

Mindfulness in a School Setting: Considering Youth Who Have Experienced Trauma

by

Kylea Covaleski

BS in Psychology, University of Pittsburgh, 2015

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This thesis was presented

by

Kylea Covaleski

It was defended on

April 17, 2019

and approved by

Mary Hawk, DrPH, Associate Professor, Behavioral and Community Health Sciences
Graduate School of Public Health, University of Pittsburgh

Carol Greco, PhD, Associate Professor, Department of Psychiatry, University of Pittsburgh

Thesis Advisor

Steven Albert, PhD, Chair, Behavioral and Community Health Sciences
Graduate School of Public Health, University of Pittsburgh

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Kylea Covaleski, MPH

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Abstract

Background: Trauma is a common childhood experience, with two-thirds of children reporting at least one experience with trauma by the age of sixteen. Teachers often misidentify trauma symptoms as ADHD or behavioral problems within the classroom. At the same time, school-based Mindfulness interventions have increased in popularity in an attempt by school administrators to improve classroom behavior and student performance.

Purpose: Mindfulness is a longstanding practice with roots in the Buddhist religion. The practice is a way of living, to focus on the present moment in a non-judgmental way. The practice has been adapted for clinical use with both children and adults, due to the value seen by clinicians, to cope with challenging cognitions and behaviors. The purpose of this literature review is to synthesize information about childhood trauma, Mindfulness interventions, and implementation of school-based Mindfulness programs.

Methods: A literature review was conducted within the databases of ProQuest and MedLine. Results were restricted to peer-reviewed journal articles, full text, publications within the last ten years, school-age children (grade K-12 or age 6-18), typical school settings, and articles written in English. Boolean operations were applied to search for articles related to Mindfulness in the school setting.

Results: Fourteen articles were selected from the literature search after meeting the search criteria, including qualitative studies, mixed methods studies, program evaluations, literature reviews, and randomized controlled trials. Results indicated improvements in self-regulation, attention, concentration, rumination, and classroom behavior. Therefore, findings revealed Mindfulness to be effective in reducing behaviors of interest to teachers. Only one study considered childhood trauma as a potential reason for student behavioral and emotional problems in the classroom. Children with a history of trauma can experience discomfort and become retraumatized through improper Mindfulness practice. Given the increasing use of school-based Mindfulness programs and the prevalence of childhood trauma, these results have public health significance, revealing a gap in research. There is a need for research that considers childhood trauma when implementing school-based Mindfulness programs.

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1.0 Introduction

Mindfulness originated as a Buddhist meditation practice called Satipatthaña. In Western culture, definitions of Mindfulness reflect traditions of Yoga, Theravada, and Mahayana Buddhism (Harrison et al. 2017). Jon Kabat-Zinn (1991) defines Mindfulness following these traditions, describing it as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally.” Mindfulness is also defined as a practice that allows critical appraisal of stimuli without distortions or reactivity due to emotions (Bishop et al., 2004). The practice of Mindfulness, therefore, is not avoidant of stimuli but instead concentrates on healthy cognitions related to the stimuli. It allows individuals to recognize their thoughts, emotions, and reactions, without negative or positive judgment.

Mindfulness was adapted for clinical use due to perceived benefits by clinical professionals as a psychological intervention. Clinicians use Mindfulness techniques to help clients redistribute mental attention and manage cognitions and behaviors related to external and internal stimuli (Bishop et al., 2004). The practice of Mindfulness became more popularized in clinical and professional settings in the 1970s when Kat-Zinn created a Mindfulness-Based Stress Reduction program at the University of Massachusetts (Dryden & Still, 2006).

The goal of the program is to improve the overall livelihood of individuals who take part, by incorporating concepts of traditional Mindfulness. Examples of Mindfulness exercises used in the program are walking meditation, Yoga, and sitting meditation (Kabat-Zinn, 1991). However, these exercises on their own do not comprise Mindfulness. Mindfulness must be an intentional way of living in the moment and being aware of the present experience. The MBSR approach demonstrates the many forms Mindfulness has taken within a clinical setting, that has branched

from traditional Mindfulness practice. Throughout this thesis, Mindfulness will be investigated within the context of the school setting, where components of the practice have grown in popularity.

2.0 Background

Trauma is a common childhood experience in the United States. According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2015), by the age of sixteen, two-thirds of children will report experiencing at least one traumatic event. These traumatic events can include: 1) psychological, physical, or sexual abuse 2) community or school violence 3) Witnessing or experiencing domestic violence 4) natural disaster or terrorism 5) commercial sexual exploitation 6) sudden or violent loss of a loved one 7) Refugee or war experience 8) military family-related stressors 9) physical or sexual assault 10) neglect and 11) serious accidents or life-threatening illness (SAMHSA, 2015). Although not all children develop traumatic stress, 9.1 per 1000 children will experience abuse or neglect, and 19% of children injured in these events develop post-traumatic stress disorder (SAMHSA, 2015).

This data was collected through the Adverse Childhood Experiences (ACEs) questionnaire, which collects data around trauma experiences from age 0 to 18. School-age children are therefore likely to be experiencing or have experienced trauma. In fact, 15.9% of children who have experienced trauma will develop post-traumatic stress disorder (McLaughlin, 2018).

2.1 Expression of Childhood Trauma in the School Setting

Youth's experience with trauma can cause behavioral issues within the school setting, although teachers and school administrators may not be aware of traumatic experiences occurring in the child's environment. Teachers often have misidentified trauma symptoms as Attention

Deficit Hyperactivity Disorder due to overlapping behavioral symptoms in the classroom. Children who experience either trauma or ADHD can present as disorganized, unable to concentrate, have difficulty listening, seem hyperactive, restless, and easily distracted (NCTSN, 2016). ADHD and trauma symptoms can also co-occur making it difficult for school professionals to identify the differences between the two diagnoses.

