

UNIVERSITY OF WISCONSIN - LA CROSSE

Graduate Studies

THE MINDFUL APPROACH TO READING ENGAGEMENT AND ACHIEVEMENT

A Chapter Style Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Education - Reading Teacher/Specialist

Hannah Hokenson

Institute for Professional Studies in Education
Master of Science in Education - Reading Teacher/Specialist

May 2020

THE MINDFUL APPROACH TO READING

THE MINDFUL APPROACH TO READING ENGAGEMENT AND ACHIEVEMENT

By Hannah Hokenson

We recommend acceptance of this thesis in partial fulfillment of the candidate's requirements
for the degree of Master of Science in Education - Reading.

The candidate has completed the oral defense of the thesis.

Patricia A. Markos

Pat Markos, Ph.D.
Thesis Committee Chairperson

11-12-19

Date

Alyssa J. Harlan

Alyssa Harlan, M.S.Ed.
Thesis Committee Chairperson

11/12/19

Date

William Gillespie

William Gillespie, Ph.D.
Thesis Committee Chairperson

11/12/19

Date

ABSTRACT

Hokenson, H.E. The mindful approach to reading engagement and achievement. M.S. in Education - Reading Teacher/Specialist, May 2020, 44pp. (P. Markos)

A quasi-experimental comparison study took place over the course of six weeks in a special education resource room in a rural Wisconsin school district. The purpose of the study was to determine the potential benefits of using a mindfulness program prior to individualized reading intervention. Students received 1:1 individualized reading instruction designed to work on specific IEP (individualized education plan) goals and objectives. For the initial three weeks of the study, students were presented with reading instruction as usual. For the final three weeks, students were given the option to participate in a mindfulness activity prior to beginning reading intervention. Mindfulness activities were pulled from the Cosmic Kids website and included yoga, guided meditation, deep breathing, and positive affirmations. Each week, data were collected using progress monitoring measures for words read correctly per minute (WCPM), comprehension, and attention redirection. Analysis of the final data points suggested that mindful practices can have significant positive effects on elementary-aged students' engagement and achievement in reading intervention.

TABLE OF CONTENTS

	PAGE
LIST OF TABLES AND FIGURES.....	vi
CHAPTER 1: INTRODUCTION.....	1
Statement of the Problem.....	1
Research Question.....	4
CHAPTER 2: LITERATURE REVIEW.....	5
Understanding Executive Function.....	5
The Role of Executive Function and Attention Regulation on Reading Achievement.....	9
Attention Regulation and Reading Achievement.....	12
The Benefits of Mindfulness Intervention.....	13
The Impact of Mindfulness on Reading Achievement.....	15
Summary.....	15
CHAPTER 3: METHODOLOGY.....	17
Research Design and Rationale.....	17
Participants.....	18
Procedure and Data Collection.....	18
CHAPTER 4: RESULTS.....	21
Description of Student Needs.....	21
Findings.....	22
WCPM.....	23
Comprehension.....	25

Engagement.....	27
Summary.....	28
CHAPTER 5: DISCUSSION.....	30
Interpretation of Results.....	30
Limitations.....	32
Implications for Teachers and Students.....	33
Implications for Future Research.....	34
CONCLUSION.....	34
REFERENCES.....	35

LIST OF TABLES AND FIGURES

TABLE	PAGE
-------	------

4.1	Student Scores on WCPM and Comprehension Progress Monitoring Measures..	23
-----	---	----

FIGURE	PAGE
--------	------

4.1	Student A WCPM Data Points and Trendline for 6-Week Period.....	23
-----	---	----

4.2	Student B WCPM Data Points and Trendline for 6-Week Period.....	24
-----	---	----

4.3	Student C WCPM Data Points and Trendline for 6-Week Period.....	24
-----	---	----

4.4	Student A Comprehension Accuracy and Trendline for 6-Week Period.....	25
-----	---	----

4.5	Student B Comprehension Accuracy and Trendline for 6-Week Period.....	26
-----	---	----

4.6	Student C Comprehension Accuracy and Trendline for 6-Week Period.....	26
-----	---	----

4.7	Data Points and Trendlines for the Average Number of Redirections Needed for Each Student Each Week.....	27
-----	---	----

CHAPTER 1

INTRODUCTION

Statement of the Problem

As an elementary cross-categorical special education teacher, I am constantly looking for new ways to engage my students and help them achieve their greatest potential. In the past few years, I have been investigating the impact of executive functioning skills, particularly those relating to attention, on students' ability to learn and keep pace with increasingly rigorous academic expectations. The population of students that I work with commonly struggle with some form of attentional disorder due to or in addition to their documented disabilities. They are often very wiggly, easily distracted by external and internal stimuli, and are unable to focus for more than a few minutes at a time. Their struggles with executive functioning skills such as working memory, planning, organization, task initiation, and self regulation hinder their learning on a daily basis. I have been finding that the best way I can teach them is by helping them gain the executive function skills they are lacking in order to overcome their attentional deficits and successfully complete their tasks at school. Often, I use the general education curriculum and reteach daily lessons in a way that addresses my students' needs for executive function instruction. However, there are also specific reading strategies that my students are missing and that they require direct instruction for. Spending so much of our designated reading instruction time working on executive functioning skills has limited

the time I can spend on doing actual reading-focused instruction.

While trying to overcome these executive functioning barriers with my students, I have looked more into “styles of learning” and have tried various strategies to meet different learning abilities. I have tried using art and hands-on activities to improve learning, body movement, listening and repeating, supplementing instruction with pictures or manipulatives, along with many other strategies. Though some of these strategies have increased engagement and interest for my students, the novelty often wears off and apathy returns. Also, these strategies tend to simply change the way a student is presenting their knowledge. My goal is to find a strategy that will help my students make a greater overall change in the way they approach learning and instruction.

According to the National Survey of Children’s Health (NSCH) conducted most recently in 2016, about 9.4% of children in the U.S. have been diagnosed with some form of Attention Deficit Hyperactivity Disorder (ADHD) (*Data and Statistics About ADHD* | CDC). Children with ADHD or other attentional disorders demonstrate lower school performance as compared to peers without those challenges (Ehm, Koerner, Gawrilow, Hasselhorn, & Schmiedek, 2016; Miller, et.al, 2014). Though medication and therapy can be effective treatments for ADHD (Chou & Huang, 2017; Tarrasch, Berman, & Friedmann, 2016), in my own experience, many parents demonstrate reluctance toward those methods, especially if their child is younger in age. While I cannot change parent attitudes, I can adjust my own teaching methods to try and meet my students’ needs regardless of any outside interventions they may or may not be receiving.

A few colleagues of mine have begun to adopt mindfulness interventions in their

weekly schedules. They have reported seeing many benefits such as increased attention during whole group times, improved self-regulation, and overall a more calm and focused classroom climate. I, myself, recently tried using some mindfulness interventions during my “Getting Ready for 4K” summer school class of 2019. The group of students I was working with had high energy and struggled with using appropriate voice levels and sitting for more than a few minutes. Though I understand that this is pretty typical of four-year-olds, I found myself having more difficulty in teaching common classroom expectations than I have in the past, teaching this same summer school class. Throughout the summer, we tried yoga, guided meditation, and body awareness videos found on websites such as GoNoodle, YouTube, and Cosmic Kids. The majority of my students responded exceptionally well to one video in particular, called “Melting.” This video, found on GoNoodle, guides children to freeze their bodies and squeeze their muscles as hard as they can. They are then directed to hold that position and breathe for a bit, before gradually and slowly releasing all of the tension they’ve been holding. The video instructs them to “melt” from top to bottom, eventually becoming a “blob” or “puddle” on the floor. Parents of multiple children were telling me that they were practicing melting at home, even though the parents had no idea what that meant. As I mentioned before, we also tried some yoga and guided meditation, though that didn’t keep their focus and interest as long as the melting video did. This brief and spontaneous experiment had me thinking about the possible benefits of including mindfulness intervention in my daily lessons during the school year. My students are typically in grades early childhood through third grade and I became interested in exploring how

different types of mindfulness interventions may impact their ability to focus and experience more success.

