well-being

of adolescents. In addition, mindfulness practices help students adapt faster to a rapidly changing world and remain resilient in life, which also affects an individual's stress tolerance and stability.

Developmentally Appropriate Practice

In recent years, the term "Developmentally Appropriate Practice" has become increasingly common in academic and public sources in relation to early childhood education. The National Association for the Education of Young Children interprets Developmentally Appropriate Practice (NAEYC, 2021) define it as follows:

Developmentally appropriate practices are methods that promote each child's optimal development and learning through a strengths-based, play-based approach to joyful, engaged learning. Educators implement developmentally appropriate practice by recognizing the multiple assets all young children bring to the early learning program as unique individuals and as members of families and communities. Building on each child's strengths — and taking care to not harm any aspect of each child's physical, cognitive, social, or emotional well-being — educators design and implement learning environments to help all children achieve their full potential across all domains of development and across all content areas. Developmentally appropriate practice recognizes and supports each individual as a valued member of the learning community. As a result, to be developmentally appropriate, practices must also be culturally, linguistically, and ability appropriate for each child. (para. 1)

Despite the current agenda to improve academic programs for student well-being, many programs fail to have this focus in reality. Many elementary schools have reported their students regularly experience stress associated with increased complexity and lack of curricular personalization (Jones, 2018). Frequent stress is not a random phenomenon in education settings,

but rather signals structural problems associated with the very understanding of normal child behavior in the early stages of learning. Because of the cumulative effect of stress, there is a rapidly increasing tendency among early learners to engage in disruptive behaviors that are dangerous and harmful to social well-being and the academic environment (Poulou, 2015). Children exhibit emotional outbursts which not only affect the child's own mental well-being but also interfere with the effective use of class time and resources. In turn, rigorous curricula, lack of adequate leadership from the caregiver or teacher, and the individual's inability to reliably self-regulate contribute to a deterioration in the student's emotional well-being. Such patterns of behavior, among others, lead to inhibited development of social skills in the child, which affects further stages of personal socialization (Combs & Slaby, 1977). Thus, stress-induced emotional dysregulation creates the need to teach children to first recognize their emotions adequately in order to then control them reliably (Domitrovich et al., 2017). Because of this, there is an urgent social demand for the use of proven interventions that allow elementary school students to recognize and manage their emotions effectively.

Among others, this evidence-based intervention promotes the use of physical activities to establish a positive classroom atmosphere and create freedom for students' emotional expression. It has been reported that children unknowingly form deeper connections to the subject matter being taught and remember knowledge better when physical activities are incorporated into their learning, namely dancing, singing, body language, and imagination (Kress, 2021). This integration between learning and exercise allows for the development of not only academic but also social and emotional competencies of the student, thus improving student motivation and engagement; in this case, the mind and body of the child is constantly involved in multifaceted problem-solving, which increases interest and attention to the subject. It is also noteworthy that

physical movement during the lesson carries physiological meaning. Research shows that children with musculoskeletal disabilities are more likely than their peers to be sedentary and impatient, thus creating obstacles to learning (Cutter-Mackenzie & Edwards, 2013).

Incorporating physical activity into classroom-based learning helps disabled students cope with restlessness and creates a constructive, supportive academic environment. Thus, elementary education is one of the first places where a child can have early experiences which form the foundations for effective personal socialization, so special attention must be paid to the student's favorable experiences within kindergarten or school.

School- and Classroom-Based Interventions

The academic environment can create opportunities for effective clinical or non-clinical interventions that improve students' quality of life and learning experiences. A wide variety of school-based practitioners are connected by the common purpose of implementing interventions creatively and comprehensively, offering children and adolescents a variety of opportunities for personal growth. For example, the school counselor organizes face-to-face or group meetings with students to discuss their problems and develop a unified solution together (Felver et al., 2013). In addition to improving students' self-reflection and problem-solving skills, the child's experience of positive professional support is critical for nurturing feelings of trust and connection with others, because providing such support shows the child that adults are interested in their problems and are able to help in any situation, whether it is an academic, family, or personal problem. The teacher can also be an executive for initiating in-class interventions for improving students' mental well-being and cognitive abilities (Weare & Nind, 2011). Other approaches involve the entire school as a single entity, creating a culture of mental health care by engaging outside professionals or family members in the interventions being developed (Kielty

et al., 2017). Studies have also approximated cognitive behavioral therapy procedures, initially designed for adult mental health care, to youth policy because it brings about expected results, such as reducing the symptoms of depressive disorder (Vostanis et al., 1996). It has also been demonstrated that applying positive psychology skills to adolescents can be beneficial to increasing student achievement and creates a supportive environment for personal development (Waters, 2011). Thus, there is ample opportunity for organizational interventions at the educational level to improve students' academic experiences and create the desired institutional culture.

The results of such interventions are rapid improvements in individuals' mental health and emotional well-being, feelings of safety, and support. In addition, the authors report that the interventions result in students developing useful social-emotional soft skills and self-regulation abilities, which, as previously mentioned, allows them to be confident in their future life paths (Boekaerts & Cascallar, 2006). The results discussed have quantifiable support as well: an evaluation of 213 school-based intervention programs focusing on social-emotional skills reported participating adolescents had enhanced social and communication skills, as well as significantly improved academic performance, compared to the control group (Durlak et al., 2011). Thus, there are robust results supporting the benefits of using interventions in an academic setting.

Mindfulness-Based Interventions (MBIs)

Mindfulness practice has already demonstrated results for adults and teachers, and this section assesses whether mindfulness-based interventions (MBIs) are helpful for young people. By November 2015, the total number of research papers on mindfulness was over 3,000, yet only 8% of those papers examined mindfulness in juvenile individuals (Felver & Jennings, 2016).

Consequently, there is a dearth of knowledge on this issue. Available research has reported that MBIs have significant positive effects on students' psychological well-being and improve mental health outcomes (Vostanis et al., 1996). Additional analysis also shows that addressing MBIs within the school environment increases students' prosocial skills and increases their tolerance of stress (Zenner et al., 2014). In particular, MBIs can be applied with consistent regularity before or between classes: this can include focusing on breathing, physical exercise, practicing meditations, or self-reflection. In addition, the teacher may encourage children to focus on experiencing the present rather than the past or future (Hooker & Fodor, 2008). Notably, MBI practices within the school can be organized either by staff members of the educational institution or by third parties with the relevant experience and competence to work with children.

Theme Variables

MBIs and School Levels

For many countries, compulsory education is an integral part of growing up and learning at a young age. The compulsory nature of this education makes it impossible for most students aged 5 to 18 to skip or ignore the basic levels of education. Consequently, young people spend most of their formative years in an academic setting, which means that implementing MBI practices within educational settings is a feasible and relevant strategy for garnering the positive results needed for healthy emotional and social development. Such practices include focusing on specific parts of one's body or activity, whether breathing, thinking, or contemplating. In addition, MBIs include practices of meditation and mindful physical activity that allow for the expression of an individual's body language.

Social-Emotional Development for Preschool Children, Ages 3-5

In an academic setting, the child tends to develop social-emotional skills that contribute to the socialization of the individual. With developed social-emotional competencies, the child at an early age is capable of effective communication and empathy, controlling hostile intentions and relationship-destructive emotions. Such a child has some foundation of moral attitudes and understands independently of a parent, caregiver, or other adult figure what actions will not be encouraged in a given environment, usually the home, pre-school, or playgroup settings.

Social-Emotional Development for Elementary School Children, Ages 5-12

Social-emotional skill development in later life is based on the relationships the individual has developed with their peers and adults. These skills help the individual not only to maintain connections with others but also to have a deeper sense of their own social representation. Among others, social-emotional skills help the child predict their own behavior and the behavior of others based on past experiences. To exemplify further, negative social experiences with one's peers or adult figures during preschool may lead to emotional and behavioral dysregulation at the elementary stage, as well as later in life. Meanwhile, positive experiences at the preschool stage, and at the elementary stage when an individual is learning deeper social-emotional skills, has the benefit of relieving the effect of negative early experiences and furnishing the individual with coping mechanisms when faced with novel experiences imparted at the elementary stage.

MBI Elementary School Programs Included in the Study

The following educational organizations practicing MBI were included in this paper:

1. Living Mindfully Primary Program (LMPP) UK
2. Mindful-Based Social Emotional Learning (MBSEL)

3. Mindfulness-Based Cognitive Therapy (MBCT)
4. Mindfulness-Based Stress Reduction (MSBR)
5. MindUP
6. Mission Meditation and Philosophy for Children (P4C)
7. Pause, Breathe, Smile (PBS)
8. Settle Your Glitter (MindUP)
9. Supporting Wellness in Early Learning Environments (SWELE)
10. Te Whare Tapa Wha

Social-Emotional Development for Middle School/High School Adolescents, Ages 12-18

As adolescents grow older, they tend to spend less time with family members and more of their free time interacting with peers. This shift in focus affects the individual's social-emotional development as the child is exposed to a new social environment, presenting novel experiences within which the child is expected to develop the necessary socio-emotional skills to cope. Beginning during the elementary stage to a lesser extent, the novel experiences that adolescents of middle or high school age will go through include stages of forming interpersonal relationships, experiencing conflicts, and events which shape their social personality profile (Ruini et al., 2009). Thus, during adolescence, the individual will experience new phases of socialization and is able to explore a previously unfamiliar environment.

MBI Middle and High School Programs Included in the Study

The following educational organizations practicing MBI were included in this paper:

1. Calmer Choice (middle)
2. Learning to Breathe (high)
3. MindUP (middle)

Definition of MBI Types

Living Mindfully Primary Program (LMPP)

The LMPP is delivered by specialist trainers in Northern England and consists of six one-hour lessons, one per week. The central goal of LMPP is to teach young children to be more mindful of themselves and their own thought processes and to be able to live and feel the experience of the present. LMPP includes but is not limited to breathing practices and body exercises to create a mental connection between body and mind. The program uses age-appropriate language that is understandable and accessible to the young child, so this intervention has increased friendliness and adaptability.