Children are also identified as showing signs of anxiety or depression, without identification of traumatic childhood experiences. According to the 2008 Presidential Task Force on Posttraumatic Stress Disorder and Trauma in Children and Adolescents, many children who experience trauma do not receive the evidence-based intervention of help from a professional due to misdiagnosis of symptoms (American Psychological Association, n.d.). This is especially true for children belonging to minority groups, which have less access to mental health professionals. While children are identified as having a behavioral or emotional difficulty, the underlying trauma is often not revealed or identified correctly (American Psychological Association, n.d.). This trend towards misdiagnosis or misidentification of symptoms puts school-age children at risk of not receiving needed interventions for trauma symptoms or post-traumatic stress disorder. It also maintains a focus from school professionals on behavioral symptoms instead of the underlying causes of the symptoms.

3.0 Methods

A literature review was conducted to explore the use of Mindfulness practices in school settings. The search reviewed literature from the databases of ProQuest and MedLine using the following keywords: Mindfulness, intervention, school, school-based, and classroom. Boolean operations were utilized for the search using the [and] and [or] function. Filters were applied to the searches restricting results to include peer-reviewed journal articles, full text, publications within the last ten years, school-age children (grade K-12 or age 6-18), typical school setting (non-clinical, and non-special education setting) articles in English, and keywords described above. A table of search terms and filters is depicted in Table 1.

Trauma is defined as experiences that involve severe harm or threat of harm to oneself or others, such as exposure to interpersonal violence, accidents, natural disasters, and injuries (McLaughlin, 2018). The resulting articles were searched for the term trauma, Post-Traumatic Stress Disorder/ PTSD, adverse childhood experience, and adversity. Trauma was inclusive of symptoms due to physical, emotional, and psychological causes. Articles were reviewed based on the aforementioned search criteria and included if the criteria were met. Articles were included that considered trauma as well as articles that did not consider trauma in school-based Mindfulness interventions.

The objective of this literature review is to present background information on Mindfulness, educate readers on the prevalence of childhood trauma, synthesize results of the literature review on school-based Mindfulness programs, determine if the resulting literature considers trauma symptoms, and direct educators towards resources for Mindfulness and childhood trauma education, training, and services.

Table 1 Literature Searches

Database	Filter	Words Searched
ProQuest	Peer Reviewed Full text Typical School Setting K-12 Last 10 Years children & youth Article In English	School-based Mindfulness intervention [in anywhere] [and] youth [in anywhere]
ProQuest	Peer Reviewed Full text Typical School Setting K-12 Last 10 Years children & youth Article In English	Mindfulness intervention [in anywhere] [and] classroom
ProQuest	Peer Reviewed Full text Typical School Setting K-12 Last 10 Years children & youth Article In English	School-based Mindfulness intervention [in anywhere] [or] youth [in anywhere]
ProQuest	Peer Reviewed Full text Typical School Setting K-12 Last 10 Years children & youth Article In English	Mindfulness intervention [in anywhere] [or] classroom
MedLine	Full text Academic Journals All dates In English Typical School Setting	Mindfulness [And] the school setting Results 4
MedLine	Full text Academic Journals Last 10 years In English In U.S. Typical School Setting Child 6-18 Human	Mindfulness [And] the classroom
MedLine	Full text Academic Journals Last 10 years In English In U.S. Typical School Setting Child 6-18 Human	Mindfulness [or] the school setting

MedLine	Full text Academic Journals Last 10 years In English Typical School Setting Child 6-18 Human	Mindfulness [or] the classroom
Total Results = 151		

4.0 Results

Fourteen articles were included in this review after meeting the search criteria, which reflected results from qualitative studies, mixed methods studies, program evaluations, literature reviews, and randomized controlled trials. The literature surrounding Mindfulness interventions focused on three broad topics: reviewing current literature and research, exploring the feasibility of the intervention, and testing effectiveness of the intervention on improving participant outcomes. A diagram of the review process is depicted in Figure 1. Articles reviewed are shown in table 2.

Mindfulness has become a popular intervention in the school setting to improve classroom climate and school performance by decreasing emotional and behavioral problems. However, there is not much evidence in research that Mindfulness is an effective intervention with children in the school setting. In this section, the fourteen scholarly articles are discussed which explore Mindfulness intervention within the school.

