Using Mindfulness Practices to Increase Self-Regulation in Pre-Kindergarten and Kindergarten-Aged Children

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USING MINDFULNESS PRACTICES TO INCREASE SELF-REGULATION IN PRE-KINDERGARTEN AND KINDERGARTEN-AGED CHILDREN

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Abstract

BACKGROUND: *Self-regulation* is identified in the literature as an early predictor of later life success and an important skill that develops over the course of a lifetime beginning in early childhood (Flook et al., 2015; Montroy et al., 2016; Murray et al., 2017). OBJECTIVE: The purpose of this research study was to assess whether direct instruction of Mindfulness Practices, such as guided meditation and yoga poses (Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo et al., 2012) would increase self-regulatory behaviors, such as impulse control, emotion regulation, and problem-solving in pre-kindergarten and kindergarten aged children. METHOD: Target children were chosen based on teacher nomination of children who displayed a lack of self-regulatory behaviors in combination with the results of the Ages and Stages Questionnaire (Squires & Bricker, 2009). A Mindfulness Practices Intervention, consisting of yoga poses and guided mediation was implemented using a multiple baseline design across classrooms. Data were collected using interval recording for a 10-minute observation daily over a six to nine-week period using an iPhone. Child's self-regulatory behaviors were recorded using behavior definitions modified from the Regulation-Related Skills Measure (RRSM) (McCoy et al., 2017). RESULTS: All three targeted children displayed increases in self-regulatory behaviors after the Mindfulness Practices were introduced. CONCLUSION: Teacher should consider integrating Mindfulness Practices within their daily classroom schedule, as these practices can positively impact students' self-regulatory behaviors.

Chapter 1. Introduction

Justification

There is a growing body of literature that supports the development of self-regulation in young children, adolescents, and young adults, as these are skills used and developed throughout a lifespan (Flook et al., 2015; Montroy et al., 2016; Murray et al., 2017). Self-regulation begins in early childhood when brain development is considered rapid and dynamic (Geng et al., 2017; Gilmore et al., 2018). It is during these early years of a human's life that the brain is also considered malleable (Murry & Rosanbalm, 2017; Nieminen & Sajaniemi, 2016; Pakulak et al., 2017). Therefore, this is the most opportune time to begin building self-regulatory behaviors in young children. Montroy et al. (2016) notes that children between the ages of 3 and 7 years-old experience a qualitative shift in self-regulation as children progress from "reactive […] to more advanced, cognitive-behavioral forms of *self*-regulation (e.g., Diamond, 2002; Kopp, 1982) that likely require the integration of many skills, such as executive functions and language skills (Calkins, 2007; Cole et al., 2010)" (p. 1744). Rather than being reactive in impulses, emotions, and thoughts, children can learn from a young age how to be proactive in each of these domains. One way to measure verbal and non-verbal thought is to measure behavior (Dörr & Perels, 2019). To influence self-regulatory behavior, many researchers suggest implementing mindfulness-based practices within the context of a human's life. Successful research conducted using adult participants and mindfulness practices are now being adapted and implemented with younger children (Razza et al., 2015; Zelazo & Lyons, 2012). Mindfulness-based practices show a promising result for children's development of self-regulation skills. These feasible daily interventions can also be easily integrated by teachers into their classroom routines at little to no cost.

Mindfulness Practices Intervention

Mindfulness is defined by Murray and Rosanbalm (2017) as a "technique of intentionally focusing attention on one's emotions and thoughts in the present moment and accepting these thoughts and feelings without judgment" (p. 5). Mindfulness is a person's present awareness of their body, mind, and breath. A person can become more mindful through the use of mindfulness-based practices, some of which include guided meditation, yoga stretching, or body scanning (Chimiklis et al., 2018; Lee et al., 2020; Zelazo & Lyons, 2012). In this research study, Mindfulness Practices consisted of adult-led guided meditation and yoga poses, which research suggests led to increased mindfulness and self-regulatory behaviors in children (Harris et al., 2016; Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo & Lyons, 2012). Both of these intervention strategies are considered appropriate for young children. Zelazo and Lyons (2012) state that mindfulness practices being used with younger children should have a shorter duration (approximately 3 minutes) and include physical movement (Burke, 2010; Kaiser-Greenland, 2010). These recommendations were considered during the design of the current study. By implementing age-appropriate mindfulness practices, their mindfulness should increase, resulting in an increase of self-regulatory behaviors as well.

Purpose

The purpose of this study is to measure the effect of mindfulness practices on children's self-regulatory behavior (i.e. impulse control, emotional regulation, problem solving). The students targeted for this study were selected based on teacher nomination for exhibiting the least amount of self-regulatory behaviors out of the entire class in combination with the results of the Ages and Stages Questionnaire (Squires & Bricker, 2009). A modified version of the *Related Regulatory Skills Measure* (RRSM; McCoy et al., 2017) was then used to track those students'

behaviors throughout the study. The Mindfulness Practices were then applied by the researcher each morning in each of the three classrooms. During baseline and intervention, the students' behaviors were observed and assessed. During the intervention, each teacher and the researcher were asked to record their fidelity of implementation to ensure the intervention was being applied regularly, as is recommended practice (Razza et al., 2015).

Theoretical Framework

This framework explains the theoretical ideas that support mindfulness and self-regulation in young children. There is "longstanding theoretical support for the role of language in helping to regulate children's behavior" (Bohlmann et al., 2015, p. 1105; Vygotsky, 1934/1986). Through the use of Mindfulness Practices teachers are able to provide students with the language and scaffolding necessary to help children learn problem solving and emotional regulation skills. According to Montroy et al. (2016), "language is thought to give children 'mental tools' to help them organize and modify their thoughts and behaviors (Vygotsky, 1934/1986)" (p. 1747; Bohlmann et al., 2015). Children develop this language when their parents and teachers model how to act, solve problems, and self-regulate (Fay-Stammbach, 2014; Florez, 2011). Bodrova et al. (2013) concluded that play time was the most opportune time for children to develop their self-regulation skills, specifically through role play and peer interactions. Dörr & Perels (2019) then used this knowledge to conduct a study in which they tracked verbal and nonverbal behaviors of children during play. Observing children at play helps researchers to externalize children's inner thought processes and language as much as possible. Lastly, the construct of self-regulated skills is learned and can be deliberately taught on a daily basis to engage children in direct social emotional development of skills and prepare them for life success (Florez, 2011).

Research Questions

The present study sought to determine the effects of a Mindfulness Practices on young children's self-regulatory behavior. Specifically, we sought to determine if (1) mindfulness practices could be implemented within the school day with fidelity, and (2) mindfulness practices increased self-regulatory behavior in pre-kindergarten and kindergarten aged children.

Research Design

This study used a single-case research design to determine the effects of Mindfulness Practice Interventions on self-regulatory behaviors in young children. Specifically, a multiple baseline design was used to determine the effect of intervention across each student's behavior. Multiple baseline designs "demonstrate the effect of an intervention by showing that behavior changes when an only when the intervention is applied" (Kazdin, 2011, p. 145). Data were collected on three students, each from a different classroom for a span of six to nine weeks. According to the *What Works Clearinghouse for Single Case Design*, the standard of practice is to collect a minimum of five data points in each phase of the study across each condition (Kratochwill et al., 2010). Once baseline data is established as "stable," interventions on each subject will begin at different times (Kazdin, 2011, p. 145). Although this design is criticized for "withholding" interventions for a period of time, this is necessary to determine the effectiveness of an intervention (Kazdin, 2011, p. 161). On the other hand, once the intervention is applied "it need not be withdrawn" (Kazdin, 2011, p. 144). Thus, "multiple baseline designs do not share the practical or ethical concerns raised in ABAB designs by temporarily withdrawing an intervention" (Kazdin, 2011, p. 144). When examining data in multiple baseline designs, a critical component is the "comparison of performance across the behaviors at the same point in time" (Kazdin, 2011, p. 146).

Benefits

Self-regulation is considered by many to be a lifelong skill (Florez, 2011; Rosanbalm & Murray, 2017) and an indicator of life success (Montro et al., 2016; Zelazo & Lyons, 2012). Children and adults alike need self-regulation in order to work in communion with others, maintain attention, use problem-solving skills, and control their emotions. Lonigan et al. (2017) provides research-based evidence that "regulatory processes are strong correlates of early academic skills (e.g., Blair & Razza, 2007; Fuhs et al., 2015; Walcott et al., 2010)" (p. 72). The use of language both internal speech and expressive vocabulary have also been known to help children develop self-regulation and enhance academic achievement (Bohlman et al., 2015; Vygotsky, 1934/1986).

In recent years, researchers have used mindfulness practices to increase attentiveness, reduce stress, and enhance effective teaching practices in adults (Harris et al., 2015; Hirshberg et al., 2020). As a result, mindfulness interventions are being practiced with children as well. The correlation between self-regulation and mindfulness stems from activation of the prefrontal cortex (Lonigan et al., 2017; Garon et al., 2008). The prefrontal cortex is used to help regulate emotions, contribute to the development of executive function skills. Because the prefrontal cortex is the last known part of the brain to develop (Perlman et al., 2010; Rakic et al., 1994), children are not always able to self-regulate. Over time children will develop these skills of self-regulation with the help of their teachers and parents. As neuroscientists are learning more about how the human brain develops, their research informs educators of children's development. In turn, teachers use more developmentally appropriate practices that can influence the success of children's development and academic achievements.

Limitations

Due to the nature of data collection, the participants were aware that the researcher is watching them. This had the potential to produce a *Hawthorne Effect;* meaning that the participants many have modified their behaviors knowing that they were being observed and videotaped (Cook, 1962). A major threat to external validity of this research project was *reactive assessment,* which was defined by Kazdin (2011) as "the extent to which subjects are aware that their behavior is being assessed and that this awareness may influence how they respond" (p. 33). The teachers and students were asked to complete satisfaction surveys at the close of the study. It was not explicit that the surveys were anonymous, which may have influenced teachers and students' responses about their experiences with Mindfulness Practices. A major threat to internal validity was *maturation*, which Kazdin (2011) defines as "any change overtime that may result from processes within the subject" (p. 30). Process of maturation could have influenced the students as their natural development simultaneously occurs during the intervention. These threats were considered when evaluating observational data in this study.