Mindful-Based Social Emotional Learning (MBSEL)

MBSEL is an eight-week program that uses thirty-five unique ten-minute audio recordings detailing guidelines for mindfulness practices, including periods of meditation, breathing practices, and concentration. In addition, the recordings offer some limited physical activities that are recommended to be done while relaxed in a seated position. It is worth emphasizing that the MBSEL program is based on the concept of Mindfulness-Based Stress Reduction (MBSR), so much of the practice revolves around a deep focus on the feelings and emotions experienced by the individual.

Pause, Breathe, Smile (PBS)

The practice of PBS, formed in New Zealand, offers participants eight lessons. PBS is based on a commitment to improving the health of New Zealand's indigenous populations and achieving conditions of well-being (Pause Breathe Smile, 2017). Specifically, mindfulness practices are implemented through breathing exercises, sensory awareness, and practices to encourage kindness, emotion regulation, and effective communication.

Supporting Wellness in Early Learning Environments (SWELE)

SWELE is one of the most extensive mindfulness programs as it includes twelve weeks of training. The primary focus of SWELE is to mitigate the child's critical transition from pre-school to higher levels of education, which becomes a source of stress. Participants are encouraged to spend their free time playing active games for 45-60 minutes and using breathing practices and moments of mindfulness. The child's emotional and physical activity is monitored using triple-ball measures, with interventions implemented by nurses and coaches.

Mindfulness-Based Cognitive Therapy (MBCT)

The MBCT program is an eight-week training program in which participants meet once a week for two hours and do 45 minutes of homework each day. MBCT offers students homework in the form of listening to audio recordings and practicing mindfulness moments. Students learn a variety of breathing practices, including, for example, the three-minute breathing space.

Mission Meditation and Philosophy for Children (P4C)

The practice of P4C was first developed by Professor Matthew Lipman and his colleagues at Montclair State University in 1972. The practice is designed to give children opportunities to talk about things and phenomena that are important to them, which can be in monologue or dialogue format. Teachers are trained to implement this practice of mindfulness, and it is embedded in the classroom for the entire school year.

Te Whare Tapa Wha

Te Whare Tapa Wha is a holistic concept of multidisciplinary health, highlighting the need to focus on different aspects of health to enhance overall well-being. Te Whare Tapa Wha training involves going through physical and technical fitness programs combined with mindfulness practices that increase an individual's attention and cognitive abilities.

MindUP

The MindUp program is implemented once a week through 45-minute sessions during which participants ranging in age from elementary school to eighth-grade practice mindfulness. Specifically, MindUp utilizes science-based approaches that incorporate developmental neuroscience, contemplative science, and positive psychology (Roeser & Zelazo, 2012). In classes, children explore the connections between their thinking and the feelings they are experiencing. This allows the individual to learn more about how their brain works and understand the causes of specific emotional and behavioral patterns.

Mindfulness-Based Stress Reduction (MSBR)

The MSBR program was developed by the founder of mindfulness psychology and positive thinking, John Kabat-Zinn, and his colleagues at the University of Massachusetts Medical School. MSBR is an eight-week program that relies on the use of ten-minute audio recordings, which individuals listen to in order to reduce their perceived stress levels qualitatively.

Settle Your Glitter

One of the most extensive intervention programs is Settle Your Glitter, which consists of 15 sections and a total of 118 lessons, of which 53 are for kindergarteners, 35 for first graders, and the rest for second graders. The core focus of Settle Your Glitter is striving to develop beneficial social-emotional competencies in the child, which include self-awareness and self-regulation, empathy, and virtuousness. Settle Your Glitter uses deep breathing exercises at least three times a day, to bring the child to moments of self-awareness. Providers can use this practice individually or in groups, depending on the specific tasks to be accomplished.

Calmer Choice

For middle school students, Calmer Choice has been developed as an eight-week course where students meet with a group at least four times a week for 45 minutes. Calmer Choice aims to instruct children's focus skills, and gain quality knowledge about stress and other disruptive phenomena and beliefs (Bauer et al., 2020). During meetings, students engage in mindfulness activities, practice breathing exercises and meditations, and assess their own thinking in a sitting position with their backs upright.

Learning to Breathe (L2B)

Finally, the L2B program is a six-week plan designed for use in classrooms or academic groups. The functional goal of this program comes down to teaching emotional recognition and regulation, along with empowering stress management and integrating mindfulness into the routine of life.

Achievement Factors

Grades

While the literature survey showed no consensus on what exactly should be considered the universal function of education, the training of a professional workforce with multiple developed cadres, or concern for the well-being of society, it is safe to say that education aims to produce graduates with necessary and sufficient competencies. Such competencies in an academic setting are measured by the grades that teachers assign to students' work; grades should be seen as indicators of academic success, signaling how well a student has been able to learn the material being taught. The 1983 federal report, *A Nation at Risk*, postulated the need for a single standardized test that qualitatively and universally assessed student knowledge at regular intervals, which not only measures national statistics in the context of education but also

provides teachers and students with important information about the dynamics of learning. For this reason, this review includes a parameter of learning achievement in the form of grades and standardized test scores.

Attendance

Attendance is another important criterion for judging an individual's academic performance and interest in learning. Low attendance not only leads to poor academic performance but also a decline in the student's interest in learning, which consequently creates a deficit of valuable skills in the individual. Statistically, 19.2% of eighth graders were absent for more than three days per month in 2015, and about 5% missed over ten days of school per month (García & Weiss, 2018). This trend increases the likelihood of dropping out of school, creating disruptive opportunities for an individual's continued development. Additionally, it was reported that high school dropouts increase the likelihood of early death by 2.5 times, creating a serious cause for concern (Schoeneberger, 2012). Thus, attendance is a critical metric studied in this study.

Disciplinary Problems

School absences can be caused not only by illness or a deliberate intent to be absent but also by suspension because of disciplinary infractions. Statistics show that 25% of high school students have been suspended at least once for academic misconduct (Aud et al., 2011). Grounds for suspension are classified by their severity: state governments classify a student's use of alcohol, drugs, or carrying a weapon as the most severe infractions, while school misconduct is considered a less serious grounds for suspension. It is arguable that skipping classes results in a deficit of useful knowledge, which in turn affects a child's future success and society. Specifically, countries with high levels of disciplinary suspensions have been reported to score

much lower on international standardized tests in math and science (Arum & Ford, 2012). Additionally, it has been shown that 38.5% of teachers are unable to teach their classes as expected due to problems related to a lack of classroom discipline (Musu-Gillette et al., 2017). Thus, discipline is an important parameter related to a child's academic performance and social-emotional skill development.

Affect

Factors related to anxiety, affect, and stress experienced by students are also pertinent to this review. Data shows approximately 13% of adolescents experience regular stress and anxiety, with this number trending upward in recent years (*Anxiety and Stress*, 2021). Additionally, it was reported that 74% of teens continue to experience symptoms of stress, depression, increased nervousness, insomnia, and fatigue (Anderson et al., 2014). The school environment was cited as a major source of stress 83% of the time, meaning current academic practices are inextricably linked to adolescents' feelings of fatigue and emotional instability. Increased stress is a predictor for the development of multiple mental disorders, among them cognitive dysfunction. Affect-prone youth experience problems with school attendance and performance, exhibit undesirable and destructive behaviors, and high levels of withdrawal (McLeod et al., 2012). Thus, the affects should also be closely examined in this review.

The Scope and Organization of the Literature Review

This critical interpretive synthesis of existing literature looks at types of MBIs implemented and evaluated in school settings worldwide.

Theme Variable Sections

There are three design characteristics related to the study results of MBIs evaluated in school settings with children worldwide as shown in Tables 1-3:

Table 1*Publication Year*

Publication Year	No.
2000-2005	0
2006-2010	0
2011-2015	2
2016-2020	14

Table 2*Country Region*

Country Region	No.
North America	6
South America	0
Asia	3
Oceania	3
Africa	1
Europe	3

Table 3*Study Design*

Study Design	No.
Randomized Controlled Trials (RCT)	6
Quasi-Experimental Designs (QED)	7
Single-group Pre-/Post-Designs (SGPP)	2
Single Subject Design (SSD)	1
Not Stated	0

There is one participant characteristic related to the study results of MBIs evaluated in school settings with children worldwide and this pertains to the sample size – see Table 4:

Table 4

Sample Size

Study Design	No.
< 50	4
51-100	4
101-150	5
> 151	3

As shown in Table 5, there are two community characteristics related to the study results of MBIs evaluated in school settings with children worldwide, namely the type of school and community:

Table 5

Community Characteristics

Type of School	No.
Public	6
Private	2
Alternative	0
Charter	1

Not Stated	7
Community	No.
Urban	9
Suburban	2
Rural	0
Not Stated	5

There are four intervention characteristics (ratio, frequency, time duration and length in weeks – see Table 6) related to the study results of MBIs evaluated in school settings with children worldwide:

Table 6

Intervention Characteristics

Ratio	No.
Group	16
Individual	0
Individual/Group combined	0
Frequency	No.
1 time per week	12
203 times per week	1
5 times per week	0
Other (2x/day; 2x/month)	3
Unclear	0
Not Stated	0
Duration (minutes)	No.