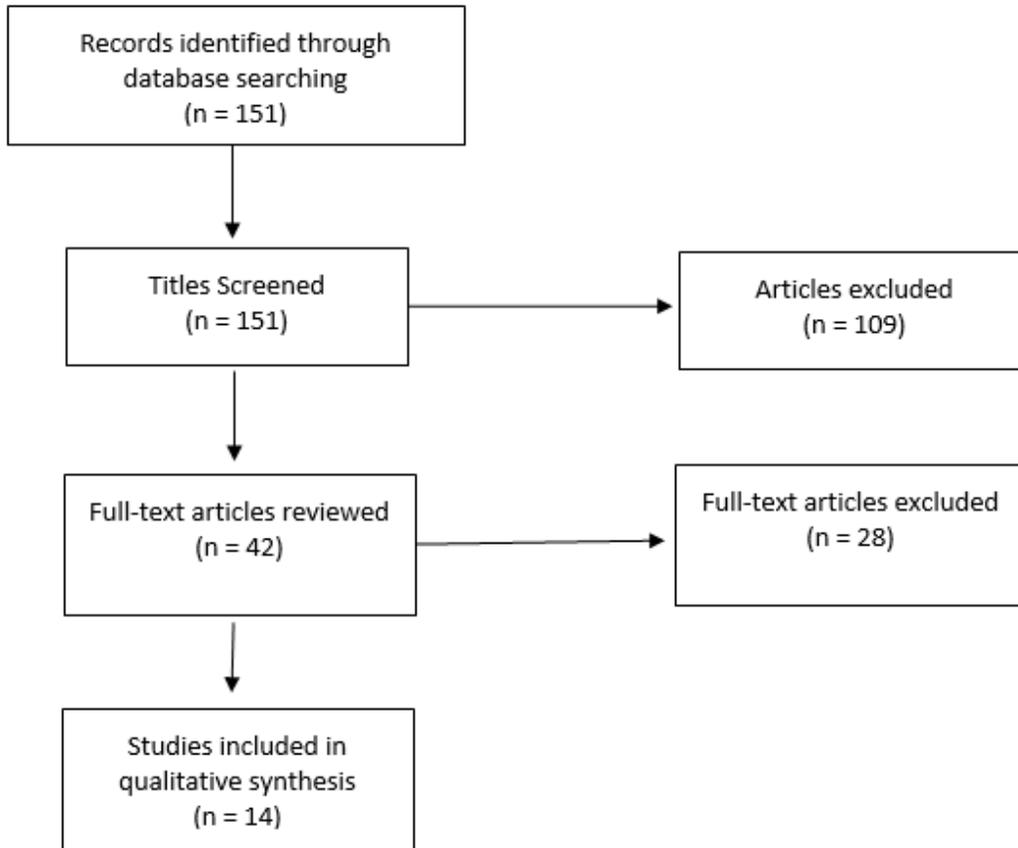


Figure 1 PRISMA Search Results

Table 2 Articles Reviewed

Citation	Study Design	Population	Outcomes Studied	Consideration of Trauma/ Adverse Childhood Experience
Bergen-Cico D., Razza R., & Timmins A. (2015)	Randomized Controlled Pilot Study	144 participants Age: 11 White participants: 57.5% Asian participants: 32.6%	Self-regulation	No
Black D. & Fernando R. (2013)	Field Intervention trial, Pre-Post design	409 participants Age: K -6 th grade Free & reduced lunch: 83% Minority: 95.7%	Classroom behavior	No
Black D., Milam J. & Sussman S. (2009)	Systematic Literature Review	16 studies Participants: 6-18 yrs old	Physiologic, psychosocial & behavioral outcomes	No
Broderick P. & Frank J. (2014)	Book Chapter	Mention Adolescents, youth, & children	Self-regulation, mood, & self-acceptance	No
Burke C. (2010)	Literature Review	15 peer-reviewed studies Participants: Children and Adolescents	Current research, feasibility, and acceptability	No
Dariotis J., Beltran R., Cluxton-Keller F., Gould L., Greenberg M., and Mendelson T. (2017)	Qualitative focus groups	22 participants 6 focus groups of 5 th & 6 th graders. Age: 10-13 72% black. Teacher focus group: 7 females, 5 black participants	Program implementation	No
Dariotis K, Mirabal-Beltran R., Cluxton-Keller F.,	Qualitative focus groups	22 participants 3 focus groups Age: 10-13 years 6 th students and	Understanding and utilization of Mindfulness	No

Table 2 Continued

Gould F., Greenberg T., & Mendelson T. (2016)		6 th grade teachers		
Fung J., Kim J., Chen G., Bear L., (2019)	Randomized waitlist study	145 participants Age: 9 th graders Latino: 41.6% Asian: 51.7%	Mediators and moderators of Mindfulness interventions	No
Kielty M., Gilligan T., Staton R., & Curtis N. (2017)	Mixed Methods Longitudinal study	45 third grade students. 50% girls 50% boys 84% Caucasian 48% free or reduced lunch	Self-evaluation of Mindfulness skills.	No
Mendelson T., Greenberg M., Dariotis J., Gould L., Rhodes B., & Leaf P. (2010)	Randomized controlled trial	97 fourth and fifth graders. Female: 60% African American: 83.5%.	Feasibility and effectiveness	Yes
Semple, R. Droutman, V., & Reid, B. (2017)	Program review/evaluation	10 programs reviewed 8 programs evaluated	Feasibility, acceptability, & effectiveness	No
Shapiro S., Lyons K., Miller R., Butler B., Vieten C., & Zelazo P. (2015)	Literature and program review	16 programs reviewed	Classroom behavior	No
Volanen et al. (2016)	Study Protocol description- cluster randomized controlled trial	3,000 participants 59 school Age: 12-15	Psychological outcomes and academic achievement	No
Zenner C., Herrnleben-Kurz S., and Walach H. (2014)	Systematic literature review and meta-analysis	24 studies 19 randomized controlled studies 1328 total participants Age: 1 st -12 th grade	Cognitive, Emotional problems, and behavioral outcomes	No

4.1 Bergen-Cico D., Razza R., and Timmins A. (2015)

Bergen-Cico, Razza and Timmins (2015) conducted research on self-regulation and school-based Mindfulness interventions through a study on mindful yoga. The study investigated the efficacy and feasibility of mindful yoga curriculum to support self-regulation of sixth-grade students. A total of 144 participants were included in the study. The mean age of participants was 11 years old. Participants were 57.5% White and 32.6% Asian.

The intervention group took part in the Mindfulness practice for 4 minutes before English class, three days a week. The practice included 2 minutes of Hatha Yoga and 2 minutes of meditation. The intervention lasted for 1 academic year. Public school English language teachers implemented the intervention after they received thirty hours of training from the YogaKids program. A certified yoga teacher aided the English teachers with the intervention.

Participants in the control group received standard English Language curriculum with some exposure to class discussions of Mindfulness that centered around awareness of thoughts, and attention on the present moment. The Mindfulness discussions occurred “a few times over the course of the year” (Bergen-Cico & Razza, 2010, pg. 3451). The control group did not take part in yoga or meditation.