Assumptions

1. There was no known reliability measure for this self-report method, other than to trust that the teachers are telling the truth (Razza et al., 2015).
2. Mindfulness techniques were feasible for every teacher to implement in his/her daily schedule (Poehlmann-Tynan et al., 2016).
3. Students who were more mindful were better able to regulate their body, emotions, and thoughts (Zelazo & Lyons, 2012).

Definitions

Self-regulation

Self-regulation was defined by Murray and Rosanbalm (2017) “as the act of managing thoughts and feelings to enable goal-directed actions, including a variety of actions necessary for success in schools, relationships, and the workplace" (p. 1). Children practice self-regulatory behaviors daily to manage their emotions, behaviors, and feelings of success in school (McCoy et al., 2017).

Executive Function

“Executive function includes a diverse set of psychological processes, including core cognitive skills, such as inhibitory control, working memory, and cognitive flexibility, that emerge in infancy and undergo robust changes during childhood, with marked improvements observed between 3 and 5 years of age (Diamond 2013)” (Pakulak et al., 2017, p. 4).

Executive function skills are the brains higher order cognitive processes that support self-regulation (i.e. inhibitory control, attention shifting, working memory) (McCoy et al., 2017).

Regulated-related skills

Regulated-related skills are a combination of both executive function skills and self-regulatory skills “that help individuals control their attention, emotions and behaviors” (McCoy et al., 2017). Specifically, these skills include impulse control, emotion regulation, problem solving, attention control, attention shifting, and working memory.

Inhibitory Control

Inhibition or inhibitory control is defined as “the ability to inhibit or control impulsive (or automatic) responses and create responses by using attention and reasoning” (Cognifit.com).

Impulse Control. *Impulse control* is defined as one's ability to control physical movements, ignore distractions during an activity, follow classroom rules and routines independently, inhibit inappropriate or automatic responses and enact appropriate responses, and wait for something (McCoy et al., 2017).

Emotion Regulation. *Emotion regulation* is defined as one's ability to modulate emotional arousal or maintain appropriate level of emotional arousal in response to classroom expectations and regulate behavior in the face of own emotional arousal (McCoy et al., 2017).

Problem-Solving. *Problem-solving* is defined as one's ability to show evidence of independent planning or monitoring, co-create and/or follow group norms or rules when interacting with peers, and show evidence of ability to solve and cope with social dilemmas and conflicts with peers (McCoy et al., 2017).

Mindfulness

Mindfulness was defined by Murray and Rosanbalm (2017) as a "technique of intentionally focusing attention on one's emotions and thoughts in the present moment and accepting these thoughts and feelings without judgment" (p. 5).

Mindfulness Practices. *Mindfulness Practices* includes adult-led guided meditation and yoga poses (Greenberg & Harris, 2012; Harris et al., 2015; Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo & Lyons, 2012).

Chapter 2. Literature Review

From a very young age children begin to develop self-regulatory behaviors that support academic and lifelong success. Self-regulation serves as a foundational skill that lays the path for virtually all learning that comes after that by seeking to enhance impulse control, emotional regulation, and problem solving (Entwisle & Alexandar, 1999; Caughy et al., 2018). Children lacking the ability to self-regulate will be more dependent on the environmental supports around them and will lack attentiveness (Caughy et al., 2018). Providing teachers with the skills and tools necessary to teach self-regulatory behaviors is imperative for young children's social-emotional and academic development (Caughy et al., 2018; Copple & Bredekamp, 2009; Florez, 2011). Therefore, it is important to investigate children's use of self-regulatory behaviors and the feasibility of implementation for mindfulness strategies, which seek to develop self-regulation skills.

Self-Regulation

Self-regulation is a developing skill that allows children to "manag[e his/her] thoughts and feelings to enable goal-directed actions" (Murray and Rosanbalm, 2017, p. 1). Self-regulation develops over time as young children grow and mature. This is a skill that was first studied in adults. Research studies used mindfulness practices with teachers to influence their self-regulatory behaviors (Harris et al., 2016; Hirshberg et al., 2020; Jennings et al., 2013). Teachers were targeted, as they tend to have fully developed brains, practice compliance to methods, and greatly impact the mood of the classroom. Once mindfulness practices were deemed effective on teachers, the audience shifted to using similar methods on adolescents and young children (Montroy et al., 2016). Throughout this section, the researcher describes the relevance of self-regulation research and its significance for both the adult and child participants.

Developmentally Appropriate Practice (DAP)

As this is a child participant research study, it should be noted that the practices discussed throughout the paper aim to align with the National Association for the Education of Young Children's (NAEYC) Developmentally Appropriate Practices (DAP) Position Statement. The DAP Position Statement is a framework grounded in research and knowledge of child development and teacher practices that aims to help children reach their full developmental potential (Copple & Bredekamp, 2009). With the goal of provided appropriate research methods that fit in the field of Early Childhood Education, researchers sought to design this study to fit the developmental needs of children. The mindfulness practices used with adults were used and modified to align with the DAP framework in the interest of each child reaching his/her full developmental potential.

Adapted for Children

First came the literature that focused on using Mindfulness Practices in adults to enhance the development of their own self-regulation skills. Researchers began implementing mindfulness practices (yoga and meditation) with teachers in efforts to reduce stress and measure feasibility of practices within the context of the classroom (Harris et al., 2015). Results suggested that the use of mindfulness practices had "small to moderate effect sizes" on teachers' self-regulatory behaviors but were also well received by educators and feasible for educator implementation with fidelity (Harris et al., 2015, p. 149). Researchers designed "intervention sessions [that] were scripted" and included at least "(b) 2 min of breathing practices; (c) 7-10 min of movement/posture practice; (d) revisiting the breathing practice" (Harris et al., 2015, p. 145). These practices were considered and adapted to fit the even shorter attention span of the four and five-year-old children for the present study.

Another reason to begin by targeting teachers in the classroom is to affect the environment of the classroom. Hirshberg et al. (2020) displays the positive impact of teachers' own use of daily mindfulness practices, spanning nine weeks, on classroom environments through the use of the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008). The two areas with the greatest impact included positive improvements of Instructional Supports and Classroom Organization. These findings align with the NAEYC's DAP Position Statement through teachers use of scaffolding and organization to "creat[e] a caring community of learners" (Copple & Bredekamp, 2009, p. 16). The term scaffolding is an instructional technique, teachers use in order to provide minimal support to learners who need help building their skills (Copple & Bredekamp, 2009). This Vygotskian tool provides teachers with a way to aid in children's development while also setting them up for lifelong, academic success.

Learning how to self-regulate from a young age will promote well-being in adulthood. The use of mindfulness practices "help[ed] teachers regulate their emotional reactivity in proactive situations by applying mindful awareness to emotional experience: noticing the physical sensations and cognitions associated with their reactions and when needed, taking a few deep breaths" (Jennings et al., 2013, p. 385). These practices look similar for children but not exactly the same. To be considered DAP researchers have modified this language and mindfulness practice to meet children where they are. The importance of this study to show that the teacher modeling of mindfulness and use of self-parallel talk throughout can provide a positive example for children on how to handle situations when they are emotionally aroused. While children might not be able to internalize speech in such a way that they are noticing their bodily sensations at the moment, children are able to stop and breath before responding to a situation. According to Rosanbalm & Murry (2017), self-regulation in preschool-aged children is

"recognizing a growing array of feelings in self and others, identifying solutions to simple problems, with support, using strategies like deep breaths and self-talk to calm down, focusing attention and persisting on difficult tasks for increased lengths of time, and perspective-taking and early empathy" (p. 4). There are many long-term benefits from practicing self-regulation, especially working cooperatively, problem solving, controlling emotions, and focusing attention.

Overall, each of these studies provides a good example of how teachers can benefit from mindfulness, impact the students in their classrooms, and how researchers can use these practices to modify for child use. Through practice, training (Heatherton & Wagner, 2011), and repetition (Zelazo et al., 2018), self-regulation is a skill that develops through interactions with those around us (i.e. teachers, caregivers, and peers) and the use of our environment (Murry & Rosanbalm, 2017). In efforts to promote a positive learning environment for both teachers and children, researchers look to Mindfulness Practices as a means of teaching children self-regulated skills and prosocial behaviors, as these are predictors of academic and lifelong success.

Why Preschool

Recent advances in cognitive neuroscience and developmental psychology, have taught researchers more about the brain and how it structurally develops (Dike, 2017). This is important to note because the prefrontal cortex is a region of the brain that controls the ability for children to self-regulate. With this being one of the last regions of the brain to develop (Perlman & Pelphrey, 2010), educators are reminded to set reasonable expectations for young children. Previous research suggests "that behavioral self-regulation develop(s) in a nonlinear fashion with early, rapid gains during […] preschool (e.g., Cameron Ponitz et al, 2008; Diamond, 2002; Wiebe et al, 2012)" (Montroy et al., 2018, p. 1755). Due to the rapid growth in development during the preschool years, Mindfulness Practices are expected to heighten the self-regulatory

skills that are already being developed (Lemberger-Truelove et al., 2018). Children ages four and five were chosen for this study, which provides teachers with the unique opportunity to foster lifelong skills of emotional regulation, impulse control, and problem solving within young children.