Ratio	No.
10-30	4
30-45	2
50-60	7
Varied (3-12 mins; 5-10 mins)	1
Not stated	2
Length (# of weeks)	No.
1-4	0
5-8	7
9-12	3
13-20	2
21+	2
Not stated	2

There are five outcomes related to the study results of MBIs evaluated in school settings with children worldwide as can be seen in Table 7:

Table 7

Outcomes

Outcomes	No.
Grades	5
Attendance	1
Disciplinary problems	5
Aggression	0
Affective measures	11

Chapter Summary

Chapter II was devoted to a preliminary overview of the phenomenon of mindfulness, from historical accounts of its creation to a broad exploration of the possibilities of such practices in school settings. Chapter II was also devoted to the study of the neurobiological development of the brain, as understanding these mechanisms leads to an understanding of the formation of emotions and thinking. In addition, the chapter discussed the theoretical framework of this study and examined practices to stimulate the personal and social-emotional development of students from ages 3 to 18. The chapter concludes by offering an analysis of the key variables of this study and organizing a systematic review in the following chapters. The next Chapter, Chapter III, provides a comprehensive description of the methodological approach employed within the current study.

Chapter III: Methodology

Introduction

The central goal of the offered critical interpretive synthesis is to discover the types of MBIs used and assessed in existing school settings globally. Moreover, it aims to synthesize credible, reliable, practical, and evaluative findings on the application of MBIs in schools.

Meta-Analysis

A meta-analysis is a specific approach to analyzing the available qualitative data linked to a particular issue. It focuses on synthesizing, evaluating, and interpreting all existing information. There are some variations of the paradigm called meta-ethnography, meta summary, or grounded formal theory.

Meta-Ethnography

Meta-ethnography is a method of analysis incorporating various primary ethnographic studies to determine similarities and differences in qualitative information and draw conclusions about a particular aspect. This section considers three major subtypes used differently depending on the nature of selected studies.

Reciprocal translations as synthesis presupposes the translation of findings linked to a particular object from one study's language into another with the preservation of significant meanings. The process might result in the emergence of a new understanding due to the capturing of major results in meta-analyzed studies. Furthermore, *reciprocal translations* can be viewed as the initial phase of the *line-of-argument* synthesis. It creates the basis for using the grounded theory method and employing divergencies and convergencies to create the necessary argument.

Refutational synthesis analyzes primary studies possessing mutually refutational data interpretations. This synthesis is critical for investigating aspects necessary for the refutation and the following discussion, requiring the in-depth analysis of the interpretation ideology to realize the nature of mutual refutational outcomes peculiar to the studies under consideration. The cases utilize an ideological perspective to interpret data which may demonstrate how the refutational synthesis is used in the research. Furthermore, the final synthesis encompasses all central ideas of specific research and outlines the major divergences between various studies linked to the same issue.

The third possible approach is the *lines-of-argument synthesis*. It can be viewed as the result of grounded theory's evolution, built upon the collection and processing of information to establish a set of theories. These theories might possess a desired level of credibility, be supported by evidence, and be used for various practice activities. Thus, the qualitative research method mainly works with data, while formulating theory is less important. For this reason, grounded theory can be viewed as an essential comparative, iterative, and interactive method of working with specific assumptions (Corbin & Strauss, 1990). However, the lines-of-argument synthesis becomes less effective when working with a set of studies adding specific meanings to the existing representation.

Meta-Study

There are three significant components to the meta-study, such as meta-data analysis, meta-method, and meta-theory, which are necessary for analyzing the results of the previous studies and concluding about their nature.

The *meta-data analysis* entails the analysis of primary studies. The researcher might start analyzing data using the paradigm applicable to the given study. The possible interpretations

gathered during the meta-data analysis are necessary to determine whether the original studies will be applicable to other types of analyses.

Meta-methodology is another vital aspect of meta-study as it introduces processes of working with data. It investigates the quality of primary studies and the employed methods' ability to influence the findings of these studies. The central objects of interest include research questions, researchers, setting, sampling method, data collection, and analysis tools.

Finally, *meta-theory* is the last component of the meta-study. It focuses on evaluating the theoretical background of specific investigations and other components of assumptions made by the authors. In general, the meta-study methods rely on primary data collected from research and focus on analyzing the effects that these methods and selected frameworks might have on interpreting findings and their credibility.

Meta-Summary

The *meta-summary* method differs from the aforementioned meta-study as it focuses primarily on summarizing the significant findings and describing them. The approach entails three major phases:

1. Facts extraction from primary works
2. Abstraction
3. Calculation of effects

The primary goal of using this approach is to summarize discoveries, conclusions, or assumptions made during the study and to draw conclusions about their importance to the existing theory. The acquired information is processed to create specific thematic fields and calculate effect sizes where possible. The employment of the meta-summary methodology runs

the risk of confusing its readers, as it is traditionally connected to other methods employed in different settings and conditions.

Grounded Formal Theory

Grounded formal theory unifies specific features of the object under investigation to present it in various contexts. This theory can be considered as a broader theoretical framework applicable to various contexts differing from those formulated in primary studies. It is vital to follow the major steps linked to the grounded theory in the investigation of primary data sources. Theoretical sampling and saturation are considered practical approaches to finding the necessary works. Through employing this practical approach, it is possible to focus on studies contributing to the development of a fundamental theory and its further development. The authors do not include a high number of sources because saturation has already been achieved, and new evidence will not have a critical influence on outcomes. Moreover, the comparative analysis of available data should be performed and supported by coding, memos, and the *core category*.

Two Other Qualitative Meta-Analysis Methods

Another interpretive method worth mentioning is *critical interpretive synthesis*, which entails the analysis and interpretation of research works regardless of the nature and the type of methodology used. The approach is similar to meta-study methods because of its critical features: evaluating the significant sources reviewed by researchers, assumptions made by them, and outcomes.

The *thematic synthesis* approach emphasizes the role of individual studies in outcomes and how inclusion or exclusion of these studies might influence the quality of final results and their credibility. This method is used to discuss the results of a study, focusing on the difference between the description and analysis of its outcomes. As the first component of thematic

synthesis, the description of outcomes implies inference and interpretation by referring to a particular framework. This results in the second component, the formulation of specific analytical themes vital for further discussion and an enhanced understanding of the selected topic.

Research Design

The offered research adheres to the interpretive synthesis framework as the method of processing data collected to outline how MBIs are implemented and assessed in specific school settings with children globally. The gathered data was processed to conclude whether existing studies linked to the problem admit a substantial impact on academic achievement or performance, grades, test scores, attendance, aggression, and the mental health of an individual or group of students. The research used numerous reliable, credible, and relevant sources, which provided the researcher with an opportunity to integrate findings from various studies into the paper and make a conclusion.

Contribution of Study

The offered research will contribute to the selected field of knowledge and application of MBIs in schools globally. Secondly, current data on MBIs creates the basis upon which researchers, policymakers, and practitioners are able to improve their decision-making and offer new ideas and thoughts linked to the issue under research. The study of this body of research will have an understandable search protocol, in-depth investigation of the employed sources' quality, and synthesis of the acquired data to make specific conclusions.

Setting

As it has already been stated, the global school settings are selected as the relevant environment for the research of mindfulness-based interventions. The analyzed studies are linked

to various mindfulness interventions, such as sitting mediation or yoga with meditation, performed within this context.

Sampling Procedures

Mindfulness in Schools

The investigation and summary of mindfulness-based interventions in global school settings were performed utilizing a systematic review. The chosen articles had to meet the inclusion criteria in order to be included in the research and serve as the source of data for a critical interpretive synthesis. Additionally, a set of specified search criteria was established as part of the literature review. Chapter III of this research paper introduces the subcategories used to structure the acquired information: population sample, search criteria, database selection, search terms, the process of study selection, data collection, and data analysis.

Population Sample

The conducted review included only interventions that took place in the school setting globally. These implied exercises during the school day or after school activities performed by learners in various regions. Another important aspect is the inclusion of any program with a mindfulness-based intervention as its central component, such as Acceptance and Commitment Therapy (ACT) or Dialectical Behavior Therapy (DBT). Furthermore, the review used the studies with absent control, single-case designs, or pre-/post- testing, alongside studies with the established control. The major aspects that were considered included academic performance (tests results and overall grades), attendance, and mental or physical well-being (anxiety and stress levels, depression). Another essential aspect was the inclusion of peer-reviewed, academic, and scholarly studies ranging from 1994 to December 2020, which were written in English. Moreover, books, chapters, theses, conference proceedings, doctoral papers, or unpublished

studies were excluded from the research. The differentiation between the inclusion or exclusion of these various types of academic literature helped to guarantee the increased relevance and credibility of the findings.

Search Criteria

The articles selected for this research paper were accessed using the EBSCOhost library, providing the set of databases necessary for the research. The main advantage of using this digital library is its ability to access 138 databases supported by a paragraph descriptor. The initial literature search on the problem of mindfulness in schools resulted in the two central papers serving as the framework for the study. Bender et al. (2018) and Carsley et al. (2018) offer the most relevant and applicable literature reviews and meta-analysis works; their research helps to build a more comprehensive understanding of the suitability and application of mindfulness interventions in schools. The proposed investigation expanded upon these two selected works in two central ways. Firstly, the definition of mindfulness presented in the work of Bender et al. (2018), which is associated with the nine School Psychology journals, was reconsidered using seven credible and relevant databases. Secondly, the criteria presented in this research paper are broader compared to the terms selected by Carsley et al. (2018) in discussing school-based mindfulness practices and interventions.

Database Selection Process

The current study presupposed working with specific databases to acquire necessary data. For this reason, seven out of the 138 databases accessible through EBSCOhost were selected (See Table 8). The selection of these seven databases was based on their availability and their descriptors. They were analyzed using keywords relevant to the study of well-being interventions in educational settings, such as “education” or “psychology,” or “behavior” or “social sciences.”

Bender et al. (2018) assumes that searching within school psychology journals only risks limiting the study as other sources may be able to present studies, and therefore data, linked to the theme.