Research Question

As I looked further into research on mindfulness interventions and its impact on attention, I found that, not only might mindfulness interventions improve a child's ability to use executive functioning skills, but they may also help increase school performance (Cohen et al., 2018; Chou & Huang, 2017; McCloskey, 2015; Tarrasch et al., 2016). The relationship between mindfulness and attentional disorders guided me to a considerable amount of research on the connection between attentional disorders and reading disorders. This is when I began to formulate my official research question and hypothesis.

Research Question: What is the effect of mindfulness intervention on reading achievement and engagement in elementary-aged students with attentional disorders?

Hypothesis: I hypothesize that using a mindfulness intervention prior to direct reading instruction will result in an increase of achievement and engagement in elementary-aged students with attentional disorders.

CHAPTER 2

LITERATURE REVIEW

Student success in school is dependent on more than academic knowledge alone. In the present educational environment, children must first demonstrate appropriate social and functional skills in order to be able to learn increasingly rigorous material. Many functional skills require developed attention and self-regulation, which can be attributed to the skill set known as executive function (EF). In this review of recent literature, I will examine the scientific research behind executive function skills, as well as the implications those skills may have on education, with particular attention to literacy. My research will also explore the positive impact of mindfulness interventions such as yoga and meditation on executive function skills and, in a larger scope, reading achievement.

Understanding Executive Function

In order for students to be successful in school, they must learn and effectively utilize skills that demonstrate school readiness. While a basis of pre-academic knowledge is important, students must also develop appropriate social and behavioral skills in order to communicate and participate effectively in the classroom environment. Executive function can be understood as a number of neurocognitive attention regulation processes that require deliberate thought for effective use (Zelazo, Blair, & Willoughby, 2017). Executive function is typically divided into three specific categories: cognitive flexibility,

working memory, and inhibitory control (Zelazo, 2015; Zelazo et al., 2017). Within these categories exist multiple attention regulation functions that provide students the ability to engage in effective learning and appropriate participation. Some of these functions include planning, task initiation, persistence, transitioning, conscientiousness, grit, and problem solving, among others (Miranda, Colomer, Mercader, Fernández, & Presentación, 2015; Takacs & Kassai, 2019; Zelazo, 2015; Zelazo, et al., 2017). Through the conscientious use of these attention regulation practices, students can successfully demonstrate their readiness for school.

Cognitive flexibility is demonstrated in a person's ability to think flexibly; for example, considering other perspectives and switching between tasks. Working memory requires holding onto information and being able to use or manipulate that information in future tasks. Inhibitory control involves consciously redirecting attention away from internal or external distractions, such as resisting the impulse to blurt an answer or lose focus due to background noise (Zelazo, 2015, Zelazo et al., 2017). Research on EF has been growing steadily and many researchers argue that executive function skills should be considered as important as, if not more so than, intellectual abilities (Blair & Raver, 2015; Kibby, Lee, & Dyer, 2014; Miller et al., 2014; Miranda et al., 2015). Not only do executive function skills regulate attention, but they provide a base for more organized and purposeful thinking.

Executive function skills are attributed to regions of the prefrontal cortex and are thus neurocognitive, meaning they require neural connections to deliberately regulate and use attention in meaningful ways in order to achieve a goal (Blair & Raver, 2015; Takacs

& Kassai, 2019; Zelazo, 2015). There has been much research conducted on executive function and its role in childhood psychoneurological development. According to Blair & Raver (2015), a child's ability to use executive function successfully is very dependent on both environmental and biological factors. Emotions and physiological responses can be compared to executive function abilities on a kind of bell curve. When emotional and physiological responses are low, there is low activity in the prefrontal cortex, thus EF abilities are weakened. As emotional and physiological responses increase, activity in the prefrontal cortex increases and leads to an ideal neurocognitive environment for EF growth. However, if emotional and physiological responses become too high, activity in the prefrontal cortex once again decreases and EF abilities are once more compromised (Blair & Raver, 2015). In school, we often observe children who are disengaged (low emotional and physiological responses) as well as those who struggle with managing anxiety or anger (high emotional and physiological responses). These two populations of children are the groups who tend to suffer from decreased executive function abilities due to the neurocognitive processes occurring in their brains. The children who come from stable home environments, have positive social relationships, and have good mental health are the ones who tend to be more successful in using executive function skills and who demonstrate greater success in school (Blair & Raver, 2015; Miranda et al., 2015).

Most researchers agree that, as neurocognitive skills, executive function skills are malleable and can be trained through specific, meaningful interventions (Blair & Raver, 2015; Kegel & Bus, 2013; Stevens et al., 2011; Takacs & Kassai, 2019; Tang, Holzel, & Posner, 2015; Zelazo, 2015; Zelazo, Forston, Masten, & Carlson, 2018). Just as with

other skills such as playing the piano or dribbling a basketball, practice is the key toward developing effective executive function. Research has also shown that the preschool or early elementary years of childhood are optimal time periods for learning and using executive function skills (Blair & Raver, 2015; Felver, Tipsord, Morris, Racer, & Dishion, 2014; Miranda et al., 2015). Once children are in school, they are expected to be able to sit still for increasing amounts of time, focus attention on teacher instruction, transition efficiently between tasks, and self-regulate emotions in unexpected or nonpreferred circumstances. All of these abilities require the use of executive function skills.

Many researchers have characterized executive function skills as either “hot” or “cool” in relation to problem-solving and attaining goals. Hot EF skills are motivationally or emotionally significant and involve more high-stakes choices (Woltering, Lishak, Hodgson, Granic, & Zelazo, 2015; Zelazo, 2015). They require deliberate, flexible thinking to make a decision on whether to avoid or engage a specific stimulus. Children who struggle with self-regulation or behavioral disorders are more apt to experience difficulty with managing hot EF because they tend to perceive situations with more complexity and emotion (Woltering et al., 2015). Examples of hot EF tasks may include resisting temptation, controlling anger in heated situations, or persevering through a challenging task. On the other hand, cool EF relates primarily to neutral or arbitrary situations and occurs in simple tasks such as sorting by color, restating a sequence of numbers, or following a simple direction (Zelazo, 2015). Both hot and cool EF skills require conscious, intentional self-regulation and mindful thinking and often work

together to help people problem solve through everyday situations (Zelazo, 2015).

Reflection is another example of a neurocognitive skill that is defined as the reprocessing of information and is considered an important foundation for executive function skills (Zelazo, 2015). The process of reflection requires a person to deliberately step back and reconsider a situation or experience in order to problem solve and move toward an intended goal (Zelazo, 2015). This process can be challenging for young children, who tend to be more reactive than reflective in problem-solving situations. However, past research indicates that reflective approaches to everyday situations can be taught and a person's executive function skills can be improved through intentional intervention, especially when that intervention begins in early childhood (Blair & Raver, 2015; Cunningham et al., 2007; Takacs & Kassai, 2019; Zelazo et al., 2018; Zelazo, 2015).

The Role of Executive Function and Attention Regulation on Reading Achievement

Due to their importance in developing neurological connections for attention regulation, executive function skills are often considered critical to academic performance (Blair & Raver, 2015; Cain & Bignell, 2014; Ehm et al., 2016; Kibby et al., 2014; Martinussen, Grimbos, & Ferrari., 2014; McGrath et al., 2010; Miller et al., 2014; Miranda et al., 2015). Though academic knowledge is important, it cannot be used effectively without the development of appropriate EF abilities. The three major components of EF come into play in various ways in regards to literacy instruction.

Cognitive flexibility is the ability to think about a problem or experience in various ways and from multiple perspectives (Zelazo, 2015; Zelazo et al., 2017). It also

involves the skills of being able to transition between tasks and accept change. In literacy instruction, cognitive flexibility is essential for understanding compound words, irregular spelling, alternate perspectives, and many other reading skills that require attention shifts or flexible thinking (Blair & Raver, 2015).