Bergen-Cico and Razza (2010) found that measures of regulation differed significantly over time between the control group and the intervention group, with regulation increasing significantly between baseline and mid-year measures in the intervention group. Therefore, between-subject, and within-subject measures of long-term regulation were significantly better for the intervention group. The researchers used the Adolescent Self-regulatory Inventory to measure regulation of the participants. The inventory measures both short-term and long-term regulation. An example of short-term regulation is a child’s ability to sit still without fidgeting. An example

of long-term regulation is a child's ability to change strategies to reach a personal goal if the original strategy does not go according to plan. Participants in the intervention group did not show significant improvement in short-term regulation. However, the researchers saw a significant difference in long term-regulation between the intervention and control group, with the intervention group scoring higher on the self-regulation inventory. Sixty students who participated in the intervention group supplied written feedback on the Mindfulness program. The written feedback revealed two major themes which included feelings of calmness and relaxation during the intervention and improved concentration. Thirty percent of the feedback reported feelings of calm and relaxation and 25% reporting improved concentration. Teachers reported that the intervention needed a minimal time commitment and helped prepare students to focus in class (Bergen-Cico & Razza, 2010)

There were also negative responses from participants, with 40% finding the intervention not helpful and 10% saying it took away from class time. Nine percent of the participants found that the intervention made them more distracted or jumpy rather than calm (Bergen-Cico & Razza, 2010).

4.2 Black D. & Fernando R. (2013)

David Black and Randima Fernando (2013) explored the effect of Mindfulness training on classroom behavior. The researchers conducted a field investigation on the effect of Mindfulness on teacher's rating of student behavior in the classroom. Seventeen teachers participated in the study and reported on 409 (kindergarten through sixth-grade) students' behaviors. Eighty-three percent of the participants were enrolled in the free and reduced lunch program, and 95.7% were

of an ethnic minority. The study also examined whether a 5-week versus 12-week program had better outcomes for teacher ratings of students.

The study intervention utilized the Mindful School curriculum in both the 5-week intervention group and 12-week intervention group. The Mindful School curriculum includes in-class exercises using meditation practices, body scans, mindful walking and eating, and in class discussions about thoughts, feelings, and actions (Black & Fernando, 2013). Mindfulness meditation teachers facilitated the lessons to students in kindergarten through fifth grade in the schools. Teachers received a 1-hour lesson in Mindfulness and were only expected to implement short two-minute Mindfulness sessions with the students when the Mindfulness instructors were not present in the classroom. Teachers received a rubric to rate students on attention, self-control, participation, and respect. The rubric used a Likert scale ranging from 0-4, with a higher score indicating better behavior. Classroom teachers were supplied rubrics to record the behavior of students in the classroom before and after the intervention (Black & Fernando, 2013).

The researchers found that after the intervention, teachers reported that students showed improved attention, self-control, participation, and caring and respecting others. The student's improved behavior lasted seven weeks after the Mindfulness intervention program. There was no significant difference in participant behavior between the 5-week and 12-week intervention (Black & Fernando, 2013). The study demonstrates promising results for the ease of implementation of school-based Mindfulness as well as positive student outcomes. However, the study lacked a control condition, which limits the study's interpretation of efficacy.

4.3 Black D., Milam J. & Sussman S. (2009)

Black, Milam, and Sussman (2009) investigated the efficacy of sitting meditation, a Mindfulness practice, across youth in the school, clinic, and community setting. The researchers conducted a systematic review resulting in 16 studies about sitting meditation intervention for youth. Meditation interventions included Mindfulness meditation, transcendental meditation, Mindfulness-based stress reduction, and Mindfulness-based cognitive therapy. Together the studies totaled 860 participants between the age of 6 and 18 years old. The studies investigated the topics of physiologic, psychosocial, and behavioral outcomes, with physiologic outcomes only examined in the school setting. Improvements were seen after the meditation intervention in physiologic outcomes such as diastolic blood pressure and heart rate. Improvements were also seen in psychological and behavioral outcome including anxiety, externalizing problems, and social relationships, but no improvement in depression. (Black, Milam, & Sussman, 2009). The review provides evidence that meditation may be an effective intervention in the school setting for physiologic, psychosocial, and behavioral issues. The review also calls for further research with larger sample sizes to support these findings. Black and colleagues (2009) found that the literature review resulted primarily in studies of youth with preexisting conditions, and that physiologic outcomes were primarily studied in African American participants. Due to these limitations, the researchers state that further investigation is needed into the implementation of meditation with youth (Black, Milam, & Sussman, 2009).

4.4 Broderick P. & Frank J. (2014)

Patricia Broderick and Jennifer Frank (2014) describe the necessity of school-based Mindfulness programs. Specifically, they focus on the Learning to BREATHE (L2B) program for adolescents, which was designed to be implemented in the school setting. Learning to BREATHE is a group-based intervention that can easily be practiced in the classroom setting. Participants practice mindful listening and speaking in response to hypothetical situations. The lessons also teach practices of self-compassion and positive emotion. Finally, the program focuses on procedural knowledge of managing stress. It allows participants to practice Mindfulness techniques in the sessions and outside of the sessions. The program builds skills in youth to recognize triggers and reduce automatic reactions to stimuli, by focusing attention (Broderick & Frank, 2014). The program is linked to health and counseling and can, therefore, be easily incorporated into existing school curricula. Research studies have found L2B to be effective at reducing negative mood in 12th graders as well as increase calmness and self-acceptance (Broderick & Frank, 2014). The authors refer to a study of Pennsylvania high schoolers showing a significant reduction in stress and psychosomatic complaints from students who took part in the BREATHE program. The study design contained a BREATHE intervention group and a control group that received traditional school curriculum. The groups were matched on demographics and school performance of students. Both groups included primarily white students with an average age of 16.5 years old. Although the study contained an intervention and control group, it recruited participants from a convenience sample. The researchers measured stress and psychosomatic complaints through a single item perceived stress questionnaire and 13 item psychosomatic complaints scale, respectively (Metz et al., 2013). Psychosomatic complaints and perceived stress were measured pre and post intervention.

Although the authors explain these many benefits of the Learning to BREATHE program, they express the need for more qualitative support for the outcomes of the program. The authors also explain the challenges many schools face in implementing Mindfulness interventions such as limited time in the school day, funding constraints, and lack of staff training to implement the program.