For the proposed study, the following search term criteria were introduced:

Search ($n = 10$), Search ($n = 6$), Search ($n = 19$): “mindfulness” OR “mindful” OR “yoga” OR “aware” OR “awareness” OR “meditation” OR “breathe” OR “self-regulation” OR “breathing;” “school” AND “mind” AND “children” AND “class” AND “adolescent” AND “classroom” AND “elementary;” “middle school,” “high school,” “elementary school,” “charter school,” “alternative school,” “informal school,” “parochial school,” AND “outcome,” “result,” “efficiency,” “effectiveness,” “impact,” “effect;” “qualitative” AND “intervention,” “therapy,” “strategy,” “program.”

These search terms were expected to broaden the pool of resources and include numerous journals relevant to the study which could otherwise have been missed if more restrictive search terms were utilized. It would contribute to the increased credibility of findings and their practical utility as using a broad set of various sources affords deeper comprehension and discussion of mindfulness practices as a well-being intervention detailed in the present study, and wider application of such research into the problem outside of educational settings.

Search Terms

The search terms for the proposed research were formulated based on the literature review conducted by Bender et al. (2018) and the meta-analysis on the effectiveness of mindfulness interventions presented by Carsley et al. (2018). The former research paper utilizes these main search terms: mindfulness, mindful, yoga, meditation, aware, awareness, breath, breathe, breathing, and self-regulation (Bender et al., 2018). The second body of research implies six major terms, such as mindfulness, school, children, adolescent, class, and classroom (Carsley

et al., 2018). The primary goal was to review available literature and create the basis for discussing mindfulness practices in schools and evaluating their effectiveness. Moreover, the Boolean search operations such as “AND” and “OR” were included in the study to ensure more sources would be included compared to the work by Carsley et al. (2018). They used such concepts as “classroom,” “school,” “child,” and these terms were included in the proposed study; however, more specific descriptors such as “middle,” “elementary,” “high,” “informal,” “parochial,” and “charter” were included. Furthermore, “mindfulness” was the only critical term used to find specific approaches analyzed later.

Chapter II offers the citation analysis proving that mindfulness practices are associated with numerous benefits in the physical and mental spheres. For this reason, it was decided to include specific search terms resting on this finding. These included “outcome,” “efficiency,” “effectiveness,” “quantitative,” and “effect.” The decision was essential to address the broad area of school psychology and collect information about evidence-based practices and decision-making tools used by school professionals (NASP, 2010; Zirkel, 2019). The paper offers an in-depth investigation of unique school-based practices linked to mindfulness and outcomes. It helps to formulate a specific conclusion about the effectiveness of such tools in the selected setting and discuss the possibility of their employment in different scenarios to attain desired goals. Altogether, using the outlined search terms, the necessary body of literature was found and analyzed.

Study Selection Process

The literature search was organized around the established exclusion criterion. The fundamental requirement was to include only peer-reviewed articles. This decision was made to ensure that only high-quality, credible, and reliable works are included in the research and create

the basis for the investigation. The given exclusion criterion was used when looking for articles in selected databases.

Data Collection Process

The source accumulation phase was followed by reading every selected work to structure and categorize all significant features that are important for the interpretive synthesis. The process was established in regard to the following major factors: study design, sample size, type of school, community, frequency, duration, length, grades, attendance, country region, grade, and intervention program. The proposed aspects were introduced based on the current literature reviews on the topic and systemic analysis of school-based mindfulness performed by other authors, such as Bender et al. (2018) and Carsley et al. (2018). The studies contain critical information about the issue under research. Application of the established search categories revealed the trends in school-based mindfulness practices globally, as shown in Table 8:

Table 8

Search Criteria in Selected Studies and in the Current Paper

Bender et al. (2018)	Carsley et al. (2018)	Current study
<i>Databases and journals used</i>		
Journals (<i>n</i> = 9)	Databases (<i>n</i> = 5)	Databases (<i>n</i> = 7)
1. Journal of School Psychology 2. School Psychology Review 3. School Psychology Forum 4. Journal of Applied School Psychology 5. School Psychology Quarterly	1. CINAHL 2. ERIC 3. PsycINFO 4. Social Work Abstract 5. Social Services Abstracts	1. PsycINFO 2. ERIC 3. Social Sciences Abstracts 4. Academic Search Complete 5. Education Full Text 6. Education Research 7. Complete Psychology and Behavioral Sciences Collection

Bender et al. (2018)	Carsley et al. (2018)	Current study
6. International Journal of School and Educational Psychology 7. Psychology in Schools 8. Contemporary School Psychology 9. School Psychology International		
<i>Search term criteria</i>		
Search (<i>n</i> = 10)	Search (<i>n</i> = 6)	Search (<i>n</i> = 19)
“mindfulness” OR “mindful” OR “meditation” OR “aware” OR “yoga” OR “awareness” OR “breath” OR “breathe” OR “breathing” OR “self-regulation”	“mindfulness” AND “school” AND “children” AND “adolescent” AND “class” AND “classroom”	“mindfulness” AND “elementary school” OR “middle school” OR “high school” or “parochial school” OR “alternative school” OR “informal school” OR “private school” OR “charter school” AND “outcome” OR “effectiveness” OR “efficacy” OR “effect” OR “quantitative” AND “intervention” OR “treatment” OR “program” OR “therapy” OR “strategy” AND “students”

Note. (Bender et al., 2018; Carsley et al., 2018)

Data Analysis

All studies included for consideration were analyzed to acquire credible data. Thus, the proposed review contains an in-depth description and analysis of the issues under research and major findings. The age, academic success, grade levels, and other participants’ attributes were discussed to acquire a better vision of the current situation. Moreover, peculiarities of setting, such as school type or location, were outlined when necessary. Finally, the major features of the used interventions were provided and analyzed.

Chapter Summary

Altogether, Chapter III provides a comprehensive description of the methodological approach employed within the current study. It uses the interpretive synthesis process to analyze the existing body of research linked to MBIs and students globally. The necessary works were found in chosen databases, evaluated using the exclusion and inclusion criteria, and investigated to create the basis for the discussion. The next chapter, Chapter IV, reports the major findings and data collected by using the described methodology.

Chapter IV: Presentation of Findings

Chapter Overview

This chapter aims to analyze and synthesize this study's findings on the different mindfulness-based interventions (MBIs) implemented and assessed in classroom settings with school-age children and adolescents worldwide. The chapter starts with a restatement of the study's research questions, a review of the Critical Interpretive Synthesis (CIS) methodology, explanations of the data collection and data analysis processes, the CIS results, and overall findings.

Restatement of the Research Questions

This critical interpretive synthesis (CIS) aimed to answer two questions— what types of MBIs are used and assessed in schools globally, and what impact do MBIs have on student grades, attendance, disciplinary problems, and affect? The analysis required to draw conclusions to these questions involved a systematic literature review of 16 studies examining the effects of MBIs on various outcomes in school-aged children and adolescents. The data gathered from the studies was processed to determine whether existing studies were linked to the problem. The analysis identified recurring themes across the studies, such as using breathing and body-based relaxation practices in MBIs, and including outcome measures related to student learning, behavior, and emotional well-being. The CIS analysis uses data categorization and appropriate measures across the studies to promote the enhanced vision of MBI's effectiveness in schools globally. The results of the analysis hold potential to inform future research and practice in this area and can contribute to the development of evidence-based interventions to support student learning, behavior, and emotional well-being.

Review of Methodology

Critical Interpretive Synthesis (CIS) is a methodological approach used to analyze and synthesize data from multiple sources to develop a new conceptual understanding of a research topic. The CIS has specific stages, such as determining the research question, creating the pool of appropriate studies, evaluating the quality of discovered evidence, data extraction, the synthesis of these findings, and the analysis of results and their processing.

The evidence in the following sections of this chapter identifies data extracted during the study review process. The data presented reflects the analysis of the types of MBIs used and assessed in schools globally, and the impact of the MBIs on student grades, attendance, disciplinary problems, and affect in schools worldwide. As the concluding chapter, Chapter V presents the synthesizing statement and the interpretation of this study's results.

Description of Sample/Setting

The conducted review included interventions that took place only in school settings and entailed exercises during the school day or after-school activities performed by learners in various regions. Furthermore, the review used studies with absent control, single-case designs, pre-/post- tests, and studies with the established control. The major aspects that were considered included academic performance (focus, engagement), attendance (participation), disciplinary problems (behavior), and affective measures (emotional well-being). Another essential aspect was to include peer-reviewed, academic, and scholarly studies ranging from 2014 to December 2020, which were written in English. Concurrently, books, chapters, theses, conference proceedings, doctoral papers, or unpublished studies were excluded from the research in order to guarantee the increased relevance and credibility of the findings.

Data Collection

Utilizing the pool of collated resources, the data collection phase entailed the structuring and categorization of all significant features important for the CIS. The process took into account the following major factors: country region, sample size, type of school, school setting, participant ages, delivery location, duration, administrator of MBIs, specific intervention program types, and student concern/treatment/outcome measures. The selected points were proposed considering the data from the literature review and systemic studies of MBIs conducted by other investigators, including Bender et al. (2018) and Carsley et al. (2018), which contain critical information about the issue under research.

Quantitative Data Analysis

All studies included for consideration were analyzed to acquire credible data. Thus, the proposed review contains a descriptive and in-depth description and analysis of the issues under research and major findings. The peculiarities of the setting, such as school type or location, were outlined. Moreover, the participants' age and other attributes were discussed in order to gain a better understanding of the current situation under which they were participating in the study. Finally, the major features of the interventions used were provided and analyzed.

School and Student Descriptors

Country region

This study of school-based mindfulness interventions found several trends regarding school and student descriptions (see Table 9). The CIS specifically examined global research on schools utilizing MBIs; most of the studies included primarily originated from North America ($n = 6$). The remaining included studies were dispersed among Asia ($n = 3$), Oceania ($n = 3$),

Europe ($n = 3$), and the region of Africa ($n = 1$). There were no investigations included in the CIS from Antarctica or South America.