Working memory gives us the ability to hold information in our mind and use or manipulate that information on other tasks (Zelazo, 2015; Zelazo et al., 2017). For example, in spelling, a student uses working memory to recall the letters associated with the individual sounds within words. Studies suggest that working memory plays the most direct role of the three EF skills when it comes to academic achievement (Kegel & Bus, 2013; Kibby et al., 2014; Miller et al., 2012; Miranda et al., 2015). Kibby et al. (2014) found that verbal working memory predicts reading fluency, comprehension, and decoding beyond simple memorization. This finding could indicate that working memory may also play into more complex cognitive processes such as analysis and synthesis in comprehending written text (Kibby et al., 2014). During reading comprehension, a student may be asked to compare and contrast texts, to make connections between the text and personal experiences, or to collect details in order to determine a central theme or idea. These higher-order thinking processes all require a strong, developed working memory skill.

Inhibitory control can be defined as the ability to intentionally redirect one's own attention to ignore distractions, suppress impulsive actions, and resist temptations (Zelazo, 2015; Zelazo et al., 2017). Inhibitory control is used in literacy instruction for persevering through challenging tasks, asking for help, taking time to read carefully, and

focusing attention on the lesson. Though less directly related to specific components of reading instruction, inhibitory control remains a crucial skill for students to develop in order to experience success and gain confidence in their abilities.

Interestingly, multiple studies found that hyperactive behaviors that require more inhibitory control do not result in an increase of academic or reading disabilities.

Inattentive-type behaviors associated with working memory and processing speed are much more likely to negatively impact intellectual growth than those related to hyperactivity (Cain & Bignell, 2014; Kegel & Bus, 2013; McGrath et al., 2010; Miranda et al., 2015). Though a student with hyperactive behaviors may appear “off-task” or unfocused, the research shows that physical behaviors do not necessarily impact or reflect cognitive abilities as it pertains to attention regulation.

Cognitive flexibility, working memory, and inhibitory control are all attention-regulation skills necessary for a student to work deliberately toward a specific goal (Zelazo et al., 2017). So, for students who struggle with attentional disorders such as attention-deficit/hyperactivity disorder (ADHD), school may seem overwhelmingly difficult and can produce high levels of stress or anxiety (Blair & Raver, 2015). As stated earlier, high levels of emotional and physiological responses (such as in the case of high stress or anxiety) cause decreased activity in the prefrontal cortex, resulting in limited executive function ability (Blair & Raver, 2015). Students with attentional disorders are required to dedicate more of their cognitive resources to managing stress and trying to regain a physiological and emotional balance (Miller et al., 2012; Sáez, Folsom, Otaiba, & Schatschneider, 2011). Thus, these students have fewer resources to actually focus

attention on and learn content presented in an academic setting.

Attention Regulation and Reading Achievement

Multiple studies have found that student engagement and responsiveness to academic instruction is significantly impacted by the ability to focus and sustain attention (Cain & Bignell, 2014; Ehm et al., 2016; Kibby et al., 2014; Martinussen et al., 2014; McGrath et al., 2010; Miller et al., 2014; Miranda et al., 2015; Sáez et al., 2011; Stevens et al., 2011). Furthermore, attention regulation and executive function play key roles in a student's ability to absorb and understand curricula. Attention regulation has been shown to have a significant direct effect on word reading and phonological processing (Cain & Bignell, 2014; Ehm et al., 2016; Kibby et al., 2014; Martinussen et al., 2014; Miller et al., 2012; Miller et al., 2014; Stevens et al., 2011). With phonological awareness being an essential introductory skill for literacy instruction, students who struggle with attention are likely to fall behind and experience greater struggle than students with developed executive function. Furthermore, students who experience difficulty in basic reading skills such as phonological processing and word reading are more likely to also experience difficulty with reading comprehension in later grade levels (Ehm et al., 2016; Kibby et al., 2014; Martinussen et al., 2014; Miller et al., 2014; Zelazo et al., 2017).

In a study by Miller et al. (2012), researchers looked at the correlation between ADHD and various cognitive skills, as well as the occurrence of a centrality deficit. Miller et al. (2012) defined a centrality deficit as “a deficit in retention of the central ideas of the text.” In other words, a difficulty in recalling central, or important, ideas and themes in a text, resulting in a less coherent understanding of the text (Miller et al.,

2012). Primarily, researchers in this study wanted to see how ADHD impacts not only word decoding, but reading comprehension in regards to understanding the main idea of a passage. The results showed that, even when controlling for word reading ability, children with ADHD demonstrated increased difficulty in the recall of central ideas as compared to children without ADHD (Miller et al., 2012). To explain this finding, the authors suggested that the increased cognitive resources children with ADHD must devote to attention regulation as compared to children without ADHD, negatively impacted their abilities to use higher-level thinking skills. Reading comprehension involves the use of prior knowledge and learned content to make connections and expand mental representations as students read (Miller et al., 2012). If children with ADHD are unable to access those higher-level thinking skills such as analysis and synthesis, they will inevitably struggle more with understanding text (Kibby et al., 2012).

The Benefits of Mindfulness Intervention

Mindfulness as an intervention can help reduce anxiety, increase focus, and promote reflective thinking ((Tarrasch et al., 2016). For children who struggle with executive functioning, mindfulness may provide the support they need to enhance those skills so they might experience more success academically.

The practice of mindfulness encourages individuals to deliberately examine their present thoughts and behaviors without scrutiny or criticism (Felver et al., 2014; Gallant, 2016; Zelazo et al., 2018). Mindfulness training centers on regulating one's attention to a specific, presently occurring somatic experience while intentionally redirecting attention from external distractions or intrusive thoughts (Felver et al., 2014; Gallant, 2016). When

distractions occur, individuals are encouraged to acknowledge the shift in attention without reaction and work to bring focus back to the present experience (Felver et al., 2014; Gallant, 2016). This encourages participants to understand that all feelings and thoughts are relevant, but not all are necessary or conducive for the focus task. Yoga, meditation, and body scanning are all common examples of mindful practices.

Mindfulness-based practices can impact more than just observable behavior; they can cause neurochemical and structural changes in the areas of the brain, namely the prefrontal cortex, where attention regulation and executive function are managed (Chou & Huang, 2016; Tang et al., 2015; Zelazo et al., 2018). Repeated practice in mindfulness has shown improvements in on-task behavior, reaction time, wait time, memory, body control, and other behaviors commonly associated with attention disorders (Chimiklis et al., 2018; Chou & Huang, 2016; Cohen et al., 2018; Razza, Bergen-Cico, & Raymond, 2013; Zelazo et al., 2018). There are benefits in regards to emotional health and wellness, as well. According to Nanthakumar (2018), mindfulness practice allows one's nervous system some much needed downtime and, in turn, reduces feelings and physiological responses related to anxiety and stress.

For students, especially those with attention-based disorders, mindfulness practice may have a significant effect on overall cognitive function and executive function skills (Chimiklis et al., 2018; Chou & Huang, 2016). Researchers have found that mindfulness intervention does not have a direct impact on observable hyperactive or motor-based behaviors. However, the physical activity and focus on body control involved in mindful interventions are likely to support a student's overall attention regulation (Chou &

Huang, 2016; Cohen et al., 2018; Gallant, 2016).

The Impact of Mindfulness on Reading Achievement

In a study by Tarrasch, Berman, & Friedmann (2016), participants with some form of dyslexia and/or attention deficit disorder engaged in a Mindfulness-Based Stress Reduction (MBSR) intervention for two months. Among other things, the researchers were looking for the effects of the MBSR intervention on sustained, selective, executive, and orienting attention as well as the impact on word reading in participants with known reading or attention delays. The results of the MBSR intervention showed decreases in individual word reading errors, impulsivity, and reaction times, as well as improvements in attention functions, perceived stress, and psychological well being (Tarrasch et al., 2016). This study demonstrates the positive and meaningful impact that mindful practice can have on executive function skills and reading achievement at the word level.