Child Development

The children chosen to participate in this study are within preschool age, four-five years old. One male is an English Language Learner (ELL), one male is an English-speaking child, and one female is an English-speaking child. According to Montroy et al. (2018) girls are "associated with earlier development trajectories" and "higher levels of expressive language at the start of preschool [as is] associated with earlier development" (p. 1756; Bohlmann et al., 2015; Montroy et al., 2016). This literature could explain why the trends in self-regulation look different among different genders. Bohlmann et al. (2015) "link[s] self-regulatory processes and language development" through "bidirectional associations between English expressive vocabulary and self-regulation" (p. 1094). Thus, Bohlmann et al. (2015) explains the effects of intervention on ELL and native English Learners. Despite the differences in linguistics, all three of these children attend a Title I school, where the entire student population is considered socioeconomically disadvantaged. This commonality affects children's self-regulation as poverty can cause delays in children's language development (Fernald et al., 2013; Hart & Risely, 1995; Montroy et al., 2016). With strong correlations between self-regulation and expressive vocabulary, there may be a reason that these children have not yet developed their self-regulatory skills. From Flook et al. (2015), research shows the greatest impact of Mindfulness Practices happen for children who are on the lower end of baseline functioning. The introduction of

Mindfulness Practices will hopefully increase their self-regulation behaviors before they advance to the next grade level.

Academic Achievement

Children succeed best when they have a safe, supportive community and classroom to learn in (Copple & Bredekamp, 2009). When examining the relationship between preschoolers' self-regulation and early literacy skills, Lonigan et al. (2017) found that "self-regulation is associated with both socioemotional and academic outcomes (e.g. Allan et al., 2014; Jacob & Parkinson, 2015; Schoemaker et al., 2013)" (p. 63). The reason being because "self-regulation enables individuals to override more automatic or established responses, typically in the service of goal-directed behaviors" (Lonigan et al., 2017, p. 63). Academic achievement is crucial to setting children up for lifelong success. Aiding children in this type of behavior control and early learning prepares students for formal schooling (Caughy et al., 2018). Goal-oriented thoughts and emotional regulation are foundational skills that prepare children for success in school and in life (Florez, 2011). Yet, due to an emphasis on other subject content, these skills and tools "are rarely taught explicitly in schools" (Flook et al., 2015, p. 44). This hinders teachers from developing the whole child, in areas of social-emotional development. As stated in NAEYC's (2020) *Principles of Child Development and Learning that Inform Practice*, "all domains of development and learning – physical, social and emotional, and cognitive – are important, and they are closely interrelated" (p. 11). Each of these domains prepares children for formal schooling. According to Skibbe et al. (2011), school readiness also "includes emotional maturity and social competencies, such as self-regulation, as well as general knowledge, cognitive ability, and language development (Boethel, 2004; Duncan et al., 2007; Pianta, 2002)" (p. 42). By

introducing Mindfulness Practices through DAP interventions, teachers can support their lesson plans to achieve full school readiness.

Theoretical Framework Extended

Theoretical perspectives that inform this research include the theories of thought and language in context (Vygotsky, 1986) and theories of egocentric speech (Miller, 2016; Vygotsky, 1986). Grounded in sociocultural theories, Vygotsky's (1978) work assumes that children use inner speech to think about their words and actions before trying to solve a problem. The Vygotskian theory of 'inner speech' is difficult to track since researchers are unable to visibly or verbally measure thoughts. As a result, Dörr & Perels (2019) tracked verbal and nonverbal behaviors as a means to externalize the inner thoughts that children exhibited during play. This unique way of analyzing children's play and behaviors within the classroom environment informs the methodology used to conduct the current research.

The use of Vygotsky's Sociocultural Theory provides support for children's cognitive and social-emotional development through the role of language, scaffolding, teaching within the zone of proximal development (ZPD), and using mindfulness during play.

Role of Language

Vygotsky emphasis children's use of language, specifically expressive language, as a way to vocalize self-regulatory practices until they develop inner speech (Bohlmann et al., 2015; Montory et al., 2016). Vygotsky (1978) asserts that "just as a mold gives shape to a substance, words can shape an activity into a structure" (p. 28). Vygotsky's theories define language and the effects that it has on children when they construct their knowledge through the use of language and hands-on learning experiences, such as play. The roles of thought and language tie into a child's ability to self-regulate their emotions and attention, which then influences their behaviors.

The concepts of egocentric speech and inner speech play a role in Vygotsky's (1986) theories about thought and language. Vygotsky (1987) notes that "egocentric speech should be regarded as a transitional form between external and internal speech. Functionally, egocentric speech is the basis for inner speech, while in its external form it is embedded in communicative speech" (p. 27; Miller, 2016). To observe children's behaviors and infer a children's thought process, researchers can note the egocentric speech that children are able verbally or nonverbally communicate. These uses of egocentric speech and inner speech help children transition and grow in self-regulation skills as they grow in their use of language.

When looking at self-regulation in young children, it is important to note the speech that they use and the actions that are paired with those words. Verbal and nonverbal communication are important as they help explain children's rationale for acting a certain way. Vygotsky's theories of egocentric speech and inner speech help to inform this research as children transition from internal thoughts to external actions. Dörr and Perels (2019) studied metacognitive abilities in preschool children as they are a precursor for self-regulation skills. Their study noted direct interventions "address[ing] the learners themselves with the aim of optimizing learning behavior" and indirect interventions as those that "optimiz[e] the learning environment in a way that optimal learning opportunities can be created" (p. 450-451). These definitions inform practices that impact self-regulation through external means of environment and speech. Thus, informing the proposed research in term of data collection and environment in which the children will be observed. While these direct and indirect interventions are external, the results showed that the use of modeling and repetition influences child's ability to internalize the speech and improve on their self-regulation skills. As a result of the study "children showed more control behavior while solving problem-solving task[s] after the intervention" (Dörr and Perels, 2019, p.

453). The ability to sustain attention on a task that requires problem solving depicts the child's ability to self-regulate his/her emotions and attention. This informs the proposed research study through the importance of noting problem solving tasks and the sustained attention.

Scaffolding

Scaffolding is the idea that a more skilled individual provides a child just enough assistance to guide and avoid frustration with the task at hand. As the child develops the necessary skills to complete the task, the more skilled individual lessens the support so that the child is given opportunities to independently complete the task (Copple & Bredekamp, 2009). Some studies have concluded the importance of scaffolding on the development of self-regulation, as it is a learned skill (Fay-Stammbach et al., 2014; Florez; 2011). Florez (2011) states that "when teachers deliberately teach self-regulation as part of everyday experience, they help children become actively engaged learners, laying the foundation for years of future success in school and life" (p. 51). As teachers use Mindfulness Practices, they are using explicit instruction and example of how to calm the body down and think clearly.

Zone of Proximal Development (ZPD)

Teachers also need to modify their Mindfulness Practices to best teach within a child's ZPD. Vygotsky (1997) states that ZPD "characterizes the difference between what the child is capable of himself and what he can become capable of with the help of a teacher" (p. 29). Making the durations of time shorter for younger children is an example of how to teach within a child's ZPD and cater to the needs of attention. Another example would be if a student is not physically able to keep his/her balance during the yoga pose, a teacher could scaffold by modifying the pose or providing physical support by holding the child's hand until the child gains his/her balance. Fay-Stammbach et al. (2014) concludes that parents can help their children

through language, scaffolding, sensitivity, stimulation, or physical and verbal prompting. These are also teacher tools that can be applied to the everyday classroom to best promote mindfulness and self-regulated skills.

Play and Mindfulness

Vygotsky's theory of thought and language in the context of play and mindfulness supports the current study. During these daily activities, children internalize language in such a way that they are able to "solve practical tasks with the help of their speech, as well as their eyes and hands" (Vygotsky, 1978, p. 26). Through the use of hands-on learning and engagement the Mindfulness Practices are supported by Vygotsky's theories as they use mindful language, movement, and teacher scaffolding. Incorporated in the Mindfulness Practice is the recommended use of child's choice (Copple & Bredekamp, 2009). Children are not only expected to engage in mindfulness, but they are given the chance to lead their peers and build their leadership skills as well. Supported by Russell et al. (2016), these researchers consider language to be an important insight of children's organizational tools that help young children to regulate "their internal experiences and their relationships" (p. 164). Through these Mindfulness Practices teachers are working towards creating a caring community of learners as recommended by NAEYC (Copple & Bredekamp, 2009).

Summary

In conclusion, Vygotsky's sociocultural theory and the use of scaffolding, teaching within the ZPD, and modeling all provide theoretical support for the use of mindfulness to aid in the development of self-regulation. Using egocentric speech and inner speech as language skills develop are natural developmental processes that are influenced by teacher modeling. Teachers

can also explicitly teach self-regulation through the use of mindfulness as long as the instruction is within the child's ZPD and scaffolded when necessary.

Mindfulness

A promising way to positively impact the development of self-regulation in young children is through mindfulness (Nieminen & Sajaniemi, 2016). As stated previously, mindfulness for the purposes of this study is a "technique of intentionally focusing attention on one's emotions and thoughts in the present moment and accepting these thoughts and feelings without judgment" (Murry & Rosanbalm, 2017, p. 5). Chosen for its skillful articulation of words, this definition provides a description of the multifaceted skill of being mindful. According to Greenberg and Harris (2012), there is a need for research that is well designed, experimental in nature, and grounded in developmental theory to test the effectiveness of yoga and mindfulness. This study responses to Greenberg and Harris's (2012) call for examination of the "impact of yoga intervention with youth in Western cultural settings" and the "need to further identify what 'age-appropriate' practices are" as it pertains to Mindfulness Practices (p. 163-164). To address these needs for new literature, my study incorporates explicit yoga poses used, how many, and a scripted guided meditation in a package intervention called Mindfulness Practices (Greenberg & Harris, 2012; Harris et al., 2015; Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo & Lyons, 2012). Each of these Mindfulness Practices are adapted from Susan Verde's children's books "I am Yoga" and "I am Peace: A Book of Mindfulness" (2015, 2017).