Table 9

Country Region

Country Region	No.
North America	6
Oceania	3
Africa	1
Europe	3
No Studies from Antarctica	-
No studies from South America	-

Sample Size

The research selected for the CIS reflected sample sizes of school children studied, ranging between less than 50 and more than 151 children (<50: 4, 51-100: 4, 101-150: 5, 151<: 3) as displayed in Table 10.

Table 10

Sample Size

Sample Size	No.
<50	4
51-100	4
101-150	5
151<	3

Type of School

In the CIS analysis, the school types where the school-based mindfulness studies took place were categorized as follows: public schools ($n = 6$), private schools ($n = 2$), charter schools ($n = 1$), and "not stated" ($n = 7$). This information provides insight into the diversity of school settings where mindfulness interventions have been implemented and evaluated.

School Setting

The CIS analysis found that the majority of school-based mindfulness studies took place in urban settings ($n = 10$), followed by suburban settings ($n = 2$) and unspecified settings ($n = 4$). The data cultivates a stronger basis for understanding the context of mindfulness interventions' implementations in schools and their evaluation (see Table 11).

Table 11

School Types and Settings

Type of School	No.
Public	6
Private	2
Charter	1
Not Stated	7
Settings	No.
Urban	10
Suburban	2
Unspecified settings	4

Participant Ages

Overall, as shown in Table 12, most studies included children of age 8 up to age 13 (ages 8-9; $n = 1$, age 8.5; $n = 1$, ages 9-10; $n = 1$, ages 9-11; $n = 2$, ages 9-12; $n = 1$, ages 9-13; $n = 1$) followed by the studies including children age 4 up to age 6 (ages 4-5; $n = 3$, ages 4-6; $n = 1$), and then studies with children age 5 up to 11 (ages 5-11; $n = 1$, ages 6-11; $n = 1$). Several school-based mindfulness studies included adolescent children (ages 11-12; $n = 1$, age 13, $n = 1$, ages 14-18, $n = 1$).

Table 12

Participant Ages

Participant Ages	Grade	No.
Ages 4-5	No grade specified	47 students
Ages 4-5	No grade specified	296 students
Ages 4-5	No grade specified	38 students
Ages 4-6	No grade specified	42 students
Ages 8.5	No grade specified	454 students
Ages 8-9	3rd Grade	191 students
Ages 9-10	No grade specified	105 students
Ages 5-11	No grade specified	106 students
Ages 6-11	No grade specified	126 students
Ages 9-11	Grades 4 & 5	91 students
Ages 9-11	No grade specified	101 students
Ages 9-12	no grade specified	124 students
Ages 11-12	6th grade	99 students
Ages 9-13	No grade specified	93 students

Participant Ages	Grade	No.
Age 13	No grade specified	78 students
Ages 14-18	Grades 9-12	27 students

Intervention Delivery Setting

The results of the CIS show that the majority of studies on school-based mindfulness interventions were performed using the classroom environment during the schedule of a normal school day. Specifically, Table 13 shows that among 16 studies used for data collection, 15 were organized in terms of the classroom setting, while the remaining one was conducted in an after-school classroom setting.

Table 13

Intervention Delivery Locations

Location	No.
Classroom Setting	15
After-school setting	1

Duration of Mindfulness-Based Interventions

The CIS process analyzed the lengths of selected school-based mindfulness practices, specifically on the following aspects: time per session (minutes), total hours devoted to school-based mindfulness, and the quantity of sessions in general. As stated previously, 16 articles were used to report these measures and specific central tendency elements (mode, mean, and median). At the same time, the data was processed to calculate ranges for each measure to cultivate an enhanced and unified comprehension of the duration of practice.

In comparing all 16 research works in regard to the number of mindfulness sessions conducted in school settings, it was found that the average number of sessions was 12.75, while the mode was 8, and the median was 9 sessions. The highest reported number of sessions was 40, while the lowest was 1. Furthermore, the 12.75 session's mean value demonstrated a positive skew, proven by the exceedance of mode and median values peculiar to the same sessions.

Across the 16 works analyzed, the average number of minutes per session was 41 minutes, with a median of 45 and a mode of 60. At the same time, the range of values associated with minutes per session was more consistent with each other rather than the quantity values associated with the range of sessions. Furthermore, the average total time of practicing school-based mindfulness across the 16 articles was 8.2 hours, with a median of 8 and a mode of 7. The range of total hours practiced was similar to the range of session quantity values. The minimum reported total hours practiced was 5, and the maximum was 24.

Overall, the CIS's investigation demonstrated significant variance between various research works in the length of school-based mindfulness practices, with positive skewness in both the number of sessions and total hours practiced (see Table 14). However, another important result showed that the values of minutes per session were more consistent, meaning there was a more significant consistency in the duration of individual sessions.

Table 14*Duration*

Duration	No.	Duration	No.	Duration	No.
Number of Sessions		Minutes Per Session		Total Number of Hours Practicing School-Based Mindfulness	
Median	9	Median	45	Median	8
Mean	12.75	Mean	41	Mean	8.2
Mode	8	Mode	60	Mode	7

Administrator of Mindfulness-Based Interventions

The 16 articles included in this study reflected varied sample types of instructors or administrators of MBIs in schools. Classroom Teachers were facilitators in five studies, Researchers were facilitators in five studies, and Trained Facilitators implemented the mindfulness program in five studies. Only one study used a pre-recorded guidance system for delivering the MBI. Moreover, among five works speaking about mindfulness and its use by investigators, only one offered a detailed description of a prolonged implementation of the approach (15 years) and its detailed analysis.

Types of Mindfulness-Based Interventions

The review considered a set of different mindfulness approaches used in various investigations selected for the project. The practices included both programs with high systematization levels and more general mindfulness approaches that could be applied to various contexts. The term "breath" was the central element of mindfulness practices used in all articles chosen for the review. Specifically, 62.5% of all research works ($n = 10$) used the term "breath" to speak about mindfulness approaches, thus providing evidence to suggest this sort of activity is

critical for the discussed practice. Breathing exercises are a fundamental aspect of mindfulness practice and are often used to help students regulate their emotions and focus their attention.

Furthermore, 43.7% ($n = 7$) of the selected research works contained the term "body-based," considering this as the basis for the analyzed intervention. This suggests many school-based mindfulness practices included activities revolving around one's awareness of physical sensations, such as body scans or mindful movement practices like yoga.

The term "meditation" was the third most common determinant of mindfulness practice discovered within the chosen articles ($n = 4$). This indicates that some school-based mindfulness practices incorporated more formal meditation practices, such as sitting or walking meditation.

Regarding systemic programs, the MindUp curriculum was the most popular and commonly employed program for integrating school-based mindfulness practice, as three from the pool of 16 research works mentioned it (19% in total). The MindUp curriculum is a structured mindfulness program specifically designed for use in schools and includes activities such as mindful breathing, sensory awareness, and positive psychology practices.

Student Concern/Treatment/Outcome Measures

The CIS analysis evaluated the conditions under which students participated in research projects selected for the analysis. Specifically, the investigation focused on determining the primary causes for using mindfulness practices in school settings and specific student concerns addressed by such interventions.

The analysis of 16 articles helped to identify the three major themes associated with the application of mindfulness approaches in schools, such as student learning, behavior, and emotional well-being. These themes encompassed a range of student concerns, including external and on-task behavior, internalized behaviors affecting the classroom, perceived stress,

mood, psychological symptoms such as depression and anxiety, coping, and self-esteem. All research projects contained a specific measure to assess behavior and emotional well-being.

In general, seven of the 16 selected articles had a particular approach to evaluate the established dependent variable. The Positive and Negative Affect Scale for Children (PANAS-C) was the most popular measurement tool used in three chosen articles. The Mindful Attention Awareness Scale (MAAS), the Social Emotional Assets and Resilience Scale (SEARS), the Behavior Rating Inventory of Executive Function (BRIEF), and the Bracken School Readiness Assessment (BSRA) were other scales used to measure the outcomes detailed in the selected articles.

Categorizing data linked to outcomes required specific quantitative data analysis tools and a more detailed investigation of measures. Initially, it was necessary to identify the reported outcome variable in each article to understand the purpose of mindfulness interventions in schools. The investigation helped to outline the outcome variables that were often found in the discussed articles, such as student learning, behavior, and emotional well-being. At the same time, some of the investigations focused on evaluating more than one outcome, meaning that various scales were employed within a single study.

Data acquired during the next phase of investigation showed that studies had different ratings of the MBIs. Therefore, only teacher-reported data was included to ensure greater consistency and comparability between studies. This decision rested on the assumption that teachers were specialists responsible for administering mindfulness practices in selected settings and, as a result, were more exposed to student samples. Thus, Table 8 presents all research papers employed in the CIS and explains why some articles were not considered even though they met the criteria established initially. The establishment of the second criterion for selection,

implying the inclusion of studies with teacher-reported data, was critical to guarantee that the data was consistent and comparable between studies included in the CIS.

Furthermore, nine articles did not have teacher-reported data and ratings linked to student behavior as required by the criterion mentioned above, and they were excluded from the investigation. Therefore, a total of seven articles met the required specifications and were used for the CIS.

Overall Findings of Quantitative Data

Based on the data collected from the seven articles chosen for the investigation, four countries were represented in the studies that met the CIS criteria: the United States, Canada, New Zealand, and Portugal. None of the studies were conducted in Africa, South America, or Antarctica. Four of the studies were conducted in urban, low-income, or majority-minority school settings, and all studies were conducted in elementary schools.

Two studies utilized the MindUp curriculum, while the remaining five used unique mindfulness programs. There were no investigations that employed identical teacher-reported measurement tools, although four of the studies used some method of teacher observation logging or journaling, and three of the studies utilized an implementation survey or questionnaire.