Summary

It cannot be said that mindfulness intervention alone directly results in increased attention regulation or academic achievement. The studies presented in this review simply suggest the many layers involved in executive function development and academic ability may be able to be influenced by long-term mindfulness intervention implemented with fidelity. It is also important to add that instruction in mindfulness or other social-emotional competencies does not take anything away from academic studies. Rather, these interventions may actually support and expand student attention, possibly resulting in improved focus and deeper understanding of academic content (Blair & Raver, 2015). To engage in mindful practices is to also engage in reflective thinking,

analytic processing, and exploration of curiosity (Shapiro et al., 2014). By fostering these metacognitive skills for self-awareness, students may also be taught to generalize those skills to their academic learning. When combined with the benefits of mindfulness intervention on executive function and attention regulation skills, students should, theoretically, be much more prepared for and confident in their academic endeavors.

CHAPTER 3

METHODOLOGY

The purpose of my study was to determine the effects of a mindfulness intervention on student engagement and achievement in reading. I anticipated seeing an improvement in overall attention, interest, and academic gain as a result of incorporating mindfulness practices prior to reading instruction. Due to the increasing popularity of incorporating mindfulness practices and social emotional learning in schools, I hoped to gain insight into its potential benefits and long-term effects on elementary-aged students. Therefore, the main question guiding my research is this: *What is the effect of mindfulness intervention on reading achievement and engagement in elementary-aged students with attentional disorders?*

Research Design and Rationale

This action-research project took place in my cross-categorical special education resource classroom with students in grades 2 and 3 whom I see for daily reading intervention. I chose to implement a comparison study involving three weeks of my typical reading instruction without additional intervention, followed by three weeks of implementing short mindfulness-based activities prior to reading instruction. All of the students I see for reading also experience daily challenges in regards to attention and executive function skills. My goal through this process was to determine if incorporating

mindful practices would improve their executive function skills to further their engagement and understanding during our reading instruction. The instruction used followed the same routines as I have established with my students in the past. I wanted my students to feel confident and comfortable in knowing what to expect during reading so as not to increase their anxieties due to change. I taught and modeled mindfulness practices such as guided meditation and yoga alongside my students before beginning reading instruction for the final three weeks of my study.

Participants

Four students whom I see daily for individualized reading intervention were asked to participate in my study. Of those four, three students returned completed informed consent slips. All of these students have individualized education plans (IEP) for disabilities including significant developmental delay and educational autism. The students are in grades 2-3 and are between 7-9 years of age. This group included two females and one male. Two students are caucasian, non-hispanic and one student is half African-American and half caucasian, non-hispanic.

Procedures and Data Collection

This study took place in my special education resource classroom and followed a quasi-experimental design. All of the students have had me as a special education resource teacher for at least one semester and were familiar with my teaching style and classroom expectations. Each student receives intervention targeting their individual needs and IEP goals. Therefore, no intervention is exactly the same. I use a variety of curricula and handmade materials to design lessons.

For the first three weeks of my study, I conducted 1:1 direct reading intervention with my students as we have in the past. Prior to each daily lesson, I asked students to complete a quick “check-in” survey to determine their mindset and readiness for learning. Lessons were individualized and planned around each students’ needs, in accordance with their IEP goals. I used a variety of activities focused around phonics, sight words, and vocabulary to improve word knowledge, reading rate, and understanding of texts. Progress on WCPM (words read correctly per minute) and basic reading comprehension was monitored at the end of each week using instructional-level texts from the Reading A-Z website. In addition, daily tallies were recorded to track the number of redirections needed for each student to stay on task and engaged in the lesson.

Reading instruction during the final three weeks of my study was conducted in the exact same way to ensure student understanding of the lesson routine. However, prior to beginning that instruction, students were asked to participate in a 5-10 minute mindfulness activity. Mindfulness activities included guided meditation, deep breathing techniques, positive affirmations, and yoga. Students were presented with a collection of mindfulness videos obtained from the Cosmic Kids website to choose from each day. Following the completion of our mindfulness activity, students began our reading instruction routine with the daily check-in survey.

Due to the short time frame of this study, I collected and recorded data each week on separate Google Sheets documents for each student. Data sources included WCPM measures, redirection tallies, and comprehension quizzes. My hopes were to see a decrease in the average number of redirection tallies for each student and to observe a

positive rate of growth in WCPM and comprehension data. The check-in survey results were not collected but were used as an informal guide for daily instruction.

CHAPTER 4

RESULTS

The purpose of this study was to determine if using mindfulness practices may improve executive function and reading skills. For three weeks, three students in grades 2 and 3 received reading instruction tailored to their individual needs, as per their IEPs. Progress was monitored weekly using WCPM and comprehension measures while daily data were collected on the number of times attention redirection was necessary during a lesson. Following the initial three weeks, students were introduced to mindfulness practices. Students then engaged in daily mindfulness practices such as yoga, guided meditation, self-affirmations, and breathing techniques prior to beginning reading intervention for the final three weeks of the study. Data were once more collected on WCPM, comprehension, and attention redirection frequency.

This chapter will examine the data collected from these measures in order to attempt to answer the original research question:

What is the effect of mindfulness intervention on reading achievement and engagement in elementary-aged students with attentional disorders?

Description of Student Needs

All three students involved in this study receive daily 1:1 direct reading intervention in accordance with their Individualized Education Plans (IEP). All three

students are also treated medically for attentional disorders. The students are all at different levels of reading ability and require specialized instruction to meet their individual needs in literacy. Student A reads at an instructional level M. Instruction for this student is based primarily around phonics and word patterns to improve decoding and fluency skills. Student B reads at an instructional level C. Instruction for this student focuses on phonological awareness skills such as rhyming and phoneme substitution as well as CVC word decoding and sight word recognition. Student C reads at an instructional level J. Instruction for this student involves sight word recognition and multisyllabic word decoding in an effort to increase reading rate and fluency to support comprehension.

Findings

Data collected from weekly progress monitoring measures were entered into line plots to show rate of growth over the six weeks of this study. Weeks 1 through 3 involved reading intervention targeted to each individual student. Weeks 4 through 6 are when mindfulness practices took place as a precursor to daily individualized literacy instruction. Table 4.1 shows the progress monitoring scores for each student on passages at their individual instructional reading levels.

Table 4.1 Student Scores on WCPM and Comprehension Progress Monitoring Measures

	Student A (Level M)		Student B (Level C)		Student C (Level J)	
	WCPM	Comp Acc	WCPM	Comp Acc	WCPM	Comp Acc
Week 1	17	40%	10	60%	25	80%
Week 2	15	60%	9	100%	23	60%
Week 3	14	80%	13	100%	25	40%
Week 4	23	80%	10	40%	41	60%
Week 5	18	60%	12	100%	31	60%
Week 6	33	80%	9	100%	36	100%

WCPM

Figures 4.1, 4.2, and 4.3 graph the data points and trendline for each student each week on WCPM measures.