4.5 Burke C. (2010)

Researcher Christine Burke (2010) wrote about the use of Mindfulness intervention with children and adolescents. Her literature review explores the use of Mindfulness-Based Stress Reduction (MBSR), and Mindfulness-Based Cognitive Therapy (MBCT) with youth at various ages and in differing settings. Burke (2010) searched multiple databases utilizing keywords such as Mindfulness, meditation, MBCT, MBSR, and young people. Burke only included peer-reviewed works with a resulting 15 studies that fit the criteria. Burke found that studies reported the feasibility and acceptability of Mindfulness interventions primarily, with results indicating acceptability by most participants (Burke, 2010). Burke (2010) found many limitations in these studies, including the use of clinical measures in non-clinical settings, reliance on self-reports, small sample sizes, and limited randomized controlled studies.

Only two of the reviewed studies in Burke's review were conducted in school-based non-clinical settings. One of these studies, conducted by Wall (2005), implemented a five-week MBSR intervention with students between 11 and 13 years old. The intervention included sitting meditation and mindful eating. Wall relied on student self-reports to gauge the effectiveness of the intervention. Students reported they felt calmer after the intervention, showing some perceived

benefits. However, the absence of quantitative measures made it difficult to speak to the effectiveness of the Mindfulness intervention.

4.6 Dariotis J., Beltran R., Cluxton-Keller F., Gould L., Greenberg M., and Mendelson T. (2017)

Dariotis and colleagues (2017) explored a school-based Mindfulness and yoga programs to identify factors for successful implementation. The researchers collected feedback from both students and teachers to improve the delivery of a Mindfulness intervention in the school setting. Dariotis and colleagues (2017) conducted six focus groups with 22 fifth and sixth-grade students.

The focus group members were past participants in a Mindful Yoga program that took place in three Baltimore schools. The program was delivered to fifth and six graders by an outside agency in the classroom setting. Students had to receive consent from parents to take part in the program. Teachers did not take part in the instruction of the program or receive any Mindfulness intervention (Dariotis et al., 2017). Seventy-two percent of the students in the focus groups were black and ranged from 10-13 years old. Nine teachers made up of seven female participants, five black participants, and sixth-grade teachers, participated in a separate focus group for teachers' feedback.

Four themes were revealed during the focus groups about barriers and facilitators for program implementation. While participants did not wish to change program content, they voiced desired changes to program timing and delivery. Participants did not like that the intervention was offered during resource time, making them miss other activities they enjoyed such as art.

Teachers suggested considering students' schedules when planning the programs such as allowing teachers to pick-up participating students early from their previous class. Communication was another theme that emerged with a need to have effective communication between teachers and program implementers around program goals, and program logistics. Another theme was program buy-in. It was important to provide proper training of teachers as well as incentives for teachers and participants. Finally, it was important for the study to utilize a quality yoga instructor. The youth identified respect as an essential quality for the instructor. The review by Dariotis and colleagues (2017) highlighted the many considerations when implementing a school-based Mindfulness intervention.

4.7 Dariotis K, Mirabal-Beltran R., Cluxton-Keller F., Gould F., Greenberg T., & Mendelson T. (2016)

A similar study was conducted by Dariotis and colleagues in 2016 to evaluate school-based Mindfulness programs. This study utilized focus groups to gain information about youth takeaways from the Mindfulness programs. Twenty-two fifth and sixth-grade students participated. It was discovered that youth took away four major components of the Mindfulness training program. These included breath work and poses, linkages between technique benefits and ailments, discerning which poses and skills to share with others, keener emotional appraisal, improved emotional regulation skills for inside and outside of school, de-escalating negative emotions, and reducing stress. Students and teachers were able to recall the components of the program and give at least one example of using a component in real life (Dariotis et al., 2016). However, without

understanding the barriers and facilitators the researchers investigated in 2017, the results may not be generalizable to other school settings.

4.8 Fung J., Kim J., Chen G., Bear L., (2019)

Fung and colleagues (2019) explored the mediators and moderators of effective Mindfulness interventions in the school setting. The researchers conducted a randomized waitlist trial of school-based Mindfulness and its effect on mental health and emotional regulation in adolescents. Participants were randomized to receive either a 12-week Mindfulness intervention in the first semester or the second semester of the academic year and received a three-month follow-up. There were 145 participants, 41.6% were Latino, and 51.7% were Asian. Up to 10-81% of the participants received free or reduced lunch.

The participants received Mindfulness-based stress reduction, based on the Learning to Breathe model described earlier by Broderick and Frank (2014). Participants received 12 sessions of the Learning to Breathe curriculum that lasted for 50 minutes. The students were also assigned Mindfulness exercises, directed through audio recordings, as homework to practice the skills learned in the sessions. Assessments were conducted three times throughout the study at pre-treatment, post-treatment, and three months follow-up. The youth showed reductions in internalizing, externalizing, and attention problems, stress, avoidance, and rumination. They also showed improvements in emotional processing and emotional expression. To measure these outcomes, the researchers used a youth self-report containing 112 questions about emotional and behavioral problems, a nine-question perceived stress scale, emotional regulation questionnaire, emotional approach coping scale, avoidance and fusion questionnaire, and children's response

style questionnaire (Fung, Kim, Chen, Bear, 2019). Students generally accepted the Mindfulness intervention, with 45.5% of youth reporting they practiced Mindfulness two or three times a week, and 93.3% indicating that they would recommend the Mindfulness program to their peers (Fung, Kim, Chen, Bear, 2019). The randomized study has therefore provided a great deal of empirical support for benefits of implementing school-based Mindfulness programs, which so many studies and reviews have called for in the past.