On average, the duration of the interventions comprised around 11-12 sessions, and the mindfulness programs were typically led by trained teachers ($n = 3, 42.8\%$) or trained facilitators ($n = 3, 42.8\%$). One study utilized a pre-recorded guidance program. The mindfulness programs were practiced in the classroom setting, and the standard measure of the frequency and overall duration was one session per week for an average of 9.6 weeks. In total, 1,178 students were assessed by their teachers in the studies that met the CIS criteria, including control groups.

Qualitative Data

The researcher examined the qualitative teacher-reported data from the seven articles meeting the second inclusion criteria outlined in the quantitative data analysis section of this study (see Table 15). The precise qualitative data this study focused on was the written feedback presented in the teacher reports from the seven articles analyzed. The written data was analyzed in order to address the CIS's following research questions: the impact of MBIs on grades, the impact of MBIs on attendance, the impact of MBIs on disciplinary problems, and the impact of MBIs on affect.

Table 15

Articles Included in the CIS (after Second Inclusion Criteria)

Articles included in the CIS
Article Inclusion (teacher rating, no missing data)
Bakosh, L. S., Snow, R. M., Tobias, J. M., Houlihan, J. L., & Barbosa-Leiker, C. (2015). Maximizing mindful learning: Mindful awareness intervention improves elementary school students' quarterly grades. <i>Mindfulness</i> , 7(1), 59–67. https://doi.org/10.1007/s12671-015-0387-6
Bernay, R., Graham, E., Devcich, D. A., Rix, G., & Rubie-Davies, C. M. (2016). Pause, breathe, smile: A mixed-methods study of student well-being following participation in an eight-week, locally developed mindfulness program in three New Zealand schools. <i>Advances in School Mental Health Promotion</i> , 9(2), 90–106. https://doi.org/10.1080/1754730x.2016.1154474
de Carvalho, J. S., Pinto, A. M., & Marôco, J. (2016). Results of a mindfulness-based social-emotional learning program on Portuguese elementary students and teachers: A quasi-experimental study. <i>Mindfulness</i> , 8(2), 337–350. https://doi.org/10.1007/s12671-016-0603-z
Malboeuf-Hurtubise, C., Lefrançois, D., Mageau, G. A., Taylor, G., Éthier, M.-A., Gagnon, M., & DiTomaso, C. (2020). Impact of a combined philosophy and mindfulness intervention on positive and negative indicators of mental health among pre-kindergarten children: Results from a pilot and feasibility study. <i>Frontiers in Psychiatry</i> , 11. https://doi.org/10.3389/fpsy.2020.510320
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Impact of MBIs on Student Learning

The findings are grouped regarding the research questions. Thus, the first theme combines the second and third questions delving into the MBIs' effects on students' grades and attendance, respectively, with the much broader category of "student learning." This category includes how students' engagement, ability to focus, participation, and involvement in the process were affected by MBIs in the school sites included in the research. The data on the theme was gathered using teacher reports on the impact of MBIs on students, as presented in the seven articles that met the final research criterion of the study.

The most critical result linked to the area of student learning demonstrated a positive correlation between MBIs and student engagement and focus levels. Specifically, teachers' reports emphasized that students demonstrated more engagement in the process and an altered attitude to the process in general, with the "excitement to learn" as one of the motivations reported by students. It evidences the change in attitudes and mood in general. One more teacher reported higher engagement and motivation levels, while another educator noted that increased focus was a spinoff from mindfulness.

Impact of MBIs on Behavior

The second theme in this study explored the impact of MBIs on disciplinary problems, which refers to how mindfulness practices affected students' behavior within the context of the

school setting. The main discovery was that educators recognized the positive impact of mindfulness practices on student behavior at school. One teacher wrote, "There are fewer class disruptions, improved focus in class, and more positive peer relationships, including less name-calling." Moreover, a teacher at a boarding school explained, "Students are experiencing improved sleep quality," while another explained, "After a few sessions, students were highly engaged and requesting additional mindfulness exercises." Although most teachers' responses were positive regarding the impact of MBIs on students and their behavior patterns, one educator provided a different report, admitting that MBIs had a limited effect on student behavior and overall engagement levels. This suggests that the impact of MBIs on student behavior may vary depending on individual students and their receptiveness to mindfulness practices. However, most teachers noted that the MBIs helped to improve their students' behavioral patterns, while there was no decrease regarding discipline as all learners had the opportunity to manage emotions and express their feelings.

Impact of MBIs on Emotional Well-Being

The final theme in this study entailed the application of MBIs to provide students with methods and approaches to regulating their emotions and cultivating a better sense of well-being. The most important result was that students could use self-regulation because of the experiences they gained while employing the MBIs and their major approaches.

Application of Self-Regulation Techniques

Teachers could offer specific examples showing how learners employed methods for self-regulation they learned from MBIs and prove that adherence to these approaches cultivated better emotion regulation and a more positive classroom atmosphere. Teachers noted that

students used these techniques consistently throughout the day, indicating that they had incorporated mindfulness practices into their daily routines.

Breathing Exercises

Teachers reported that MBIs taught students breathing exercises that were effective in helping them manage their emotions and behavior in the classroom. Educators also provided evidence proving the positive impacts and significance of breathing techniques. Students were observed using these techniques to refocus and calm themselves during periods of stress, and teachers noted that these techniques had an immediate impact on their well-being. Furthermore, teachers noted that students could use all techniques taught during MBI sessions independently, helping them to feel more engaged in their own learning and confident in their ability to regulate their actions through breathing work, as they were able to exhibit increased levels of self-control and knowledge of emotional self-regulation. Teachers stated that learners started to use breathing exercises taught in MBI sessions to pause when they felt frustrated, stressed, or overwhelmed in response to upsetting classroom situations, in order to calm themselves down, and to think about their feelings and how they could impact their actions within the classroom. Such reports proved that these techniques were effective in helping students cope with difficult emotions, and that they had learned to apply the breathing techniques in real time.

Self-Reflection Strategies

Teachers also reported using self-reflection strategies with students as a result of MBIs. Four teachers provided real cases where learners used self-reflection for various purposes and noted that this helped them regulate their behavior and emotions. In general, the technique positively impacted students' well-being, with one teacher reporting that their students felt less stressed and were less easily upset. Another teacher reported that a student who felt

overwhelmed could think clearly and complete their work after practicing self-reflective mindfulness. Teachers also emphasized the importance of self-awareness in student self-management. One teacher noted that MBIs became a fundamental approach that allowed students to investigate their emotions better and regulate them. Moreover, another teacher admitted the MBIs' critical contribution to making her students self-aware.

Addendum Notes on Frequency of Specific Interventions and Their Common Features

As mentioned previously in this chapter, seven of the 16 articles initially selected for this CIS met the final inclusion criteria. Data acquired in the examination of the original 16 articles reflected that the studies had a variety of raters reporting on the types and impacts of MBIs in schools around the world. Additional investigation into the original 16 articles reflected those seven studies specifically reported teachers as the raters of the school classroom MBIs' impact on students. The remaining nine articles utilized rater data that were either collected from student self-reports ($n = 4$), quantitative scale-reports ($n = 3$), a combination of student self-reports and teacher reports ($n = 1$), or a combination of student self-reports and parent reports ($n = 1$). Therefore, only the seven studies representing solely teacher-reported data were included in the CIS to ensure greater consistency and compatibility between studies. This decision rested on the assumption that teachers are specialists more regularly exposed to student samples and their daily learning, behavior, and affect patterns in the classroom setting.

Once the seven articles were quantified as meeting final inclusion criteria, the discovery process shifted to answering the CIS's first research question; "What types of MBIs are used and assessed in schools globally." This examination revealed that the main types of MBI program practices used and assessed in Canada, New Zealand, Portugal, and the United States, as represented in the final seven selected articles, were; Mindfulness-based Social Emotional

Learning, PauseBreatheSmile, Philosophy for Children & meditation practice, an unnamed unique program, MindUp ($n = 2$), and Settle Your Glitter. Therefore, the CIS results did not reflect a universal mindfulness-based intervention program in the final seven papers examined.

The discovery that the seven articles meeting this CIS's final inclusion criteria did not present a consistent MBI method necessitated another review cycle of the initial studies, including the seven articles meeting the final inclusion criteria of the CIS. The second review cycle of the articles revealed that the nine studies not included in the final criteria for this study originated from the United States, Hong Kong, England, Germany, Northern Uganda, and Israel. The nine studies, like the seven studies meeting final inclusion criteria, also did not contain a homogenous representation of MBIs utilized in worldwide school settings. The nine studies each utilized unique MBIs; Living Mindfully, Calmer Choice, PauseBreatheSmile, Learning to Breathe, a stress-inducing Stroop task/breathing exercise/biometric reading sequence, Supporting Wellness in Early Learning Environments, Mindfulness-Based Cognitive Therapy for Children, MindUp, and Mindfulness-Based Stress Relief Therapy.

Overall, the main discovery related to the first research question of this CIS is that of the 16 initial papers reviewed, three studies used the same MindUp program (19%, $n = 3$), and two studies (13%, $n = 2$) used the same PauseBreatheSmile intervention. However, 11 studies (68%, $n = 11$) used an MBI program unique to that study. Therefore, most of the studies reported on in this CIS utilized distinctive MBI strategies, and thereby, the replicability of the investigated studies is uncertain.

Despite the apparent lack of universally utilized mindfulness-based interventions in classrooms worldwide, this CIS did discover standard features of the MBIs utilized in the seven articles that met the final inclusion criteria. Most notably, of the seven studies, five mention self-

regulation techniques, four mention breathing activities, and four mention self-reflection techniques as part of the MBI strategies utilized in schools globally. Additionally, all seven studies reported that MBIs incorporating these named practices in school settings could benefit students' learning, behavior, and emotional well-being. This revelation answers the CIS' second research question investigating the impact of MBIs on student learning, behavior, and emotional well-being in schools globally.