Interventions were formulated based on the developmentally appropriate practices for children and previous suggestions from recent research. Using similar practices to that of adult interventions Poehlmann-Tynan et al. (2016) notes that one hour of mindfulness showed little to no effect on children's empathy in prosocial behaviors. On the other hand, Poehlmann-Tynan et

al. (2016) findings aligned with those that state the positive influences of mindfulness on self-regulation and attention (e.g. Flook et al., 2015; Razza et al., 2013). Due to maturation, or "any change over time that may result from processes within the subject" (e.g. growing older), it is expected that there will be some increase in self-regulation (Kazdin, 2011, p. 30). However, in Poehlmann-Tynan et al. (2016) there were more significant increases in self-regulation of the mindfulness intervention group. This sense of "deepen[ing] normal maturation" is also expressed in Lemberger-Truelove et al. (2018) (p. 299). Based on the findings of Zelazo & Lyons (2012), Mindfulness Practices are recommended to have a shorter duration (approximately 3 minutes) and physical movement to cater to attention spans of younger children. This idea of movement and mindful cognition was reiterated in other research as well. Some described these interventions as movement, songs, stories, belly breathing with props (Lemberger-Truelove et al., 2018; Pohlmann-Tynan et al., 2016), yoga and meditation (Chimiklis et al., 2018; Greenberg et al., 2012; Razza et al., 2015), or walking and imagery through the use of language and oral story telling (Lee et al., 2020). Building upon prior research, Mindfulness Practices used in this study included two yoga poses (held for a duration of five seconds) and a guided meditation (scripted and included belly breathing and imagery through story telling). This package intervention is endorsed by Chimiklis et al. (2018), who state that there is a greater impact when yoga and meditation interventions are combined. Children attended to these practices for the duration of their intervention period and were prompted to continue using practices outside of intervention implementation, as repeated practice was deemed most effective (Klingbeil et al., 2017).

Regulated Related Skills Measure

For the purposes of measurement of behavior and self-regulatory practices, the Regulation-Related Skills Measure (RRSM) was modified and used to create behavioral definitions used during data collection (McCoy et al., 2017). This tool used by researchers and teachers measures children's regulation-related skills, specifically executive function and self-regulation. The tool can be used within the everyday setting of a classroom environment during student-led activities (i.e., free play), teacher-led activities (i.e., read-aloud) and transitioning between activities (i.e., clean up) (McCoy et al., 2017). The three inhibitory behaviors were selected from the RRSM based on relevance to the study: impulse control, emotion regulation, and problem-solving. From each of these three behaviors, ten total subcategories (i.e. Physical Movements, Ignores Distractions, Rules and Routines, Enacts Appropriate Responses, Wait for Something, Modulates Emotional Arousal, Regulates Behavior, Independent Planning, Follows Group Norms, Solve and Cope with Social Dilemmas) were created and scored using an interval recording data sheet. As recommended by Kazdin (2011), data were collected using interval recording to show if behavior occurred or did not occur within the 30-second interval over a ten-minute span.

Children practice self-regulatory behaviors daily to manage their emotions, behaviors, and feelings of success in school (McCoy et al., 2017). Self-regulatory behaviors are defined as behaviors that exhibit a child's ability to use regulated-related skills to manage thoughts and feelings that enable goal-directed actions (Rosanbalm & Murry, 2017). Regulated-related skills are a combination of both executive function skills and self-regulatory skills "that help individuals control their attention, emotions and behaviors" (McCoy et al., 2017). The use of this observational tool helps measure child behavior, while a fidelity checklist is used to measure the

researcher's implementation practices. According to Razza et al. (2015), there was a need in the literature for fidelity of Mindfulness Practices implementation with child participants. Therefore, the researcher kept a daily log of the two yoga poses, guided meditation, and whether the child actively participated in the mindfulness activities or not. During the instruction of how to implement Mindfulness Practices the teachers were recommended to use "breathing […] during morning circle, yoga postures linked to literacy activities in the afternoon, and breathing exercises during transition periods" (Razza et al., 2015, p. 357). While teachers were not required to use all of the suggestions there was still teacher hesitancy of implementation due to discomfort with Mindfulness Practices. Therefore, the researcher implemented intervention each morning as part of morning circle, or a classroom transition time. Mindfulness Practices were implemented with ease by the researcher and were integrated with each classroom's daily schedule.

In summary, the RRSM tool is used for its strong "ecological validity, or a measure's ability to capture the ways that children deploy executive function and self-regulated skills in the context of real-world distractions, emotions, and supports" (McCoy et al., 2019, p. 63). The modified version of the RRSM is valid as it still captures a wide range of real-world behaviors, emotions, and supports of children.

Summary

Regulation of physical, emotional, and social well-being are all skills that prepare children for academic achievement and lifelong success. Inability to regulate leads to classroom disruptions and dependence on environmental supports. In order to cultivate long-term self-regulation practices, children need safe, learning environments where they are free to explore and develop positive peer relationships. Mindfulness Practices provide tools to increase

children's self-regulation skills. Highly regulated children are prepared for formal schooling and develop a language that helps them convey emotions. While some practices are costly and time consuming, the Mindfulness Practices proposed in this study are cost effective and feasible for teachers, as they can be used throughout their daily schedule.

Chapter 3. Method

The present study sought to determine the effects of a Mindfulness Practices on young children's self-regulatory behavior. Specifically, we sought to determine if (1) mindfulness practices could be implemented within the school day with fidelity, and (2) mindfulness practices increased self-regulatory behavior in pre-kindergarten and kindergarten aged children. The independent variable within the study is the Mindfulness Practices implemented by the researcher. The dependent variable was each students' self-regulatory behaviors exhibited throughout the duration of the study.

Participants

The participants included two pre-kindergarten-aged children, one kindergarten-aged child and three early childhood teachers. The students were selected based on teacher nomination due to their difficulty with self-regulated skills. Selections were then reviewed based on parent feedback from the Ages and Stages Questionnaire, Third Edition (ASQ-3; Squires & Bricker, 2009). ASQ-3 is a parent child survey for children one month to 5½ years old that helps researchers and teachers to better understand a child's development to then help the children reach his or her full potential (Squires & Bricker, 2009). Jorge was a 4 year 3-month-old male enrolled in pre-kindergarten and functioning within the normal limits for communication, gross motor, problem-solving, and personal social for his age according to the ASQ-3. Based on the results of the ASQ-3, Jorge needed scaffolding in the development of his fine motor skills. At the time of the assessment, he was unable to draw some shapes, use buttons on a shirt, trace a line, draw a picture, and use scissors to cut on the line. His parents also revealed that Spanish is Jorge's first language, and that he does not always use complete sentences when communicating. These language barriers were important when considering the implementation methods of

Mindfulness Practices. Sarah was a 5-year-old female enrolled in kindergarten, and her first language was English. According to the ASQ-3, she was developmentally on target in the areas of communication, gross motor, fine motor, and problem solving. At the time of the survey, Sarah still needed scaffolding in the development of her personal-social well-being. This category required that children share with their peers, take care of their needs, and know identifiable information about themselves. Overall, Sarah is developing within the normal means for her age. Luke was a 4-year-old male enrolled in pre-kindergarten, and his first language was English. According to the ASQ-3, he was developmentally on schedule in the areas of communication, gross motor, and problem solving. It was recommended that Luke be provided with more scaffolding in the areas of fine motor and personal-social development at the time of the study.

Two of the teachers in the study were in a pre-kindergarten classroom while the third teacher was in a kindergarten classroom. Each of these three teachers were considered the “lead” teacher in the classroom. These three teachers were selected as a convivence sample based on availability and grade level. Ms. Hill was a fifty-three-year-old female. She has a bachelor's degree in Human Services with a certification to teach Pre-K3 through fifth grade. In her previous experience, she had taught special education students for about five years, first grade for a year, second grade for four years, and Pre-K for seven years; in total this teacher had about seventeen years of experience teaching in the classroom. Ms. Evans was a twenty-five-year-old female. She had a bachelor's degree in Elementary Education and an Early Childhood Certification with four years of experience in a kindergarten classroom. Ms. Davis was a fifty-one-year-old female. She was a certified teacher in early childhood through eighth grade with sixteen years of experience, eleven in kindergarten and five in Pre-K. This study had approval

from the Louisiana State University's Institutional Review Board (see Appendix A). Administrator, parent, child, and teacher consent were obtained as well.

Setting

The study was conducted at a suburban elementary school located in a southern state. The Title I school serves four hundred sixty-nine children from pre-kindergarten to eighth grade with only two classes in each grade level. The population of students are all considered to be economically disadvantaged. The elementary school operates as a full day program beginning at 7:30am and ending at 2:30pm each day. Children have the option to arrive early, at 7:15am, if they would like to eat breakfast before class officially begins at 7:30am.

Pre-kindergarten classrooms

The two pre-kindergarten (Pre-K) classrooms utilized during this study were selected based on convenience and accessibility due to COVID-19 restrictions. Both Pre-K classes follow Frog Street Pre-K (Schiller et al., 2010) and Conscious Discipline curriculums (Bailey et al., 1996). The Frog Street Pre-K Curriculum was created using comprehensive, research-based practices that integrate lessons, Conscious Discipline strategies, and differentiated instruction for English Language Learners (ELLs) (Schiller et al., 2010). The Conscious Discipline curriculum was created using neuroscience, early childhood, and psychology to develop a sense of self-discipline within children (Bailey et al., 1996). Teachers focus on creating safe environments where children can connect with their peers and are free to learn (Bailey et al., 1996). Both Pre-K classrooms are also located each in their own trailer outside of the normal school buildings.