4.9 Kielty M., Gilligan T., Staton R., & Curtis N. (2017)

A study by Kielty and colleagues (2017) researched a Mindfulness intervention with third-grade students in the classroom setting. The researchers conducted a three-year study with 45 third-grade students. Participants were evenly split between boys and girls, with one unidentified student. Eighty-four percent of the participants were Caucasian and 48% received free and reduced lunch. Thirty-minute classroom lessons were implemented on Mindfulness over three weeks, and booster sessions were also offered in fourth and fifth grade for the students. Kielty and colleagues (2017) measured student and teacher experiences of the intervention via the Mindful Student Questionnaire (MSQ). The MSQ is a 15 item self-report of youth Mindfulness shown to have robust internal consistency and reliability, although not yet a validated measure (Renshaw, 2016). The researchers also used the Positive Experiences at School scale, a validated measure of classroom experience (Kielty, Gilligan, Staton & Curtis, 2017). The program implemented mindful breathing practices while exploring bodily and emotional awareness. Lessons taught body scanning, the range of human emotion, deep breathing, attention to thoughts, and emotional awareness. The researchers were surprised by lower scores at post-test on the MSQ compared to

the pretest. However, they stated that the lower results could be due to a better understanding of Mindfulness by the students and therefore more intentional answers on the post-test versus the pre-test (Kielty, Gilligan, Staton, & Curtis, 2017). However, there were positive outcomes for the qualitative survey responses of students and teachers. Eighty percent of teachers reported that their students had good coping skills after the intervention. Students reported practicing Mindfulness before exams, when arguing with a sibling, and to help them sleep at night. The pre-post design of the study did not allow the researchers to make direct inferences about the outcomes of the Mindfulness intervention; there was no comparison group in the study design (Kielty, Gilligan, Staton & Curtis, 2017).

4.10 Mendelson T., Greenberg M., Dariotis J., Gould L., Rhodes B., & Leaf P.

(2010)

Mendelson and colleagues (2010) investigated the feasibility and preliminary outcomes of a school-based Mindfulness intervention. The researchers were specifically interested in the feasibility with urban youth and considering childhood adversity in Mindfulness practice. Mendelson and colleagues (2010) stress the importance of understanding the effects of Mindfulness on rumination and intrusive thoughts, as these can be symptoms associated with childhood adversity, and symptoms that may otherwise cause problematic outcomes for youth as they progress through life. The researchers implemented a pilot randomized controlled trial, testing the feasibility, acceptability, and outcomes of the Mindfulness intervention. The study took place in four public schools over 12 weeks with 97 fourth and fifth-grade students. Sixty percent of the participants were female and 83.5% of the participants identified as African American. A total of

51 students received the intervention, and 46 students were in the waitlist control group. The Mindfulness intervention incorporated yoga, breathing exercises, and guided Mindfulness practice. Participants in the intervention group engaged in the Mindfulness practices four times per week for 12 weeks during their resource time (similar to recess time, where students do not participate in academic work). The waitlist control group received the intervention after the completion of the pilot study (Mendelson et al., 2010).

Mendelson and colleagues (2010) found that students were enthusiastic about participating in the Mindfulness program and only three students withdrew from the study. The participants also showed significant improvements in factors such as rumination, intrusive thoughts, emotional arousal, impulsive action, and physiologic arousal. There were no significant improvements in depressive symptoms, negative/positive affect, or relationships with peers and teachers. The findings suggest that the Mindfulness intervention may be effective on factors of behavior, which may be of interest to teachers, but may not be effective on internalizing symptoms.

4.11 Semple, R. Droutman, V., & Reid, B. (2017)

An article by Semple, Droutman, and Reid (2017) summarized research about ten Mindfulness programs being implemented in schools. Semple and colleagues describe the catalyst of the Mindfulness interventions as the increasing demands on students and teachers. Children have difficulty concentrating in the classroom, which increases the stress of teachers dealing with the challenging classroom climate.

Semple and colleagues (2017) reviewed Mindfulness programs that aimed to improve social-emotional resilience and decrease emotional and behavioral problems. All ten programs

were implemented in K-12 schools in conventional classrooms and identified Mindfulness as the primary focus. The programs evaluated included: 1) Inner Explorer, 2) Master Mind and Moment Program, 3) Mindfulness and Mind-Body Skills for Children, 4) Mindful Schools, 5) Resilient Kids, 6) Still Quiet Place, 7) Stress Reduction and Mindfulness Curriculum and Mindful Moment, and 8) Wellness and Resilience Program (Semple et al., 2017).

- 1) Inner Explorer is an intervention implemented using only MP3 recordings of Mindfulness exercises including meditation, body scans, progressive muscle relaxation, and journaling. The program is adaptable for kindergarten through eighth grade and requires little facilitation for the classroom teacher.
- 2) Master Mind and Movement Program was developed by Research and Training Incorporated. It is designed for 4th-5th graders and is a teacher-led curriculum. The program incorporates mindful breathing and eating, body scans, and daily home practice.
- 3) Mindfulness and Mind-Body Skills is targeted at children age 3 to 13. It aims to bolster self-awareness, self-efficacy, social-emotional skills, and prevent risky behaviors. The program requires a trained Mindfulness instructor and utilizes awareness of breath, body sensations and movement through Yoga.
- 4) Mindful Schools is a program for K-12 students and is led by teachers who have completed a Mindful Schools training. It implements breath and body exercises as well as listening skills, and mindful thoughts and emotions.
- 5) Resilient Kids is targeted at K-12th graders. Sessions are led by Resilient Kid trained facilitators who implement lessons in Yoga, mindful discussion, storytelling, and drawing.

- 6) Still Quiet is a program for children age 5-18. It aims to improve affective and behavioral regulation. Still Quite instructors are required to lead the classes and implement breathing practices, body scans, mindful eating and walking, and meditation.
- 7) Stress Reduction and Mindfulness Curriculum (SRMC) was developed for elementary and middle school students to improve self-regulation, emotional wellness, and anger management. It is led by SRMC instructors and utilizes Yoga, meditation, tai chi and other mindful practice.
- 8) Wellness and Resilience Program is an initiative to help pre-kindergarten through 12th-grade teachers. It aims to reduce stress of teachers through breathing exercises, body scans, mandala painting, and other creative activities.