Figure 4.1 Student A WCPM Data Points and Trendline for 6-Week Period

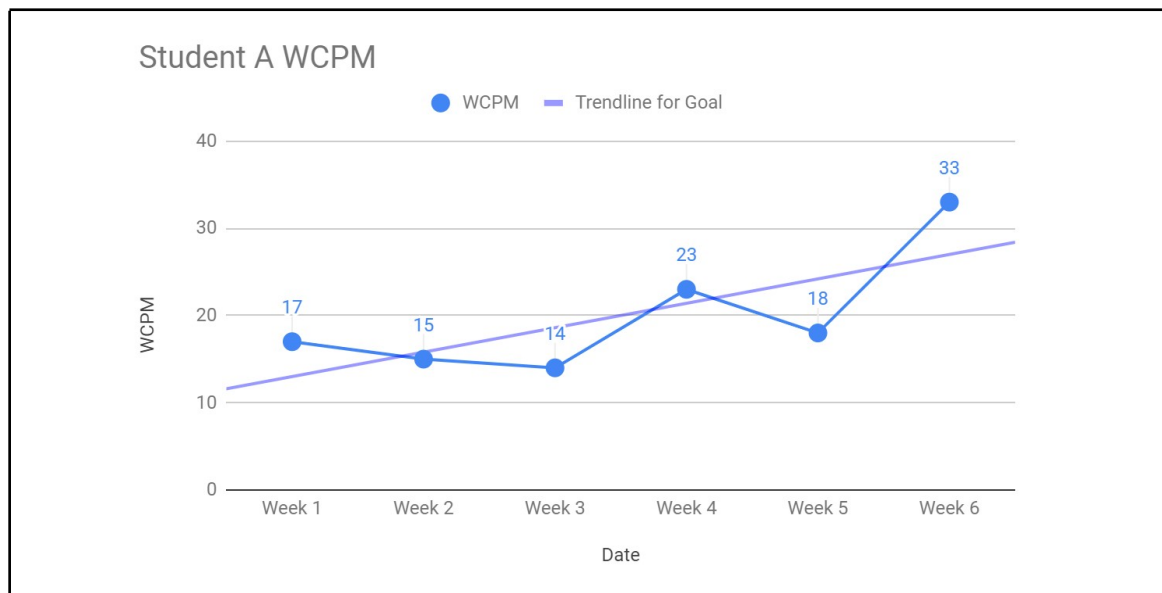


Figure 4.2 Student B WCPM Data Points and Trendline for 6-Week Period

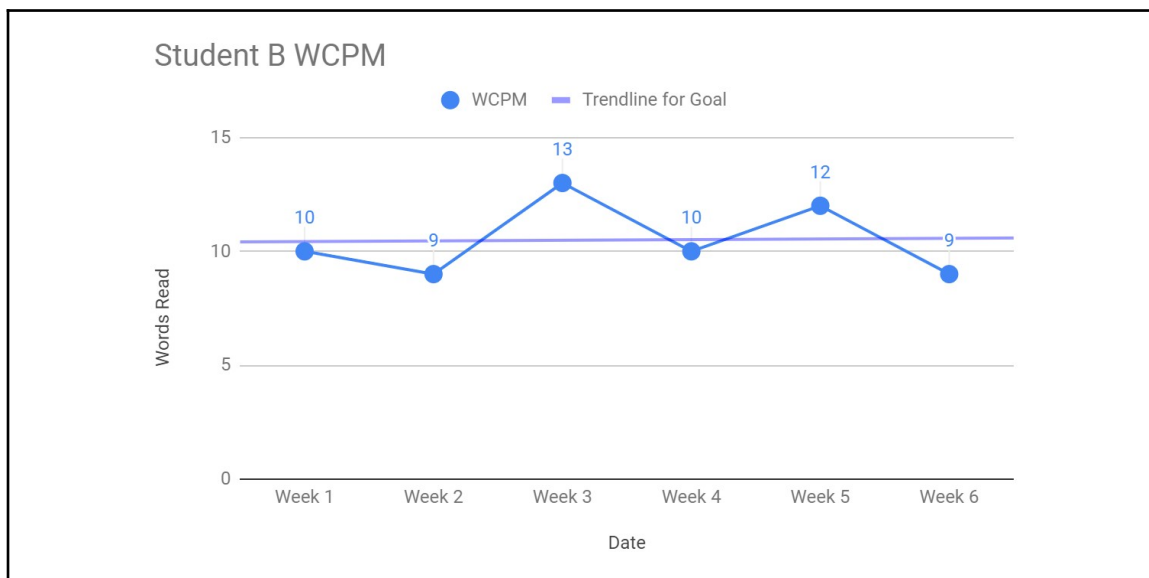
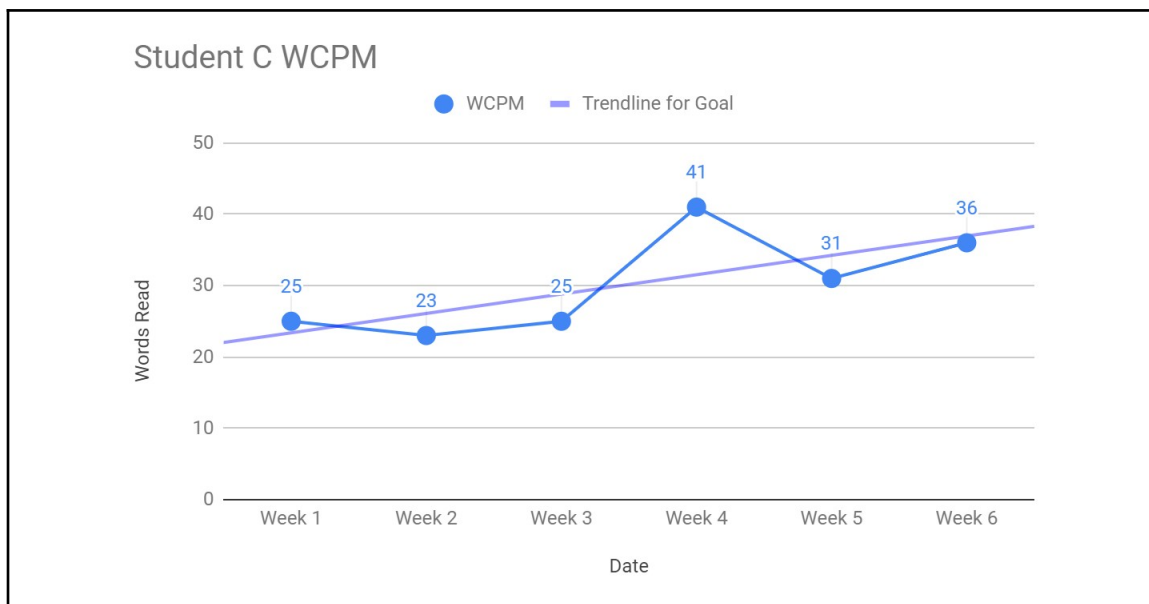


Figure 4.3 Student C WCPM Data Points and Trendline for 6-Week Period



Analysis of these data points indicate that students A and C both demonstrated a positive rate of growth throughout the 6-week period, as evidenced by the trendlines in each graph. In addition, both students A and C achieved higher WCPM scores in the final three weeks, when mindfulness interventions were in practice, than they did in the initial

three weeks. Though Student B did not demonstrate growth, their scores and trendline remained consistent throughout the six weeks of the study.

Comprehension

Progress monitoring data were also collected weekly on five-question comprehension quizzes based on the same passages used for measuring WCPM. Figures 4.4, 4.5, and 4.6 show the data points and trendlines for each student each week.