Chapter Summary

The researcher investigated the types of MBIs used and assessed in schools around the world and the impact of mindfulness-based interventions (MBIs) on key outcome variables related to student learning, behavior, and well-being, globally. The prominent themes identified through the qualitative findings were predetermined by the research questions of the study. The researcher found a primary connection between the quantitative and qualitative findings, which both emphasized improvements in student learning, behavior, and emotional well-being as the most common outcome variables across articles on MBIs in schools worldwide. These findings will be further explored in Chapter V.

Chapter V: Discussion and Conclusion

Chapter Overview

The fifth chapter presented aims to focus on the discussion of findings from the critical interpretive synthesis (CIS) on types of mindfulness-based interventions (MBIs). MBI practices are comprehensively ingrained into school education systems, so the motivation for the critical analysis was to identify the most advanced, useful, and universal findings of high practical value. Specifically, the results of the CIS analysis presented in this chapter reveal patterns of influence of MBIs on student achievement and their behavior with respect to attendance, potential discipline, and orderliness, combined with affective indicators. The value of the chapter is further reinforced by the fact that the findings obtained and discussed appear to be applicable to students and school settings around the world, not just in specific communities.

Purpose of the Study

The goals and objectives of the research project were dictated by the rapidly changing global public sentiment and the sustained trend of communities toward the adoption of mindfulness practices, ecological thinking, and inner peace. Historically and culturally, the roots of this trend can be traced back to the practices of the philosophies of the Buddhist schools that have spread rapidly around the world, and whose rituals and values have become accessible not only to adherents of the religion, but also to people whose lives are not connected to religiosity, including Buddhism. The integration of Eastern Buddhist ideas and concepts into secular society has also led to the widespread practice of mindfulness, ultimately resulting in widespread cultural appropriation.

As one of the central concepts of Buddhist philosophy, mindfulness should be defined as the state of consciousness and awareness in which the individual is mentally connected to the

present moment and feels it without any judgmental acceptance of self. In other words, mindfulness is a form of self-acceptance in which an individual grants himself consent to recognize the value of the present moment without having to worry about the future or focus on the past. Research has repeatedly shown that mindfulness practices and MBIs, in general, have beneficial effects on an individual's well-being, namely reducing anxiety levels and reducing episodes of depression and regular stress. In addition, such interventions are beneficial to the overall well-being of the individual. It is precisely because of the availability of evidence-based results and the rapid spread of the described trend that MBIs have become increasingly active in various areas of life, especially in education.

However, it is essential to emphasize that the application of MBIs in school and academic settings can vary greatly. There is no universal spectrum of rules of behavior and actions that a person engaged in mindfulness should perform, and this multiplicity and uncertainty are reasons for the variability in MBIs practices. Additionally, different patterns of mindfulness behavior among students are expected to result in different levels of influence. Concurrently, the effects of MBIs on students are determined by a combination of factors, among them the cultural background of the individual, their age, the duration of the intervention, and the frequency with which it occurs. Based on all of the above, a worthwhile goal of a CIS-based research project is to identify the types of MBIs being implemented in school environments around the world and to determine the outcomes that such implementation leads to.

Research Questions

Although the overall research focus is to examine a global trend and is described by plurality and pluralism, the theoretical research framework can be shortened to a few questions.

The questions listed below fully reflect the purpose of the research project and help guide the research vector:

1. What types of MBIs are used and assessed in schools globally?
2. What impact do MBIs have on academic achievement, attendance, disciplinary problems, and affective performance in schools globally?

Theoretical Focus

In their development, mindfulness practices have passed through several historical stages, allowing them by now to be available to all who wish to utilize them. As already discussed, mindfulness originally referred to Buddhist philosophy, in which meditative concentration and self-focus were part of daily ritual practice. As globalization intensified, these patterns of behavior became widespread around the world, not excluding Western communities. Thus, by the late 1970s, some 40-50 years ago, the Western researcher, clinical publicist, and professor of medicine John Kabat-Zinn established a philosophical school of mindfulness, the core of which was based on the values of ancient Buddhism. Kabat-Zinn's (1996) major writings focused on the study of stress and anxiety, or more specifically, on meditation and mindfulness-based interventions to reduce destructive or unwanted effects on the body and well-being. As a result of his research, the professor was able to develop a unique concept of mindfulness-based stress reduction (MBSR), the purpose of which was improving people's quality of life through mindfulness practices to reduce perceived stress levels.

The universality of this practice was defined by the uncomplicated activities an individual had to perform. Specifically, there is a wide range of daily stressors of varying levels that affect a person: conflicts with loved ones, problems at work or in school, emotional burnout, unprocessed childhood trauma, and many other predictors of an unfavorable lifestyle. Despite the

commonality of the MBSR concept developed, Kabat-Zinn (1996) initially focused only on chronically ill patients whose primary source of stress was their illness. The researcher found that MBSR showed successful results in terms of overcoming this stress for patients, so the concept rapidly spread to other areas of life. Education was no exception but instead aroused research and the public interest because learning is continuously associated with stress, the management of which positively affects quality of life.

It is fair to acknowledge that with regard to education, as with all other nonclinical applications of MBSR, most of the work on stress management training is conducted by people who are generally not medically trained. This led to an expansion of MBSR opportunities, including the formation of a sustained link between these practices and psychotherapeutic characteristics, which was intended to improve the overall outcomes of interventions. In this context, it is worth noting that MBSR in a modified form, summarized by the term MBIs, has been actively used in school settings since 2005, some 30 years after Kabat-Zinn's original development (Woods et al., 2016). The success of this application to this day has been attributed to multiple confirmations by authors of scholarly publications that the results of MBIs in academic settings are by no means inferior to the use of MBSR in clinical settings. From all of the above, it is reasonable to conclude that there is scientific and historical validity to the use of MBIs within school settings, as it is expected to lead to highly positive results for both students and school staff.

Methodology

This paper is based on a mixed paradigm for data collection and analysis based on the principles of interpretivism and constructivism. Methodologically, interpretivism should be understood as a way of mixed-method research in which data processing depends on the

attitudes, considerations, and values inherent to a particular community. Constructivism has similar characteristics, as it is defined as the ability to generate knowledge from human experience and capacity. On the integration of such paradigms, there is a critical interpretive synthesis that allows for careful, thoughtful, and parallel evaluation and interpretation of data from multiple sources. In this case, it does not matter what methodologies the authors of the works used or what theoretical and conceptual framework such research was based on. Rather than focusing on differences, the CIS makes it possible to assess the significance of the data, results, and conclusions and places them in a single research field for comparison.

This study was based on the use of the CIS to process the data collected during the literature search. The basic premise of the data collection was based on the need to describe MBIs practiced and critically evaluated in relation to school environments with children around the world. Data processing was structured around the question of whether multiple published studies recognize the benefits of MBIs in relation to academic achievement, attendance, disciplinary problems, and affective indicators for students around the world.

The CIS Overview

The CIS can be summarized as a rigorous and systematic approach to information processing which emphasizes finding correlations between different sources. The method can be thought of as a broad funnel in which a multitude of different knowledge, ideas, findings, and results are collated to formulate some common outcome. In this study of global perspectives on mindfulness interventions, the CIS was intended to address two issues. On the one hand, the CIS was used to draw conclusions on what mindfulness practices are used in school settings to reduce stress and other challenges around the world — it formulates an observational function. On the other hand, the CIS intended to examine those sources to generate results that would describe the

effects of MBIs on academic achievement, attendance, disciplinary problems, and affective performance of children around the world — in other words, it articulates a specific function. It follows that the use of the CIS was to solve two problems simultaneously and to answer the broad question of whether the use of mindfulness practices has a proven benefit for school children within the academic environment.

As mentioned earlier, the source search was based on inclusion criteria. These parameters included thematic relevance, namely a focus on mindfulness-based interventions, school environments, participant characteristics, and additional but related subtopics. A literature search found 16 valuable scholarly sources that met the eligibility criteria and focused on the same issue as the current dissertation research. All 16 articles were placed in the CIS framework to conduct a thorough and comprehensive analysis of the results and to search for parallels found in the sources. As stated in Chapter IV, the results of this analysis confirmed that some of the research articles were characterized by providing results for more than one indicator. This detailed examination revealed a problem: the same semantically related results were reported differentially by the authors. Overall, this does not seem surprising and, on the contrary, should be expected since different authors with very different cultural, ethnic, and religious backgrounds, as well as differential research methodologies, were used, which led to distinctive differences in the results. In particular, the independent and dependent variables of some of their studies were overly broad, making it inappropriate to use them to generalize results on students' academic performance, attendance, disciplinary problems, and affective activities. Thus, the results were recoded into a more unified form and were represented by student learning criteria ($n = 4$), behavioral problems ($n = 5$), and emotional well-being ($n = 11$) without losing the semantic connection to the initially stated variables.

Moreover, using the CIS in relation to the 16 sources revealed another problem, namely a previously unformulated research theme of high practical value. This theme can be formulated as "a wide range of measures used to assess the effectiveness of school mindfulness practices." Despite the frequent mention and use of assessment measures in the sources, they were quite extensive and varied among themselves.

Notably, the methods used by the authors for collecting and reporting their results were also markedly varied. In particular, some were characterized by the methodological use of self-report questionnaires completed by students, while others resorted to using a facilitator role. Other studies were characterized by the reporting of results indirectly by parents or directly by the authors of the study, as well as by teachers. Results gathered from teacher reports were found to be less common, with only four of the 16 studies (25%) reporting data from teachers, in the form of observations or journals. Three out of the 16 articles (2%) utilized teacher surveys and questionnaires to collect data.