Founders of each program were interviewed, and the programs were evaluated for their strengths and weakness based on the interview and self-report of program outcomes. Semple and colleagues (2017) found that none of the programs had been evaluated in randomized controlled trials. The programs were implemented in varying ways with some sessions utilizing audio recorded programs, some using outside facilitators, and some training teachers to facilitate the Mindfulness programming. There was also no uniform way of training teachers to facilitate Mindfulness exercises. Although self-reports from participants and facilitators indicated positive results, small sample sizes and research design limits our understanding of the degree to which the programs were the source of improved student outcomes, and if so, which components of the programs were the source of the improved outcomes.

4.12 Shapiro S., Lyons K., Miller R., Butler B., Vieten C., & Zelazo P. (2015)

Shapiro and colleagues (2015) reviewed empirical evidence supporting the use of contemplation practices, a component of Mindfulness, in the school setting. The practice of contemplation aims to improve self-regulation, addressing the issues of behavioral and emotional problems in the classroom. Shapiro and colleagues (2015) identified that while research has found contemplative practices to be effective with adults and there is promising research surrounding adolescents, there is the need for much more research to determine possible positive and adverse effects of the practice. The review reveals that self-regulation is essential for child development and aids in decreasing disruptive behaviors and increasing the ability to form positive relationships with teachers and peers. The researchers describe contemplative practice exercises such as focused breathing, as well as sitting, standing, and walking meditations. They found that contemplative practices can be implemented as short breathing and meditative practices in the classroom and cultivate self-regulation in students. However, they indicate that much more empirical evidence is needed to support the use of contemplative practice in the school setting.

4.13 Volanen et al. (2016)

Volanen and colleagues (2016) published a methods paper for school-based Mindfulness interventions to fill the need for methodologically robust research designs on the topic. The researchers propose a more rigorous approach to exploring the effect of school-based Mindfulness interventions. The protocol describes a current cluster randomized controlled trial to determine the outcome of a school-based Mindfulness and relaxation program. In the study, a Mindfulness

intervention group is compared to a relaxation intervention group and a non-treatment control group. The study includes 3,000 participants from 59 schools with students age 12-15 years old. The intervention incorporates 45-minute Mindfulness lessons for nine weeks in the intervention group, with the control group receiving a relaxation program. Both groups receive a 6 and 12-month follow-up. Volanen and colleagues (2016) are interested in the outcomes of resilience, presence/absence of depressive symptoms, psychological strengths/difficulties. In addition, they aim to measure cognitive functions, psychophysiological responses, and academic achievement. Results of the study are yet to be published. The article by Volanen and colleagues (2016) supports the need for quality empirical research to inform the implementation of school-based Mindfulness interventions.

4.14 Zenner C., Herrnleben-Kurz S., and Walach H. (2014)

Zenner and colleagues (2014) conducted a systematic review and meta-analysis to analyze the effects of Mindfulness interventions in school on psychological outcomes. The researchers included articles in their review that were Mindfulness-based, took place in a school setting in grades 1-12, and quantitatively measured outcomes of psychological aspects. The review resulted in 24 identified studies, including 19 randomized studies with 1348 total students receiving Mindfulness instruction across the studies, and 876 control students. Zenner and colleagues utilized a weighted mean effect size to analyze their final study selection. Both within-group effect size and controlled between-group effect sizes were calculated for their selected studies. The within-group effect size was based on the average pre-post-test changes in every study. The

between-group effect size was determined based on the change score between intervention groups and control groups in the studies.

Based on these measures, the researchers evaluated the effects of Mindfulness on cognitive performance, emotional problems, resilience, stress and coping, and behavior problems. Cognitive performance was measured primarily through attention tests, emotional problems through self-report questionnaires of maladaptive emotion, cognition, and behavior, stress and coping through self-report questionnaires and cortisol measures, resilience through self-report data on wellbeing, social skills, positive relationships and self-concept/esteem, and third-person rating parent and teacher questionnaires reported on behaviors, social skills, emotional competence, attention, and self-regulation of the participants. The strongest domain across reviewed studies was cognitive performance, followed by resilience and stress. Significant effects were not found for emotional problems or third-person ratings. These results indicate that across studies, Mindfulness has a significant beneficial effect on outcomes of cognitive performance, resilience, and stress, but results differed for emotional problems and observational reports across studies.

5.0 Discussion

The objective of the above literature review as mentioned in the methods section, was to synthesize results of the literature review on school-based Mindfulness programs and determine if the resulting literature considers trauma symptoms. When considering the results from the literature review, there is a disconnect between the implementation of school-based Mindfulness practice and the traditional practice of Mindfulness. There is also a clear gap in the literature, with little consideration of trauma symptoms or experiences in the resulting articles.

Of the articles described above only one, the article by Mendelson and colleagues (2010), considers adverse childhood experience. Mendelson and colleagues (2010) suggest that adverse childhood experience is a factor in atypical brain development and emotional regulatory abilities. The researchers studied the feasibility, acceptability, and outcomes of a school-based Mindfulness program. Results indicated improvements in rumination, intrusive thoughts, emotional arousal, impulsive action, and physiologic arousal. However, there was no significant improvement in depressive symptoms or negative/positive affect. Therefore, findings revealed Mindfulness to be effective in reducing behaviors of interest to teachers, but not effective on internalizing symptoms. Mendelson and colleagues (2010) did not consider how adverse childhood experiences affect a child's experience with Mindfulness interventions or the outcomes of the intervention. This is an oversight in the literature surrounding school-based Mindfulness research, due to the prevalence of experienced trauma by children and adolescents.

While Mindfulness has many benefits in the classroom, it also has the potential for harmful effects. Individuals who have experienced physical trauma can experience great discomfort and pain when conducting specific Mindfulness techniques such as body scans or meditation. Manotas

(2015) states that a body scan can bring awareness to the body bringing forth the sensation of previously unconscious trauma. In addition, Manotas discusses how mindful meditation takes a high level of skill to accept experiences without becoming overwhelmed. It is possible to become retraumatized without professional guidance, by staying present during meditation with traumatic experiences (Manotas, 2015).