Figure 4.4 Student A Comprehension Accuracy and Trendline for 6-Week Period

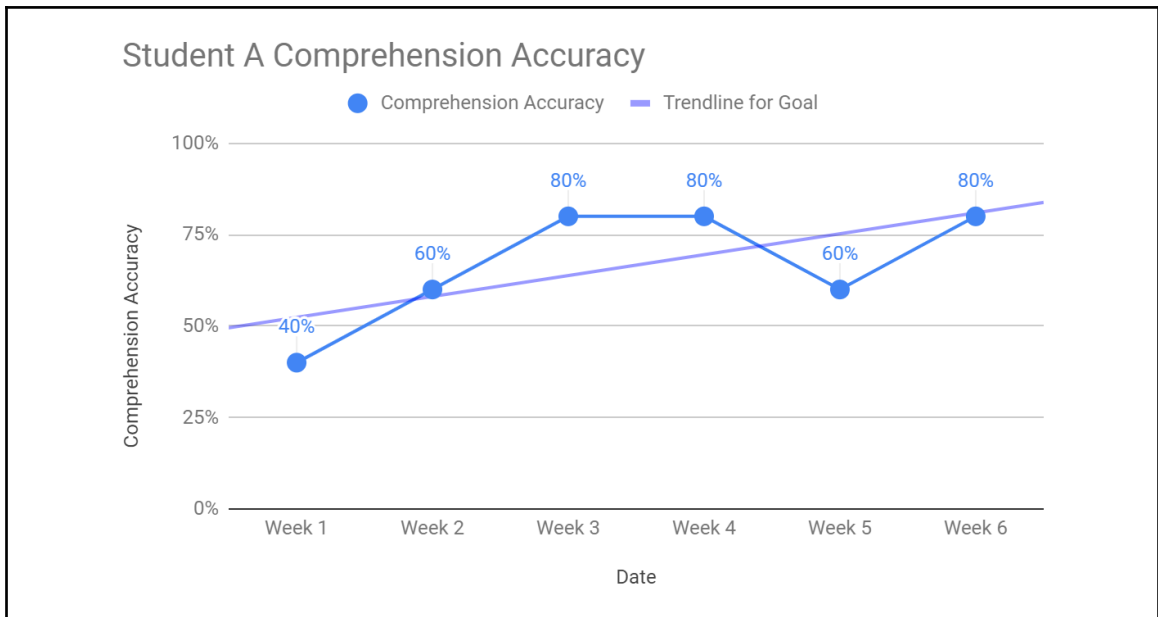


Figure 4.5 Student B Comprehension Accuracy and Trendline for 6-Week Period

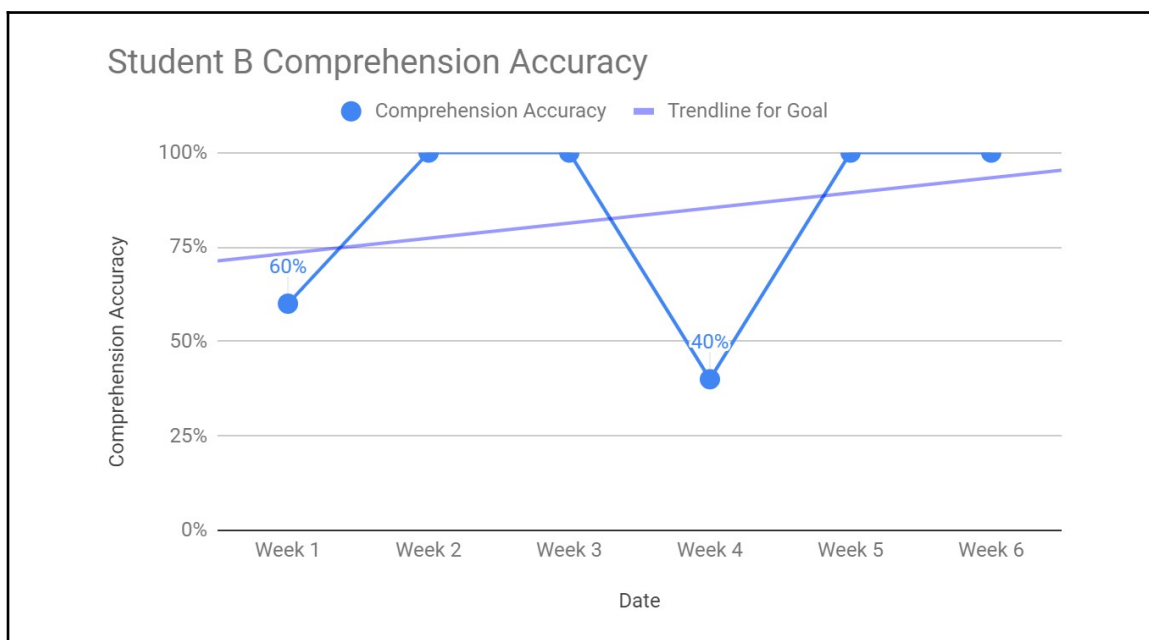
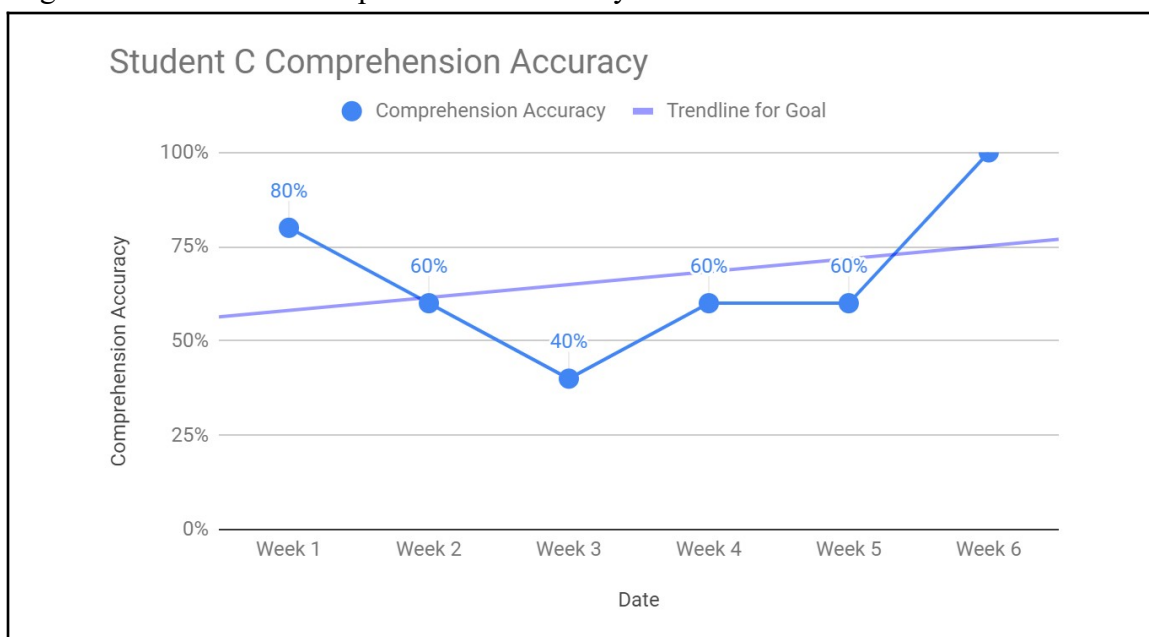


Figure 4.6 Student C Comprehension Accuracy and Trendline for 6-Week Period



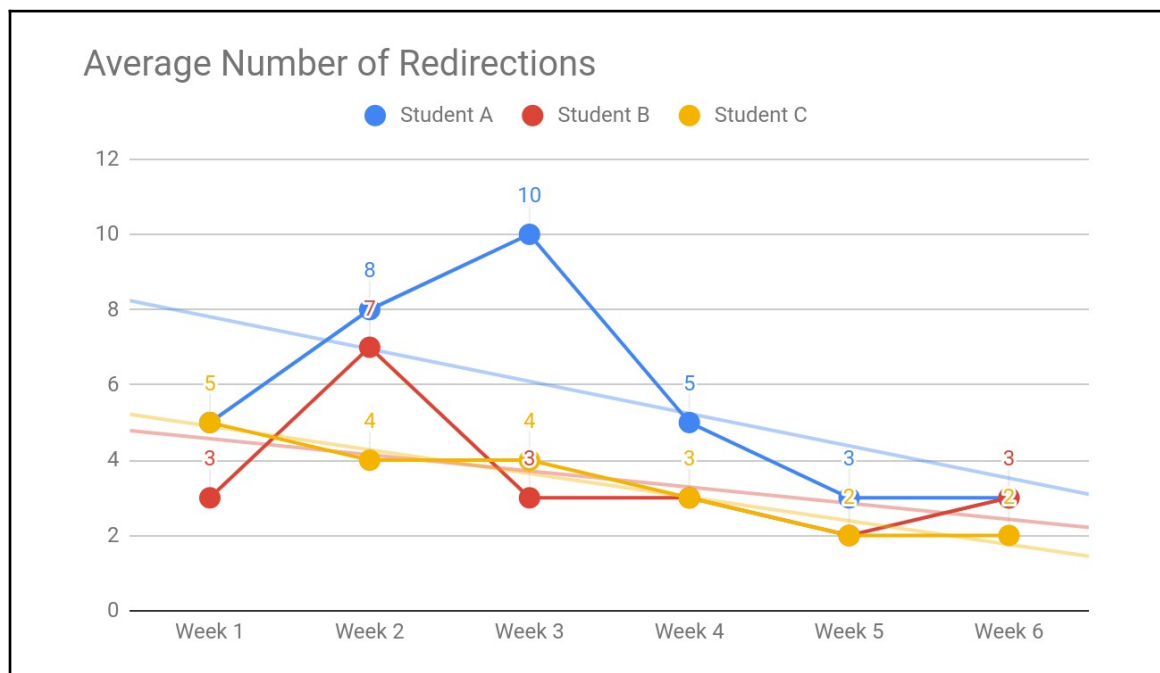
Results for all three students on the comprehension measures demonstrate a positive rate of growth, as evidenced by each graph's trendline. Again, Student A and

Student C showed overall higher scores on comprehension measures in the final three weeks of the study as compared to the initial three weeks. Though Student B did not demonstrate a change in overall scores between the two three-week periods, the trendline suggests that growth was still occurring.