The first Pre-K classroom had one lead teacher, one paraprofessional, and seventeen in-person students, eight girls and nine boys. The second Pre-K classroom had one lead teacher, one paraprofessional, and sixteen children total, seven girls and five boys. Four of the sixteen

students participate in virtual learning due to COVID-19. The two classrooms were arranged in accordance with ECERS (Harms et al., 2014) and arranged into learning centers. Their daily schedule included: arrival, bathroom, snack, physical education, breakfast, brain smart, read aloud, literacy centers, lunch, read aloud, music and movement, math and science, content centers, outdoor centers, rest time, closing circle reflection, and dismissal. The second Pre-K classroom's schedule includes a separate virtual schedule for students who are online. Those who are virtual join the class via Google Classroom during brain smart start, both read alouds, music and movement, and closing circle reflections. Breakfast and lunch are served in individually packaged containers and eaten in the classroom, with the option to eat outside at picnic tables, when the weather permits. Teachers were provided a forty-minute planning period daily during the students' physical education period.

Kindergarten classroom

The one kindergarten classroom utilized during this study was selected based on convenience and accessibility due to COVID-19 restrictions. In the kindergarten classroom, there was one teacher and a total of seventeen students, twelve in person and five virtual. Of the twelve in person students, there were seven girls and five boys. This kindergarten classroom used Core knowledge Language Arts and Learning Strand (CKLA; Core Knowledge Foundation, 2010) by Engage New York and state standards as their curriculums. CKLA is a standardized language arts curriculum "designed to help student build background knowledge and vocabulary critical to listening and reading comprehension" (Core Knowledge Foundation, 2010). Their classroom is located on the first floor of the main school building.

The classroom is equipped with a smart board, two desktop computers, a laptop for each child, headphones, a reading corner, and kidney bean table. The students' desks are organized in

rows all facing the front of the room in compliance with the current COVID-19 restrictions. Their daily schedule is as follows: homeroom, physical education, CKLA knowledge, bathroom, CKLA skills, lunch, bathroom, CKLA small group, math, recess, social studies/science, and bathroom. The teacher was provided a forty-minute planning period daily during the students' physical education period.

Behavior Definitions

Data were collected using a checklist based on the modified RRSM tool (McCoy et al., 2017). This checklist included ten definitions under one of the following categories: impulse control, emotion regulation, problem-solving. Each of the following definitions was obtained from the RRSM Overview (McCoy et al., 2017).

Impulse control

Impulse Control was defined as one's ability to control physical movements, ignore distractions during an activity, follow classroom rules and routines independently, inhibit inappropriate or automatic responses and enact appropriate responses, and wait for something. Subcategories included the following: (a) *Controls physical movements* – maintains "bubble space" and can sit still when it is appropriate to do so. (b) *Ignores distractions during an activity* – ignores outside sounds and keeps working on a task and may be temporarily distracted, but independently returns to the task at hand. (c) *Follows classroom rules and routines independently* – completes routine without prompts and does not need reminders about following the rules. (d) *Inhibits inappropriate or automatic responses and enacts appropriate responses* – uses appropriate skills to get what s/he wants, instead of grabbing or pushing and waits turn to talk. (e) *Is able to wait for something* – waits and watches independently until it is his/her turn and occupies him/herself by chatting quietly while waiting for an activity to begin.

Emotion regulation

Emotion regulation was defined as one's ability to modulate emotional arousal or maintain appropriate level of emotional arousal in response to classroom expectations and regulate behavior in the face of own emotional arousal. Subcategories included the following: (a) *Modulates emotional arousal or maintains appropriate level of emotional arousal in response to classroom expectations* – matches the feelings of other children without going overboard and quickly calms him/herself down when excited or upset. (b) *Regulates behavior in the face of own emotional arousal* – can describe what s/he is feeling and then moves on and works toward the classroom goals even while emotionally aroused.

Problem-solving

Problem-solving was defined as one's ability to show evidence of independent planning or monitoring, co-create and/or follow group norms or rules when interacting with peers, and show evidence of ability to solve and cope with social dilemmas and conflicts with peers. Subcategories included the following: (a) *Shows evidence of independent planning or monitoring* – discusses his/her intentions for an activity before beginning and monitors or reflects on own actions, or the actions of others; may correct mistakes. (b) *Co-creates and/or follows group norms or rules when interacting with peers* – follows rules of suggestions put forth by other children, without support and shows a sense of fairness when applying, using, or making up new rules. (c) *Shows evidence of ability to solve and cope with social dilemmas and conflicts with peers* – can navigate a social conflict without becoming upset or using inappropriate responses and uses problem-solving strategies with peers.

Data Collection

Child Behaviors

Inhibitory behaviors (i.e., impulse control, emotion regulation, and problem-solving) were scored using the 30-second interval recording during 10-minute observation sessions in each classroom. Kazdin (2011) states that interval recording is frequently used when "measuring behavior in an applied setting […] during short periods of time" (p. 78). Thus, making the use of interval recording optimal for this study. Video recordings were filmed by the researcher for each of the 10-minute observation sessions for each participant. The researcher scored the sessions daily using the video footage from each session by using the operational definitions and data sheet accordingly (see Appendix B). An overall impulse control, emotion regulation, and problem-solving score was calculated for each session, in addition to the scores for each individual subcategory. The scores were calculated as a percent by dividing the number of occurrences by the total number of opportunities provided for that category or subcategory to occur. Data were collected from October to December.

Adult Behaviors

The researcher implemented Mindfulness Practice Intervention daily in each classroom. In order to measure fidelity, both the researcher and each teacher used a checklist to indicate the researcher's daily adherence to the Mindfulness Practices. Similar to Razza et al., (2015), fidelity of implementation was conducted using a checklist to record the implementation of the two yoga poses, the guided meditation, and the target child's participation (see Appendix C).

Observation Procedure

All sessions were recorded for 10-minutes between 9:15am and 10:35am using an iPhone. This observation procedure was repeated each school day for six to nine weeks, which

included two major breaks in data collection. There was one week off school for a natural disaster (e.g. hurricane) and two weeks off due to COVID limitations. On the days of observation, the researcher held the iPhone and moved around the room to follow the targeted students. The students were videoed within audible distance and from the front, to capture facial expressions, language, and tone of voice. These were necessary to capture the behaviors being measured on the data sheet. The researcher did not interact with children or teachers during recordings.

Experimental Conditions

Baseline

During baseline observations, students and teachers instructed to act as they would on any other day. When Jorge displayed a lack of self-regulation, Ms. Hill would intervene or solve his conflicts with peers as they arose. She would physically remove him from the group and place him in the blue chair near the library center. At times, Ms. Hill would also have Jorge sit with the paraprofessional. When lack of self-regulation was displayed in Ms. Evans's classroom, she would remind children of the rules of the classroom and tell them to focus on their work. Other times, she would threaten to give them a color other than green (indicating a good day) in their conduct folders or tell children who struggled with peer conflicts to "be nice to one another." During baseline, Ms. Davis would stop all instruction and wait until the undesired behaviors stop, call out the child's name during a story and keep reading, or have them resolve conflicts by modeling how to communicate with peers. Baseline data collection were captured by the researcher via video recording for 10-minutes in the morning daily, as previously stated in the observation procedures.

Mindfulness Practices Intervention

The Mindfulness Practices consisted of an adult-led guided meditation and two yoga poses, which research suggests leads to increased mindfulness and self-regulatory behaviors in children (Harris et al., 2016; Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo & Lyons, 2012). Due to some teachers' unfamiliarity with Mindfulness Practices, they were hesitant to lead these activities with the students. Therefore, the researcher implemented intervention across all three classrooms. The researcher engaged children in both components of the Mindfulness Practice Interventions for approximately 3-5 minutes each daily, resulting in a total duration of 6-10-minutes (DiCarlo et al., 2016). These practices were carried out for shorter durations over the appropriate number of consecutive days, as recommend by Lee et al. (2020). It is considered developmentally appropriate practice for children, who are engaging in mindfulness practices, to have a shorter duration (approx. 3 minutes) (DiCarlo et al., 2016) and involve more movement-based practices (i.e., yoga stretches or rocking one's body from side to side) (Burke, 2010; Kaiser-Greenland, 2010; Zelazo & Lyons, 2012). The researcher implemented one daily guided meditation session of 3-5 minutes each school day. This guided meditation was scripted for adult use and adapted from Susan Verde's book *I am Peace: A Book of Mindfulness* (2017). During the guided meditation, the children had a choice to be seated on the floor in a cross-legged position or to lay flat on their backs with their eyes opened or closed.

The Mindfulness Practices also included the integration of two yoga poses within the school day. At the start of the intervention period, the researcher introduced children to the book *I am Yoga* by Susan Verde (2015) and placed it in the book center for children to refer to on their own time. Immediately following the guided meditation, the researcher allowed the children to choose the two yoga poses from the book, as choice is considered a tenet in early childhood

practice (Copple & Bredekamp, 2009). The researcher modeled each yoga pose while also talking the children through each step of how to get into and out of the yoga positions based on Susan Verde's book, *I am Yoga* (2015). Children were instructed to hold the yoga pose for at least 5 seconds, which is different from Telles et al. (2013), who instructed children in their study to hold the yoga poses for as long as possible.

Satisfaction Surveys

At the close of the study satisfaction surveys were administered and distributed to teacher and student participants. The researcher read the questions to the children, as they were not yet able to read. These open-ended questions inquired on their experiences of using Mindfulness Practices in their classroom environment. The teachers received a digital questionnaire using Google Forms. Each teacher had one week to return feedback on their experiences participating in this study and using Mindfulness Practices in their classrooms.

Interobserver Agreement

Two reliability persons were used to calculate interobserver agreement, including the researcher, who is a certified Early Childhood Educator, and a young professional, who works as a Civil Engineer. The reliability person was trained through explanations and clarifications of operational definitions, then using two practice videos. The researcher worked to clarify definitions and answer any questions before the two reliability persons dually coded two practice videos. The practice videos were coded a total of two times each until the researcher and reliability observer reached at least 80% reliability, as recommended by Kratochwill et al. (2010).