It is also important to note, the need for behavioral and academic improvement rather than an initiative for psychological diagnoses precipitated the implementation of school-based Mindfulness programs. While many of the studies reviewed above considered psychological symptoms such as anxiety and depression that can improve due to Mindfulness, the Mindfulness interventions centered on the school outcomes associated with these symptoms. There is a missing piece in the literature as to what may be causing school-age children to be experiencing issues with anxiety and depression or other symptoms such as trouble concentrating and problems with peer relationships. It is concerning to implement a Mindfulness intervention or any intervention in the school setting without exploring the root cause of these psychological and behavioral difficulties of the students. Further research is needed to understand why students are exhibiting these symptoms, how the teachers can identify the symptoms, and how it contributes to their experience in the classroom. The focus on student behavior as a problem also strays from the traditions of Mindfulness which aim to focus on the present moment in a non-judgmental way (Kabat-Zinn, 1991). Mindfulness is also a way of living outside of the short Mindfulness exercises that are being implemented in the school setting.

Finally, the long-term effects of school-based Mindfulness on students are currently unknown. While there have been many studies in adults on the effects of Mindfulness interventions, further exploration is needed in children and adolescents. Preliminary studies show

promising benefits of school-based Mindfulness interventions (Black & Fernando, 2013). Both teachers and students were accepting of the intervention. In addition, teachers reported improved student attention, self-control, participation, and caring and respect for others (Black & Fernando, 2013). However, researchers call for more controlled trails and further investigation of school-based interventions.

5.1 Recommendations for school professionals

There are promising findings for Mindfulness interventions in the school setting. Improvements in student self-regulation, attention, and respect, are desirable outcomes for teachers due to improving the classroom climate and academic performance (Scwartz, 2019). However, the need for improved classroom climate and academic achievement cannot supersede the need for informed interventions in the school setting or direct the choice for implementation, without considering causes of problematic classroom behavior. School teachers do not have the proper training to assess the clinical needs of students or correctly identify mental health conditions. As stated by (NCTSN, 2016) teachers often have difficulty discerning the difference between symptoms of ADHD and symptoms of trauma.

In addition, Mindfulness professionals must attend a certified training program to become certified instructors of Mindfulness practice (University of Massachusetts Medical School Center for Mindfulness, in Medicine Healthcare, and Society, n.d.). Mental health providers attend graduate and professional programs to earn the required education for licensure (National Alliance on Mental Illness, 2017). The required education supports responsible practice with clients experiencing trauma symptoms and mental health conditions. In order to implement a responsible

school-based Mindfulness intervention, teachers need to participate in extensive training on trauma-informed Mindfulness practice and mental health identification, or a co-facilitator needs to be present who is a mental health or Mindfulness professional. As stated by (Manotas, 2015) Mindfulness practice takes skill, and it is helpful to have a professional guide participants through the practice, especially if they have experienced trauma. In addition, teachers should engage in their own Mindfulness practice, if they are expected to direct students in Mindfulness. Implementing personal practice may also help the teacher's interaction with students in the classroom environment, creating a better experience for both students and teachers.

Implementing a school-based Mindfulness intervention will take more time, effort, and therefore buy-in from the school system when considering these factors. Teachers may enjoy the benefits of holding four-minute Mindfulness sessions before class, but they also must be willing to put in the time to understand the complexities of Mindfulness and its interaction with residual trauma experiences. The lack of research means it is not the right time to implement Mindfulness programs in the school.

As called for by the reviewed literature, more research, especially controlled trials, are needed to confirm the effects of school-based Mindfulness interventions and best practices for implementation considering trauma. Traumatic experiences affect two-thirds of children. Researchers and school administrators need to consider this statistic when implementing programs to support a better school environment and achievement for students. Without this consideration researchers and schools are overlooking a potentially crucial component behind student stress, and behavioral and academic challenges (Scwartz, 2019).

With continued research, it can be determined whether school-based Mindfulness interventions are beneficial to the student population and trauma-informed Mindfulness programs

can be created. Until that time, there are many educational resources about Mindfulness and childhood trauma through which teachers can familiarize themselves. The National Child Traumatic Stress Network (NCTSN) and Substance Abuse and Mental Health Services Administration (SAMHSA) provide educational material about the effects of childhood trauma and adverse experiences.

The National Child Traumatic Stress Network provides specific guidelines for teachers on how to talk to students who have experienced trauma. It is also possible for teachers to gain insight into the practices of Mindfulness by reviewing articles about the practice or attending a Mindfulness training session. A list of resources for teachers and researchers to learn more about Mindfulness and childhood trauma is listed in table 2. Raising awareness and education on Mindfulness and trauma will help prepare school professionals for future implementation of school-based Mindfulness programs, as well as identify students who may be experiencing trauma or adverse childhood experience, allowing them to connect those students to needed resources.

Table 3 Resources for Teachers

Name of Resource	Link	Summary
National Child Traumatic Stress Network	https://www.nctsn.org/	Resources, information, and training opportunities related to trauma for professionals, families, and youth
National Child Traumatic Stress Network	https://www.nctsn.org/resources/child-trauma-toolkit-educators	Toolkit for educators on childhood trauma
Substance Abuse and Mental Health Services Administration	https://www.samhsa.gov/	Treatment referral resources, training opportunities, and educational material about mental health diagnoses

I charge researchers and school administrations to take a comprehensive approach to understand the basis of classroom and achievement issues in the schools, and whether trauma is a critical factor in the issues. Understanding this dynamic will help researchers identify if Mindfulness is a feasible intervention in the school setting where children may have trauma experiences. It is also essential for teachers to gain trauma and Mindfulness training, as well as take part in personal Mindfulness practice, to ensure they fully understand the interventions they are implementing. Taking this approach will ensure that schools obtain the desired outcomes of improved student behavior and achievement without causing detrimental effects on students who may have experienced trauma. A secondary effect would hopefully allow teachers to identify students who have experienced trauma and connect them with appropriate resources. With the proper support from research and education, schools can ensure a beneficial Mindfulness program for their students.

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