Engagement

To record engagement and attention to task, a tally system was used to collect data on the number of redirections each student required to remain on task during daily lessons. These daily tallies were averaged at the end of each week to use as data points for progress monitoring and were then input into a graph to determine a trend. Figure 4.7 shows the data points and trendlines for each student in regard to the number of redirections needed throughout the six weeks of the study.

Figure 4.7 Data Points and Trendlines for the Average Number of Redirections Needed for Each Student Each Week



Students A, B, and C all demonstrated a significant decrease in the number of redirections needed in the final three weeks, after mindfulness practices were introduced. Overall engagement and attention to task improved greatly in the final three weeks of the study, once mindfulness intervention had been introduced. In addition, anecdotal notes and informal survey results indicated that students were much less physically “busy” and responded to prompting more quickly than in the initial three weeks of the study.

Summary

This chapter presented data on progress monitoring measures related to reading achievement and overall engagement during individualized reading lessons. Data were collected for three weeks without mindfulness intervention and for three weeks after introducing mindfulness intervention. The six weeks of data were presented on one graph for each student in order to demonstrate an overall trendline for the rate of growth, though particular attention was drawn to the change that had or had not occurred following the introduction of mindful practices in the final three weeks. Due to the differences in the individual reading levels and needs of each student, data were presented separately to view rates of growth and to determine the effectiveness of the mindfulness interventions for each student.

The results collected on each progress monitoring measure demonstrate overall positive trends in student achievement and engagement. Two of the students (A and C) presented markedly positive changes on all three progress monitoring measures: WCPM, comprehension, and attention to task in the three weeks after the mindfulness practice had been introduced. One student (B) did not demonstrate growth in WCPM, but did show

progress on comprehension measures and number of necessary redirections in the three weeks of mindfulness practice.

CHAPTER 5

DISCUSSION

The purpose of this study was to determine the effectiveness of mindful practices and interventions on student engagement and achievement in reading. As an elementary special education teacher, I see students struggle with executive function skills every day. Between organizing all of their materials, using working memory to hold onto important information, and having enough self-regulatory abilities to maintain focus during lessons, my students' brains are already working hard. Throw in the academic standards and social expectations of the school environment and it's not hard to understand why inattentive behaviors seem to be on the rise. The importance of physical movement in childhood is one that has long been emphasized by experts. Less recognized, however, is the importance of metacognition and self-awareness. Students are required to use metacognition and executive function skills on a daily basis in order to meet the academic benchmarks that teachers aim for. When students do not have those skills, finding success in school can be extremely challenging.

Interpretation of the Results

This study examined the effect that short mindful practices can have on students who experience struggles with maintaining attention and using self-regulation. In particular, this study looked at the benefits that mindful practices may have on reading

achievement and engagement in daily intervention. Three elementary-aged students who receive reading intervention as part of their Individualized Education Plans (IEPs) took part in this study. All three children exhibit delays in both academic knowledge and executive functioning skills. In an effort to boost their abilities and confidence levels, I began incorporating mindfulness intervention prior to their daily reading lessons. The change I saw was almost immediate in two of the students. Where, only a week before, they had struggled to keep their focus on our lessons, they were suddenly expanding on my questions and prompts. Lessons began to involve more discussion rather than lecture and students appeared to be overall happier and more alert. The progress monitoring data I collected provides a visual representation of the change I observed. All three students required fewer prompts for redirection due to their increased engagement and attention to task. The increase in comprehension scores for all three students is another indicator of improved focus. When they are able to hone in on and retain the information they read, comprehension is going to improve.

Two of the three students showed an increase in their rate of reading and accuracy, which I believe was a big result of the change in confidence that I observed. This confidence was especially evident during lessons following mindfulness activities that practiced positive affirmations and self-awareness. Interestingly, the one student who did not demonstrate growth in WCPM never chose those types of activities. Instead, they picked more of the “fun” yoga and movement videos based on popular movies or characters. While these videos helped decrease fidgeting and movement during seated lessons, they did not promote the self-awareness that other activities did.

The improvements of Students A and C on all three measures and of Student B on the comprehension and redirection measures suggest that the mindfulness intervention videos had a positive impact overall on their executive function and reading abilities. This lines up with much of the research presented in Chapter 2 and supports the idea of using mindful practices to enhance attention and self-awareness in schools. Though this was a short study with a small population of non-randomly selected students, the potential positive impact of mindfulness on other students is evident.

Limitations

There were a few limitations that arose throughout the course of my study. The first limitation was the time frame in which I had to collect data and establish routines. This study took place during the first six weeks of the 2019-2020 school year. Typically, I wouldn't expect to see much progress during this short time, especially when the first two weeks are used as a time to determine schedules, communicate expectations, and ease into the classroom curriculum. In addition, significant standardized testing was taking place district-wide during this time, as it is at the beginning of every new school year. Our district also had our Homecoming week celebrations during the fourth week of school. As is common with many students, especially those with disabilities, my students were experiencing high levels of stress and stimulation throughout the duration of my study. The results from the daily check-in surveys I had them complete frequently indicated that students were tired when I would see them for their pull-out reading intervention every morning.

The second limitation of my study was my lack of experience in mindfulness

practices. Though I have some background knowledge of yoga and meditation, I have never used it on a consistent or dedicated basis. To combat my inexperience, I looked to my research base and used reputable resources such as Cosmic Kids to guide our mindfulness practice.

A third limitation is the sample of students involved in this study. Three students took part in my research and were not randomly selected. These students all come from middle-class families who are very involved in their schooling. Furthermore, each student has an IEP specifically designed to help them work through any academic or attentional barriers in order to be successful in the structured school setting. The sample of students was very small, which impacts the opportunity for generalization of the results across diverse populations.

Implications for Future Research

I hope to see continued research on the topic of mindfulness and its use in education. With children being deprived of more movement and time to develop basic executive function skills in younger years, it is imperative that we as teachers work some form of mindfulness into our daily routines. Future researchers could attempt this study on a larger scale and for a longer period of time to determine if mindful practices truly benefit students as readers in the long term. It may also be interesting to look at older grades and/or students without special needs. I wonder if the mindfulness interventions would have the same positive effects if students did not already struggle with focus and reading. Researchers could also organize a study to look at the effect of mindfulness on basic areas of reading separately, rather than grouped together as I did. I'm curious about

whether the mindfulness itself helped in improving comprehension or if it was the increased WCPM that affected those scores. I strongly believe that doing further research on the overall effect of mindfulness on children with attention disorders would be extremely beneficial in designing and guiding instruction for those students.

Implications for Teachers and Students

The benefits of this study have already begun to affect my students outside of our special education classroom. I see more engagement in the general education classrooms and more attention to detail in written work. The students look forward to our daily mindfulness practices as a precursor to their lessons. Even students who did not take part in this study are requesting mindful breaks in our sensory room rather than iPad or toy breaks. I've also recommended the Cosmic Kids website to other teachers and have observed them using it in their classrooms. The engagement of their students during the activities is apparent in every situation I've witnessed. With further exploration into the use of mindfulness in classrooms, I think teachers could start to truly understand their students who struggle to attend and be better able to meet their needs as learners.

Conclusion

This study has shone a light on mindfulness as a regular practice and the positive impact it can have on students with executive function difficulties. It has certainly encouraged a change in my own students and I look forward to continuing our mindful explorations in the future.