Point-by-Point Agreement

Interobserver agreement was calculated using point-by-point agreement ratio. Point-by point agreement is used when "there are discrete opportunities for the behavior to occur" (Kazdin, 2011, p. 103). After observations were recorded, two observers independently scored the videos using the modified RRSM tool to determine if the behaviors occurred or did not occur within each 30 second interval over a 10-minute span. Kratochwill et al. (2010) states that researchers using single-case research design need to "collect inter-assessor agreement in all phases […] on at least 20% of all sessions (total across phases) for a condition (e.g., Baseline, Intervention)" (p.15). Aligned with the standards for single-case research design, the two observers calculated point by point agreement on each variable recorded (i.e., physical movement, no opportunity – physical movement, no self-regulation – physical movement, etc.)

Interrater reliability was calculated on 23% (n=68) of all sessions across all conditions. Point-by-point agreement was calculated using the formula agreements divided by agreements plus disagreements multiplied by one hundred to generate a percentage (Kazdin, 2011, p. 104). For self-regulated behaviors, occurrence agreement was 60% (range, 0-100%), non-occurrence agreement was 85% (range, 0-100%), and overall agreement was 97% (range, 80-100%). For impulse control behaviors, occurrence agreement was 65% (range, 0-100%), non-occurrence agreement was 88% (range, 0-100%), and overall agreement was 97% (range, 80-100%). For emotionally regulated behaviors, occurrence agreement was 64% (range, 0-100%), non-occurrence agreement was 88% (range, 0-100%), and overall agreement was 98% (range, 80-100%). For problem solving behaviors, occurrence agreement was 51% (range, 0-100%), non-occurrence agreement was 79% (range, 0-100%), and overall agreement was 97% (range, 80-100%).

Fidelity Checklist

A checklist was issued to each teacher as a recording measure of the researcher's fidelity to the daily implementation of Mindfulness Practices. "Fidelity may be defined as the extent to which delivery of an intervention adheres to the protocol or program model originally developed" (Mowbray et al., 2003, p. 315). Measuring the researcher's adherence to the intervention helps draw more precise conclusions when analyzing the effectiveness of the Mindfulness Practices. The researcher implemented the two mindfulness-based interventions (i.e., guided meditation and yoga stretching) daily for the duration of the study. Each day that a Mindfulness Practices were implemented, the researcher and the teachers logged if the guided meditation was completed, which two yoga poses were implemented, and if the target children participated in these activities.

Experimental Design

This study used a single-case research design to determine the effects of Mindfulness Practices on self-regulatory behaviors in young children. Specifically, a multiple baseline design was used (Kazdin, 2011). Multiple baseline designs allow for "comparison of performance across the behaviors at the same point in time" (Kazdin, 2011, p. 146). The standard for implementation of the single-case research design is a minimum of five data points in each phase of the study (Kratochwill et al., 2010).

Chapter 4. Results

The present study assessed the impact of Mindfulness Practices on self-regulatory behaviors of young children and their feasibility during implementation. The research questions sought to determine if (1) mindfulness practices could be implemented within the school day with fidelity, and (2) mindfulness practices increased self-regulatory behavior in pre-kindergarten and kindergarten aged children.

Research Question 1: Mindfulness Practices Implemented with Fidelity

Research Question 1 sought to determine the feasibility of daily implementation of Mindfulness Practices within the limits of a normal classroom. Teachers were taught how to complete the daily fidelity checklist, including if guided meditation was implemented, which two yoga poses were practiced, and if the target children participated in the Mindfulness Practices. Both the researcher and teacher participants from each classroom recorded adherence to the Mindfulness Practices implemented during each session. Due to teachers discomfort when implementing Mindfulness Practices, the researcher implemented the intervention daily as a model for future teacher implementation. This resulted in a high degree of fidelity (93%).

Research Question 2: Mindfulness Practices Increased Self-regulation in PK / K Students

Research Question 2 sought to determine if the use of Mindfulness Practices would increase students' self-regulatory behaviors. See Figure 1 for average self-regulatory behaviors graphed. Data were collected on impulse control, emotional regulation, and problem-solving skills daily using a modified version of RRSM during both baseline and intervention phases. See Table 1 for analysis of self-regulation subcategories.

Jorge

Overall. During baseline, Jorge displayed an overall average of self-regulatory behavior 38% (range, 20% - 54%) of the observed intervals. During intervention, Jorge displayed an overall average self-regulatory behavior of 67% (range, 31% - 88%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 29-percentage point increase in average self-regulatory behaviors.

Control Impulses. During baseline, Jorge used self-regulatory skills to control his impulses on average 37% (range, 18% - 54%) of the observed intervals. Jorge used self-regulatory skills to control his impulses on average 67% (range, 25% - 89%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 30-percentage point increase in impulse control after intervention occurred.

Regulate Emotions. During baseline, Jorge used self-regulatory skills regulate his emotions on average 39% (range, 8% - 56%) of the observed intervals. Jorge used self-regulatory skills to regulate his emotions 75% (range, 29% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 30-percentage point increase in emotional regulation after intervention occurred.

Problem Solve. During baseline, Jorge used self-regulatory skills to problem-solve on average 48% (range, 20% - 75%) of the observed intervals. Jorge used self-regulatory skills to problem-solve on average 70% (range, 25% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 22-percentage point increase in problem-solving after intervention occurred.

Sarah

Overall. During baseline, Sarah displayed an overall average of self-regulatory behavior 68% (range, 36% - 89%) of the observed intervals. During intervention, Sarah displayed an overall average self-regulatory behavior of 89% (range, 77% - 96%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 21-percentage point increase in average self-regulatory behaviors.

Control Impulses. During baseline, Sarah used self-regulatory skills to control her impulses on average 68% (range, 36% - 91%) of the observed intervals. Sarah used self-regulatory skills to control her impulses on average 87% (range, 73% - 95%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 19-percentage point increase in impulse control after intervention occurred.

Regulate Emotions. During baseline, Sarah used self-regulatory skills regulate her emotions on average 74% (range, 0% - 100%) of the observed intervals. Sarah used self-regulatory skills to regulate her emotions 97% (range, 88% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 23-percentage point increase in emotional regulation after intervention occurred.

Problem Solve. During baseline, Jorge used self-regulatory skills to problem-solve on average 77% (range, 50% - 100%) of the observed intervals. Jorge used self-regulatory skills to problem-solve on average 97% (range, 75% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 20-percentage point increase in problem-solving after intervention occurred.

Luke

Overall. During baseline, Luke displayed an overall average of self-regulatory behavior 68% (range, 38% - 88%) of the observed intervals. During intervention, Luke displayed an overall average self-regulatory behavior of 95% (range, 92% - 97%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 27-percentage point increase in average self-regulatory behaviors.

Control Impulses. During baseline, Luke used self-regulatory skills to control his impulses on average 71% (range, 38% - 94%) of the observed intervals. Luke used self-regulatory skills to control his impulses on average 94% (range, 92% - 96%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 23-percentage point increase in impulse control after intervention occurred.

Regulate Emotions. During baseline, Luke used self-regulatory skills regulate his emotions on average 49% (range, 0% - 100%) of the observed intervals. Luke used self-regulatory skills to regulate his emotions 100% (range, 100% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 51-percentage point increase in emotional regulation after intervention occurred.

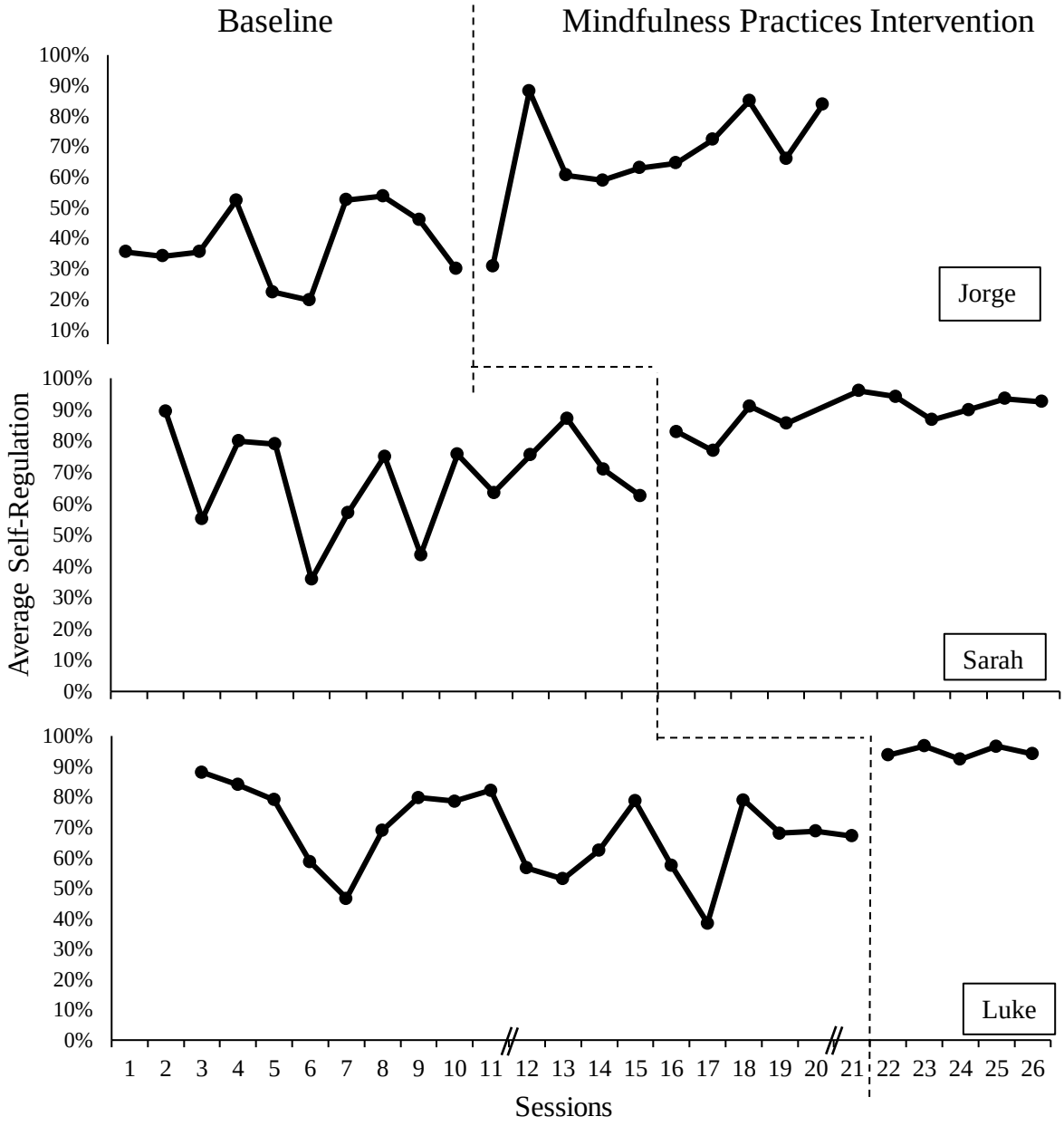
Problem Solve. During baseline, Luke used self-regulatory skills to problem-solve on average 54% (range, 0% - 100%) of the observed intervals. Luke used self-regulatory skills to problem-solve on average 100% (range, 100% - 100%) of the observed intervals, when the *Mindfulness Practice Intervention* was implemented. This represents a 46-percentage point increase in problem-solving after intervention occurred.