The CIS also showed that one of the most common methods of using MBIs in the sources studied was the popular MindUp program aimed at developing mindfulness — this was found in three studies (19%). Two out of the 16 articles (1%) used Pause, Breathe, and Smile, while unique programs were used for the remaining ten materials. Additionally, the CIS found that in most of the sources analyzed, the younger children's age group was most frequently studied, accounting for 93% of all articles. In most of the research settings, these children were invited into the classroom where MBIs were practiced for them. Nevertheless, the choice of this cohort does not seem surprising since the younger age group was identified as the most favorable for two reasons. Firstly, it provides a familiar opportunity for children to practice in small groups, which means they are not exposed to an additional source of stress in the form of unfamiliar

circumstances. Secondly, there are significantly fewer credit requirements for children of this age. This implied that the CIS results were accurate, primarily for younger children than for older individuals.

The CIS also demonstrated differences in the types of schools, depending on their nature and the format of instruction provided. Specifically, 62.5% of the studies used ($n = 10$) were conducted in urban schools. As before, this does not seem surprising since urban environments, saturated with a fast pace of life and associated problems and risks, can create additional predictors of risk compared to, for example, rural schools (Ahram et al., 2020). Moreover, urban schools have much higher rates of turnover and difficulty hiring professionals, whether teachers or administrators. In addition, urban environments, as Ahram et al. (2020) state, are more often characterized by inexperienced faculty, recent university graduates, higher rates of poverty, cultural, religious, linguistic, and racial diversity, and lower overall achievement rates among students.

Not only the school setting but also the classroom made sense with respect to the use of the CIS. The results showed that teachers might tend to ignore or overlook cultural differences in children, fail to understand their backgrounds, and therefore fail to personalize instruction directly to their individual needs and sociocultural demands. As a consequence, expectations of these children may be excessive or inadequate, leading to a disruption in effective teaching and learning. Nevertheless, there is a demand to improve the educational function in urban schools. It has been found that educators in such educational institutions around the world are faced with the need to address students' problems and provide immediate support and counseling. Moreover, it is typical for urban teachers to continually attempt to formulate and implement preventive services to improve student learning outcomes in the future. Based on this, it has been

demonstrated that there is a need to further deepen, explore, and put into practice effective strategies and interventions that focus on improving student well-being, including on a global scale. MBIs are an example of such strategies, which necessitates a thorough study of this concept.

Based on the results discussed, it was pertinent to review the methodological basis of the current study. In more detail, the multiplicity of strategies, results, and types of programs used could have compromised the reliability of the findings. Therefore, it was advisable to reduce the number of studies used for the CIS to only those based on data reported by teachers, for which there were two motivations. Firstly, the teacher was most often found to be a facilitator of awareness-based interventions for students. Secondly, because of their professional activities, teachers were closest to the educational needs of individual students and held knowledge of their students' extensive school-based learning indicators. Therefore, compared to external third-party facilitators for mindfulness-based interventions in school settings, teachers were deemed more capable of reporting more valuable, reliable, and useful information.

Quantitative Data Analysis

The CIS was used to conduct an initial assessment of the 16 research sources found on MBIs practiced around the world. This allowed us to analyze and identify the main types and characteristics of such practices, as well as the key themes of students' learning, behavior, or emotional well-being. At this initial assessment stage, these themes benefitted from being broad enough to describe students' externalizing and internalizing patterns of behavior, levels of perceived stress, moods, depressive and anxious signs, combined with patterns of coping and levels of self-esteem. Simultaneously, the themes were sufficiently specialized and therefore able

to summarize precise data on the variables used within the 16 research sources and applied within the present paper.

At the next stage, 56% of the sources ($n = 9$) were excluded because they contributed to an undesirable variety of methodological frameworks that could lead to skewed results; thus, only 44% ($n = 7$) were held to further the CIS. In these sources, only teachers were the evaluators of student behavior, demonstrating a positive effect on the representativeness and accuracy of the reported data. Analysis was conducted for school settings from four countries, namely Canada, New Zealand, Portugal, and the United States. Of these, 57% ($n = 4$) of the studies were conducted in low-income urban schools and 100% in elementary schools.

The average duration of MBIs was defined as 11-12 times, with a standard frequency of one session per week for an average of 9.6 weeks. Interventions were predominantly delivered either by teachers (43%, $n = 3$), by trained and trained facilitators (43%, $n = 3$), or through pre-recorded programs (14%, $n = 1$). In all of the seven scholarly sources, MBIs were implemented within a classroom setting. MindUp was used for 29% of the articles, and unique mindfulness development strategies were used for the remainder. The total number of students for all materials used in the MBIs was 1178, including control groups.

Qualitative Data Analysis

Qualitative data was collected through written reports and teacher feedback. The CIS analysis of this data demonstrated that the main factors discussed in the research studies were student learning, student behavior, and student emotional well-being. In analyzing the qualitative data, a problem was found that led to inconsistencies between the CIS results and the key themes previously compiled, which in turn highlighted the need to revisit the research question. The arising problem is discussed in detail in the forthcoming section.

The Intersection of Quantitative and Qualitative Outcomes

The CIS assessed the main types of MBIs and the effects of these interventions on overall academic achievement, attendance patterns, disciplinary problems, and affective outcomes in schools around the world. The analysis identified a particular relationship between quantitative and qualitative outcomes, leading to three new key themes, namely student learning, behavior, and emotional well-being. Ultimately, this highlighted the need to revise the research question, and thus the modified one was formulated as follows: "What impact do MBIs have on student learning, student behavior, and student emotional well-being in schools around the world?"

Student Learning

One of the three key themes of the study, based on findings from seven research sources, is the cumulative effect of MBIs on student achievement and attendance, summarized as learning patterns. This category encompasses the full range of possibilities that exist when using MBIs to influence a student's ability to stay focused and concentrate, to be engaged, and actively participate in the learning process. The CIS demonstrated that in classrooms where MBI practices were implemented, student performance significantly improved, resulting in more active attendance and fewer absences.

Student Behavior

The second key theme was to determine the impact of MBIs on disciplinary problems, summarized by the new term student behavior. Discipline was to be understood as patterns of student behavior in which students adhere to the rules of the educational organization, conform to the values of this setting, and do not create barriers to effective learning for themselves or others. The CIS demonstrated that teachers were characterized by the perception that MBIs positively influence student behavior in school and reduced disciplinary problems. More specifically, the

overall frequency of teachers having to send students to the principal's office or contacting a child's primary caregiver(s) for rule violations or problem behavior was reduced. Thus, it was concluded that MBIs practices had a positive effect on student behavior.

Emotional Well-Being of Students

The third key theme was to identify the impact of MBIs on students' personal well-being. Affective states are defined as the ability of individuals to experience and move through specific emotions. The CIS showed that MBIs practices had a positive impact on students' emotional well-being. Specifically, teachers were more likely to report students' use of emotional control and self-regulation skills when MBIs were implemented. In other words, MBIs taught children the ability to manage their emotions, which led to improvements in the overall emotional well-being of both the individual child and the entire class.

CIS Conclusions

Types of MBIs Used Worldwide

The results of the CIS analysis identified the main types of MBI practices common to Canada, New Zealand, Portugal, and the United States, and showed there was an absence of a universal mindfulness development program. Thus, while some papers used the same MindUp program (28%, $n = 2$), most presented unique strategies.

The Impact of MBIs Worldwide

The CIS analysis proved, with multiple pieces of evidence, the positive impact of MBIs practices on students. Specifically, MBIs led to increased academic performance and attendance, improved students' emotional well-being, and reduced disciplinary problems. It follows that the implementation of MBIs has valid and proven practical benefits, so the application of this method is appropriate for a global scale.

Limitations of the Study

Although the research was able to answer the questions posed and achieved a key goal in contributing to an expanded understanding of the impact of mindfulness practices on schooling, it is not without some limitations. Firstly, the small sample size of the studies used ($n = 7$) may reduce its statistical power, thus compromising the overall representativeness of the results and their ability to be extrapolated. Secondly, in order to standardize the estimation and improve data accuracy, 56% of the initial sample was excluded, which may have negatively impacted the results. Thirdly, the paper reported data only from the teachers, and all other evaluators were excluded. This could also impact the representativeness of the findings. Finally, the results were based on data from younger students, so extrapolating the results to older students may be questionable.

Implications for Research

It is important to emphasize that a literature search found an abundance of articles aimed at examining patterns of association between the use of MBIs and components of student learning. However, the present study was able to prove the positive effects of MBIs based on the results of the CIS. In other words, the present study can be considered a synthesis of current published evidence at the global level. For this reason, decision-makers have a proven ability to implement MBIs practices if they are interested in enhancing the well-being of both individual students and the classroom as a whole. Such strategies would be well aligned with Social Emotional Learning initiatives and ensure a reliable connection between teacher and student. According to CASEL (2020), students can engage in mindfulness practices as a way of improving assimilation and awareness processes and managing and regulating their own emotions and positive social relationships.

Recommendations for Future Research

During the literature search, one major finding was the high number of scholarly publications on the influence of MBIs on learning patterns, indicating a solid increase in academic interest in solving educational problems. This trend predicts that the number of such papers will continue to increase in the future, making it worthwhile to compile a list of recommendations based on the findings. Firstly, it is suggested that the number of variables studied in light of MBIs be increased, expanding to include mood patterns, depressive episodes, perceived stress, overall student well-being, and additional factors affecting the learning process. Secondly, a significant expansion of the sample is proposed, both in terms of geographic distribution and quantitative measures, to test the representativeness of the current findings. Thirdly, none of the studies used in the CIS reported follow-up results after a period of time, so the long-term nature of such changes is another question suitable for future research. Including evaluators of different categories, not just teachers, may also have a positive effect on the representativeness of the results.

Summary

The study offered a global perspective of mindfulness-based interventions in schools. The overall conclusion of the study is that MBIs positively affect students' learning, behavior, and emotional well-being, therefore meaningfully increasing educational success. It follows that mindfulness practices can be useful, practical additions to the mainstream educational process to improve the overall perceived success of students in school settings around the world.

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