REFERENCES

- Blair, C., & Raver, C. C. (2015). School Readiness and Self-Regulation: A Developmental Psychobiological Approach. *Annual Review of Psychology*, 66(1), 711-731. doi:10.1146/annurev-psych-010814-015221
- Cain, K., & Bignell, S. (2014). Reading and listening comprehension and their relation to inattention and hyperactivity. *British Journal of Educational Psychology*, 84(1), 108-124. doi:10.1111/bjep.12009
- Chimiklis, A. L., Dahl, V., Spears, A. P., Goss, K., Fogarty, K., & Chacko, A. (2018). Yoga, Mindfulness, and Meditation Interventions for Youth with ADHD: Systematic Review and Meta-Analysis. *Journal of Child and Family Studies*, 27(10), 3155-3168. doi:10.1007/s10826-018-1148-7
- Chou, C., & Huang, C. (2017). Effects of an 8-week yoga program on sustained attention and discrimination function in children with attention deficit hyperactivity disorder. *PeerJ*. doi:10.7717/peerj.2883
- Cohen, S. C., Harvey, D. J., Shields, R. H., Shields, G. S., Rashedi, R. N., Tancredi, D. J., . . . Schweitzer, J. B. (2018). Effects of Yoga on Attention, Impulsivity, and Hyperactivity in Preschool-Aged Children with Attention-Deficit Hyperactivity Disorder Symptoms. *Journal of Developmental & Behavioral Pediatrics*, 1. doi:10.1097/dbp.0000000000000552
- Cunningham, W. A., Zelazo, P. D., Packer, D. J., & Bavel, J. J. (2007). The Iterative Reprocessing Model: A Multilevel Framework for Attitudes and Evaluation. *Social Cognition*, 25(5), 736-760. doi:10.1521/soco.2007.25.5.736
- Data and Statistics About ADHD | CDC. (n.d.). Retrieved July 15, 2019, from <https://www.cdc.gov/ncbddd/adhd/data.html>
- Ehm, J., Koerner, J. K., Gawrilow, C., Hasselhorn, M., & Schmiedek, F. (2016). The association of ADHD symptoms and reading acquisition during elementary school years. *Developmental Psychology*, 52(9), 1445-1456. doi:10.1037/dev0000186

- Felver, J. C., Tipsord, J. M., Morris, M. J., Racer, K. H., & Dishion, T. J. (2014). The Effects of Mindfulness-Based Intervention on Children's Attention Regulation. *Journal of Attention Disorders*, 21. doi:10.1177/1087054714548032
- Gallant, S. N. (2016). Mindfulness meditation practice and executive functioning: Breaking down the benefit. *Consciousness and Cognition*, 40, 116-130. doi:10.1016/j.concog.2016.01.005
- Kegel, C. A., & Bus, A. G. (2013). Evidence for Causal Relations between Executive Functions and Alphabetic Skills Based on Longitudinal Data. *Infant and Child Development*, 23(1), 22-35. doi:10.1002/icd.1827
- Kibby, M. Y., Lee, S. E., & Dyer, S. M. (2014). Reading performance is predicted by more than phonological processing. *Frontiers in Psychology*, 5. doi:10.3389/fpsyg.2014.00960
- Martinussen, R., Grimbos, T., & Ferrari, J. L. (2014). Word-Level Reading Achievement and Behavioral Inattention: Exploring Their Overlap and Relations with Naming Speed and Phonemic Awareness in a Community Sample of Children. *Archives of Clinical Neuropsychology*, 29(7), 680-690. doi:10.1093/arclin/acu040
- Mcgrath, L. M., Pennington, B. F., Shanahan, M. A., Santerre-Lemmon, L. E., Barnard, H. D., Willcutt, E. G., . . . Olson, R. K. (2010). A multiple deficit model of reading disability and attention-deficit/hyperactivity disorder: Searching for shared cognitive deficits. *Journal of Child Psychology and Psychiatry*, 52(5), 547-557. doi:10.1111/j.1469-7610.2010.02346.x
- Miller, A. C., Fuchs, D., Fuchs, L. S., Compton, D., Kearns, D., Zhang, W., . . . Kirchner, D. P. (2014). Behavioral Attention: A Longitudinal Study of Whether and How It Influences the Development of Word Reading and Reading Comprehension Among At-Risk Readers. *Journal of Research on Educational Effectiveness*, 7(3), 232-249. doi:10.1080/19345747.2014.906691
- Miller, A. C., Keenan, J. M., Betjemann, R. S., Willcutt, E. G., Pennington, B. F., & Olson, R. K. (2012). Reading Comprehension in Children with ADHD: Cognitive Underpinnings of the Centrality Deficit. *Journal of Abnormal Child Psychology*, 41(3), 473-483. doi:10.1007/s10802-012-9686-8
- Miranda, A., Colomer, C., Mercader, J., Fernández, M. I., & Presentación, M. J. (2015). Performance-based tests versus behavioral ratings in the assessment of executive functioning in preschoolers: Associations with ADHD symptoms and reading achievement. *Frontiers in Psychology*, 06. doi:10.3389/fpsyg.2015.00545

- Mochan, M. (2017). The Benefits of Teaching Yoga to Young Children with Special Needs: Developing an Appropriate Methodology. *International Journal of Technology and Inclusive Education*. doi:10.20533/ijtje.2047.0533.2017.0143
- Mussey, S. S. (2019). *Mindfulness in the classroom: Mindful principles for social and emotional learning*. Waco, TX.: Prufrock Press.
- Nanthakumar, C. (2018). The benefits of yoga in children. *Journal of Integrative Medicine*, 16(1), 14-19. doi:10.1016/j.joim.2017.12.008
- Razza, R. A., Bergen-Cico, D., & Raymond, K. (2013). Enhancing Preschoolers' Self-Regulation Via Mindful Yoga. *Journal of Child and Family Studies*, 24(2), 372-385. doi:10.1007/s10826-013-9847-6
- Sáez, L., Folsom, J. S., Otaiba, S. A., & Schatschneider, C. (2011). Relations Among Student Attention Behaviors, Teacher Practices, and Beginning Word Reading Skill. *Journal of Learning Disabilities*, 45(5), 418-432. doi:10.1177/0022219411431243
- Shapiro, S. L., Lyons, K. E., Miller, R. C., Butler, B., Vieten, C., & Zelazo, P. D. (2014). Contemplation in the Classroom: A New Direction for Improving Childhood Education. *Educational Psychology Review*, 27(1), 1-30. doi:10.1007/s10648-014-9265-3
- Stevens, C., Harn, B., Chard, D. J., Currin, J., Parisi, D., & Neville, H. (2011). Examining the Role of Attention and Instruction in At-Risk Kindergarteners. *Journal of Learning Disabilities*, 46(1), 73-86. doi:10.1177/0022219411417877
- Takacs, Z. K., & Kassai, R. (2019). The Efficacy of Different Interventions to Foster Children's Executive Function Skills: A Series of Meta-Analyses. *Psychological Bulletin*, 145(7), 653-697. doi:10.1037/bul0000195
- Tang, Y., Holzel, B., & Posner, M. (2015). The neuroscience of mindfulness meditation. *Nature Reviews Neuroscience*, 16. doi:10.1038/nrn3916
- Tarrasch, R., Berman, Z., & Friedmann, N. (2016). Mindful Reading: Mindfulness Meditation Helps Keep Readers with Dyslexia and ADHD on the Lexical Track. *Frontiers in Psychology*, 7. doi:10.3389/fpsyg.2016.00578
- Woltering, S., Lishak, V., Hodgson, N., Granic, I., & Zelazo, P. D. (2015). Executive function in children with externalizing and comorbid internalizing behavior problems. *Journal of Child Psychology and Psychiatry*, 57(1), 30-38. doi:10.1111/jcpp.12428

Zelazo, P. D. (2015). Executive function: Reflection, iterative reprocessing, complexity, and the developing brain. *Developmental Review*, 38, 55-68.
doi:10.1016/j.dr.2015.07.001

Zelazo, P. D., Blair, C. B., and Willoughby, M. T. (2017). *Executive Function: Implications for Education (NCER 2017-2000)*. Washington, DC: National Center for Education Research; Institute of Education Sciences, U.S. Department of Education. Available online at: <http://ies.ed.gov/>

Zelazo, P. D., Forston, J. L., Masten, A. S., & Carlson, S. M. (2018). Mindfulness Plus Reflection Training: Effects on Executive Function in Early Childhood. *Frontiers in Psychology*, 9. doi:10.3389/fpsyg.2018.00208