Table 1. Analysis of Self-Regulation Subcategories

	Impulse Control			Emotional Regulation			Problem Solving			Average Self-Regulation		
	Base	Int	Δ	Base	Int	Δ	Base	Int	Δ	Base	Int	Δ
Jorge	37%	67%	30	39%	75%	39	48%	70%	22	38%	67%	29
Sarah	68%	87%	19	74%	97%	23	77%	97%	20	68%	89%	21
Luke	71%	94%	23	49%	100%	51	54%	100%	46	68%	95%	27

Note. Base = Average scores collected during baseline, Int = Average scores collected intervention, Δ = Difference in percentage points between baseline and intervention

Figure 1. Percentage of Observed Intervals with Child Self-Regulatory Behavior



Note. The solid line represents the student's self-regulatory behaviors graphed from baseline and intervention phases. Results show an increase in self-regulatory behaviors once Mindfulness Practices began being implemented.

Chapter 5. Discussion

The purpose of the present study was to determine if Mindfulness Practices could be implemented with fidelity and if children's self-regulatory behaviors (i.e., impulse control, emotional regulation, problem solving) would be impacted when Mindfulness Practices were implemented in their daily classroom routine. Data were collected on the researcher's fidelity of daily implementation of Mindfulness Practices. Additional data were collected on children's impulse control, emotional regulation, and problem solving using a modified version of the RRSM tool (McCoy et al., 2017) to determine influence of Mindfulness Practices on these self-regulatory behaviors. Lastly, satisfactory surveys were collected from all teacher and student participants at the close of the study to establish social validity. The results indicate that Mindfulness Practices can be implemented daily with high accounts of fidelity and have a positive impact on each students' self-regulatory behaviors.

Research Question 1

Researchers inquired if Mindfulness Practices could be implemented with fidelity. The original intention of this study was for teachers to implement Mindfulness Practices within their normal classroom routine. Research suggests that all implementers of Mindfulness Practices attend extensive trainings of over 200 hours through YogaKids (Razza et al., 2015), or daily sessions with professional yoga instructors for at least 20-30 minutes for four-days per week (Poehlmann-Tynan, et al., 2016; Harris et al., 2016). Due to lack of time and resources, the researcher conducted a 20-minute training session to explain to the teachers how to implement the interventions. The researcher made sure to answer any and all questions prior to teacher implementation. The first day of the intervention phase for the first classroom began in session 11. After session 11, Ms. Hill reported discomfort with leading the intervention due to lack of

prior mindfulness experience. As a result, Ms. Hill had only implemented part of the Mindfulness Practices (e.g., reading the children's book, *I am Yoga* (Verde, 2015)). Her discomfort emphasizes the importance of teacher training in Mindfulness Practices before implementation with children. Teachers daily use of Mindfulness Practices in their own lives could also potentially ease any discomfort when implementing interventions with young children (Hirshburg et al., 2020; Poehlmann-Tynan et al., 2016; Rosanbalm & Murry, 2017).

To preserve consistency, the researcher, who had four years of personal experience with yoga practices and other mindfulness practices, implemented the daily interventions (Poehlmann-Tynan et al., 2016). The researcher implemented Mindfulness Practices in each classroom for approximately ten minutes daily sometime between 9:15am-10:35am when data were not being collected through video recording. When collecting teacher fidelity, Razza et al. (2015) required teachers to track their daily implementation of intervention which included descriptions of mindfulness activities, duration of activities, and the time of day the activities were completed. Similarly, the fidelity checklist in this study was designed to include implementation of the yoga book, the names of yoga poses implemented, completion of the guided meditation, and a record of child participation. Results of teacher and researcher tracking revealed high accounts of fidelity to intervention implementation.

Research Question 2

The second research question was used to investigate the impact of Mindfulness Practices on Pre-K and Kindergarten aged children's ability to self-regulate (i.e., impulse control, emotional regulation, and problem solving). As stated previously, self-regulation is a foundational skill that is used to develop the whole child through social emotional development. Teachers have an opportunity to encourage students' growth and development in "all domains of

development and learning – physical, social and emotional, and cognitive – [as] they are closely interrelated" (NAEYC's *Principles of Child Development and Learning that Inform Practice*, p. 11).

Results

Results indicate more stability and predictability in regulatory behaviors once interventions were applied. Ranges in self-regulatory behaviors rose once intervention was presented due to a presence of higher self-regulatory behaviors being exhibited by each child. In addition, the range of average self-regulation after interventions were also smaller in numerical value due to those increases in stability of data. This tightening of ranges once intervention occurred shows that there were more consistent self-regulatory behaviors occurring during intervention phases. As recommended, Mindfulness Practices are more likely to work if they are repeated regularly (Klingbeil et al., 2017). This consistency in the data is a result of repetitive implementation at the same time every day of the school week.

Emotional Regulation

The present study provides a new insight into the relationship between emotional regulation and Mindfulness Practices. The results revealed that Mindfulness Practices had the greatest impact on each student's emotional regulation. Ironically, there were the least number of opportunities for these behaviors to occur, due to lack of emotional arousal and only two subcategories being collected on here. These results suggest that Mindfulness Practices have great impacts on emotional regulation in young children. Future research is also encouraged to determine how significant the effect of Mindfulness Practices have on emotional regulation in particular.

Impulse Control

Some say that impulse control is at the center of self-regulation (Heatharton et al., 2011). In alignment with Heartharton et al. (2011), results of the current study suggests that there were more opportunities for children to control their impulses within each session. Perhaps this is due to impulsive behaviors being easily observed by others. Originally, it was assumed that all opportunities to display self-regulatory behaviors would be the same for each session, with two hundred total opportunities, further broken down into one hundred opportunities for impulse control, forty opportunities for emotional regulation, and sixty opportunities for problem solving. However, in the pilot study using the data sheet, the observer noted that there were not all opportunities across all sessions. The data sheet was then modified to allow differentiation between 'No Opportunity' and 'No Self-Regulation.' Thus, indicating that not all sessions had the same number of opportunities to perform the desired skills. The lack of opportunity to preform self-regulatory behaviors could be due to the restricted timing of intervention being implemented by the researcher in the morning. Although Razza et al. (2015) recommended that implementation of Mindfulness Practices be flexible and incorporated into different parts of the class's daily schedule, this was not always feasible for the researcher to do. This also highlights the importance of teachers as implementations of Mindfulness Practices. The lack of opportunities for self-regulatory behaviors could also be attributed to the uneven distribution of subcategories when creating the data sheet for the study. There were more subcategories recorded for impulse control than there were for emotional regulation or problem solving. Lastly, the greater number of subcategories in impulse control also suggest that it was of great importance when observing and measuring self-regulatory behaviors.

Poorer Baseline Functioning

Based on the results, children with poorer baseline functioning made larger gains in self-regulatory behaviors (Flook et al., 2015). All three children showed an increase in their ability to self-regulate their impulse control, emotional regulation, and problem-solving skills. However, Jorge showed the highest gains in his ability to self-regulate after having the lowest baseline functioning. With significant insights on growth and development of self-regulation this research contributes to the academic conversation noting that children who are within the lower baseline of function gain the most from Mindfulness Practices (Flook et al., 2015). This suggests that children with lower baseline averages also have more room to grow and show improvement as exemplified in this study.

Social Validity

The findings indicate that Mindfulness Practices are feasible and effective with pre-kindergarten and kindergarten-aged children. Further, findings from teacher and student satisfactory surveys, conducted at the close of the study, provide valuable information on feasibility and teachers' comfort levels with conducting this particular intervention with their students. Although the fidelity data were based on one day of teacher implementation and the rest researcher intervention, teacher and student surveys reveal high accounts of social validity. Results of teacher and student surveys after the conclusion of intervention revealed that both teachers and students enjoyed partaking in the Mindfulness Practices. All three students reported "love it" happy faces when asked how much they enjoyed the yoga and breathing exercises. They also agreed that Mindfulness Practices made them feel happy, excited, strong, relaxed, and smart. Three out of three teacher surveys revealed that teachers were comfortable implementing Mindfulness Practices after being provided with the materials and seeing how the interventions

were to be conducted. Two out of three teachers said that they will continue to use the Mindfulness Practices in their classrooms even after the close of the study because they are "easy to implement," she has "seen how much [her] students enjoy the Mindfulness Practices," and "how it has positively affected them." According to Kazdin (2011), social validity refers to any intervention that is used to impact global change in human behavior or adaptive functioning. Thus, the researcher established high accounts of social validity for this study.

Limitations

Analysis of Data

Data were collected using video recording on an iPhone. The researcher recorded children from the front view to best capture facial expressions and children's conversations. Due to COVID-19 restrictions, which required all teachers and students to have facial coverings on at least their nose and mouth, the researcher and reliability persons were not always able to clearly hear what was being said in the classroom. Fortunately, the researcher who helped analyze the data from the videos could recall the context and conversations had earlier that day in each classroom. Some might also say that the researcher being the one to implement intervention, analyze data, and film the videos could have influenced the outcome of the study. The nature of single case research design is not normally blinded, and the researcher made sure to rely on the reliability partner's interpretations of data when analyzing videos. Because reliability data were collected using someone unfamiliar with the field of early childhood education, there is stronger validity in the reliability of results from this study.

Duration of Study

Data were collected for a span of six to nine weeks within the normal limits of two pre-kindergarten and one kindergarten classroom. Data collection were interrupted twice, one week

off for a hurricane and two weeks of for a period of quarantine due to COVID-19. The limitation therein lies in the disruption of students' normal routine for these three weeks of being absent from the classroom. Such lengthy absences may have contributed to the maturation in children, which threatened the validity of Mindfulness Practices (Kazdin, 2011; Lemberger-Truelove et al., 2018). However, the data analyzed in this study was a result of six weeks of data collected over a nine-week period. Nine weeks is not long enough to deepen maturation enough to were that would be the only accreditation for the results received. This limitation was also diminished by the strong internal validity established from immediate changes in self-regulatory behaviors at the start of intervention.

Reactive Assessment

Another limitation of the study was teacher hesitancy to participate in the implementation of the Mindfulness Practices. One out of three teachers were uncomfortable implementing the intervention, which disrupted the ability to collect data on teacher fidelity within the school day. As previously mentioned, the researcher implemented intervention for each classroom and modeled how to use Mindfulness Practices with a whole group. As a result, fidelity data were collected on the researcher's ability to implement intervention.

Due to Ms. Hill's discomfort in the beginning of the study, the researcher asked the teachers and students to complete satisfactory surveys. Reactive assessment posed a threat to the results received from those surveys. To oppose this threat the researcher did not require or ask that the teachers put their names on the satisfaction surveys.

Clinical Implication

Standard of Practice

With the intent to design a study that aligned with early childhood development and the use of most appropriate practices, the researcher used NAEYC's *Position Statement on DAP* and prior researcher that used mindfulness practices to further develop a standard of Mindfulness Practices for children. This study targeted four and five-year-old children, who were within normal limits of their development but lacked necessary self-regulatory skills. As a result, children choose which yoga poses they wanted to practice within each session (Copple & Bredekamp, 2009). Interventions were designed to incorporate movement through the use of yoga poses or belly breathing during guided meditations (Burke, 2010; Kaiser-Greenland, 2010). Lastly, the Mindfulness Practices were shortened to last no longer than 10-minutes a day (DiCarlo et al., 2016) over the span of multiple, consecutive school days (Lee et al., 2020; Zelazo & Lyons, 2012). Each of these components were implemented with the intent to aid each child's physical, cognitive, and social emotional development within the normal school day. As a result, Mindfulness Practices showed great improvement in self-regulatory behaviors and should be used for future research.

Internal Validity

In efforts to show greater self-regulatory gains in preschool aged children the Mindfulness Practices were designed to meet the needs of early childhood students and teachers. According to Greenberg and Harris (2012) there was a need for a cost-effective, theoretically grounded strategy to implement Mindfulness Practices with young children. This package intervention, Mindfulness Practices, "promotes the well-being of students by training their non-cognitive skills that are also important for academic success" (Flook et al., 2015, p. 9). The

Mindfulness Practices combined yoga poses and guided meditation (Greenberg & Harris, 2012; Harris et al., 2015; Lee et al., 2020; Poehlmann-Tynan et al., 2016; Zelazo & Lyons, 2012). As it was recommended that intervention would show stronger results when combined rather than practicing yoga in isolation (Chimiklis et al., 2018). This negated prior research stating that mindful yoga alone can enhance self-regulation in preschoolers (Razza et al., 2015).

As a result of using packaged intervention, there was greater immediacy of change for each student's data was present at the onset of interventions, the researcher concludes that both yoga and guided meditations have stronger implications for the positive changes in behaviors. Based on the magnitude of change in behavior after the onset of intervention inferences can be made that Mindfulness Practices were responsible for the child's self-regulation. Kazdin (2011) states that "the more immediate the change after the onset of the intervention, the stronger a case can be made that the intervention, rather than other events, was responsible for change" (p. 265). Thus, the data from this study has strong internal validity as the behaviors of each student changed immediately after the onset of intervention. Something to consider is the lack of change in Jorge's first intervention data point, which could have been attributed to the teacher's hesitancy to implement the entire intervention as instructed. Ms. Hill disclosed that she had only read the book, *I am Yoga* by Susan Verde to the children during session eleven, but she had not completed the yoga poses or guided meditation on that day. As a result, the researcher concludes that the isolation of the book reading about yoga does not have as great an impact as participation in the belly breathing and yoga poses themselves.

External Validity

External validity answers the question "to what extent can the results be generalized or extended to people, settings, times, measures or outcomes, and characteristics other than those

included in this particular demonstration?" (Kazdin, 2011, p. 29). To establish external validity of this study three children were chosen based on their teacher's nomination of lack of self-regulation. These children were then deemed to all be within the means of average development for their age and based on Ages and Stages Questionnaire (Squires & Bricker, 2009). Two males and one female were chosen. Previous literature suggests that females have higher self-regulatory behaviors than that of males (Montroy et al., 2018). The data collected in this study does not know that to be true. However, it is important to remember to that the two males were four years old and the female five. One male used Spanish as a first language and the other two children spoke English as a first language. Originally, the researcher hypothesized that the language barrier would prevent the ELL student from understanding and developing the desired behaviors after the intervention was applied. However, the data shows a steady increase in self-regulatory behaviors. Overall, each of these factors are to be considered when determining the generalization of the data set. It is most appropriate to say that three different children from three different classrooms, who were all within the normal means of development for their age, benefited from the use of Mindfulness Practices.

Implications

Implications of this study include an active participation in setting the standard for Mindfulness Practice in early childhood education. From various recommendations by researchers in the field, the researcher culminated all that she could to create a safe, developmentally appropriate, effective intervention. As a result, from these efforts the intervention is proven both effective and reliable. Some things to consider when creating Mindfulness Practices include the duration, repetition, specificity of practice, number of breaths and collection of easily interpretable data.

Future Research

Future research is required to establish whether teacher fidelity when implementing Mindfulness Practices within a school day are feasible and reliable. This will need to take into account teacher's previous experiences with Mindfulness Practices and teacher age. As seen in other studies for the best results teachers should be trained in Mindfulness Practices or have some background in mindfulness to attribute to the success of the study (Poehlmann-Tynan et al., 2016).

Practical applications of this study also encourage teachers to couple books or some other visual representation of their yoga practice with the mindfulness techniques that they choose to implement in their classroom. This intervention was cost effective and can easily be implemented with little to no disruption of the classroom's daily schedule.

It is beyond the scope of this study to address the question of how Mindfulness Practices effect ELL students and their language development. Future research should focus on how language contributes to the development of self-regulation.

Conclusion

In conclusion, this research contributes to the field of research in early childhood education through the use of DAP Mindfulness Practices that are feasible for teacher implementation. Mindfulness Practices are an effective means for enhancing these learned behaviors of impulse control, emotional regulation, and problem solving. As concluded by other researchers the use of self-regulatory skills and behaviors spans that of a lifetime (Florez, 2011; Rosanbalm & Murray, 2017). Thus, making it important for teachers to help their students learn from a young age these important skills. Continuing to further children's development through Mindfulness Practices will enhance their social-emotional development and focus their attention

on the present moment. By encouraging the development of self-regulation from a young age, teachers are setting their students up for lifelong success.

Appendix A. Instructional Review Board Approval

Office of Research & Economic Development

TO:	Culotta, Ellyn LSUAM | Col of HSE | Early Childhood Education Laboratory Preschool (ECELP)
FROM:	Alex Cohen Chair, Institutional Review Board
DATE:	23-Oct-2020
RE:	IRBAM-20-0403
TITLE:	Using Mindfulness Practices to Increase Self-Regulation in Pre-Kindergarten and Kindergarten-Aged Children by Ellyn Culotta (Created on 27-Sep-2020 8:54 PM)
SUBMISSION TYPE:	Initial Application
Review Type:	Expedited Review
Risk Factor:	Minimal
Review Date:	23-Oct-2020
Status:	Approved
Approval Date:	23-Oct-2020
Approval Expiration Date:	22-Oct-2021
Re-review frequency:	Annually
Number of subjects approved:	12
LSU Proposal Number:	

By: Alex Cohen, Chairman

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.

6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc. Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.**

** All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/research*

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Appendix B. Data Sheet

Data Sheet

Observer: ______________________

Student being observed: ____________________

Date of Observation: __________________

Grade Level: ________________

Time: ________________

Date Scored: ________________

30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Total SR Average: __________

PM: ______________ EA: ______________

ID: ______________ RB: ______________

RR: ______________ IP: ______________

AR: ______________ GN: ______________

WS: ______________ SC: ______________

30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
30s	Impulse Control					Emotion Regulation		Problem-Solving		
	PM	ID	RR	AR	WS	EA	RB	IP	GN	SC
	np	np	np	np	np	np	np	np	np	np
	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Appendix C. Fidelity Checklist

Teacher Name: _____

DAILY CHECKLIST						
Date	**Read Yoga book** *(only on day 1)*	**Yoga Stretch #1** *(write name of pose implemented)*	**Yoga Stretch #2** *(write name of pose implemented)*	**Guided Meditation** *(Check Mark if you did it)*	**Total** *(out of 3)*	**Did student participate in activity?** *(respond yes/no)*

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Vita

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