2023

How do mindfulness-informed practices positively affect students with intellectual disabilities

Hilary Hinrichs
Bethel University

HOW DO MINDFULNESS-INFORMED PRACTICES POSITIVELY AFFECT STUDENTS WITH INTELLECTUAL DISABILITIES

A MASTER'S THESIS SUBMITTED

TO THE FACULTY OF BETHEL UNIVERSITY

BY

HILARY HINRICHS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF ARTS

AUGUST 2023

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APPROVED

ADVISOR: CHARLES S. STRAND, ED.S.

PROGRAM DIRECTOR: KATIE BONAWITZ, ED.D.

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ACKNOWLEDGEMENTS

I would like to thank my husband, Joseph France Jr, for supporting me through this process, encouraging me, and believing in me. I couldn't have done it without you!

I would also like to thank our son for giving me the best reason for getting this project done!

Additional thanks to Chuck Strand for helping get me to the finish line.

ABSTRACT

Mindfulness-informed interventions have gained greater popularity as interventions for schools for a variety of purposes. There has been an increase in research regarding the effect of these practices on students. Adolescent students with intellectual disabilities have also been the subject of research on the effects of mindfulness-informed practices. It is the goal of this thesis to address the effect of mindfulness-informed interventions on adolescents with intellectual disabilities. The research further seeks to determine whether these practices are effective for increasing positive school behaviors for these students, specifically: on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance. Several studies are reviewed that address mindfulness-informed interventions on these school behaviors. Additionally, an application of the research is provided to give special education teachers a starting point for implementing these mindfulness-informed interventions.

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CHAPTER I: INTRODUCTION

Thesis Writer's Story

Most teachers of special education want to increase on-task behavior and self-regulation for their students. One category of intervention for schools that has received greater attention in recent years is mindfulness-based interventions or mindfulness-informed interventions. While mindfulness-informed interventions have been used effectively with children and adolescents to decrease depressive and anxiety symptoms while increasing executive function and attention (Dunning et al., 2019), the research specific to the effect of mindfulness-based interventions for adolescents with intellectual disabilities is limited. The goal of this research is to discover the effect of mindfulness-informed interventions for adolescents with intellectual disabilities. It further seeks to determine the effect of mindfulness-informed practices on the positive school behaviors of on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance for adolescents with intellectual disabilities.

As a teacher of special education and students with intellectual disabilities, this researcher has personally sought effective research-based interventions to help their students grow in their own self-regulation and on-task behaviors. As an individual, the researcher has personally benefited from mindfulness-based interventions for personal wellbeing. In the researcher's classroom, self-regulation skills have been both practiced and taught. Interestingly, students and some support staff have reported high levels of engagement in these practices. It was from a daily mindfulness routine that one colleague even began a personal practice of mindfulness on their own time. Even with these successes, the researcher has continued to look

for mindfulness-informed interventions that are actually created and intended for use with students with moderate to severe intellectual disability.

This researcher has witnessed students with intellectual disabilities in the special education classroom struggle to initially learn some self-regulation strategies. The researcher was then surprised to find them not only practicing the self-regulation strategies when prompted but also prompting others to implement them as well! A memorable incident cementing the value of repeated modeling of mindfulness strategies for students happened for the researcher a few years into their teaching practice. At the end of the school year, a student who struggled with self-regulation and resistance to practicing self-regulation strategies all school year noticed that the researcher was, in fact, losing some self-regulation and prompted them to take some deep breaths. While still frustrated with the student's behavior, the researcher laughed to themself, practiced some deep breaths along with the student, and knew that given time, practice, and modeling, all students can learn self-regulation strategies. This knowledge furthered the search for mindfulness-informed interventions that were created with students with severe intellectual disabilities in mind.

This thesis seeks to investigate the current research related to mindfulness-informed interventions for people with intellectual disabilities. This thesis will seek to answer the question: What is the effect of mindfulness-informed practices on adolescents with intellectual disability? It will further attempt to determine whether this is an effective intervention for the positive school behaviors of on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance. If mindfulness-informed practices are found to be effective, this thesis will additionally determine what curricula or intervention resources are available for teachers to use to implement these interventions on their own, and

what adaptations, if any, are needed for these resources to be used for students with intellectual disabilities.

Mindfulness is a term that is commonly used with a variety of meanings. Jon Kabat-Zinn defines mindfulness as "moment-to-moment, non-judgemental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, as non-judgmentally, and as open-heartedly as possible" (Kabat-Zinn, 2015, p. 1481). Mindfulness can be incorporated into many activities, therapies, and interventions. When the intervention or program is based on mindfulness, it can then be called a mindfulness-based program (MBP) or mindfulness-based intervention (MBI). Programs can also be guided by mindfulness but not truly based on mindfulness. These programs can be called mindfulness-informed. To give further distinction, Crane et al. have named five essential components of a mindfulness-based program: 1-guided by "contemplative traditions, science, and the major disciplines of medicine, psychology, and education" (Crane et al., 2017, p. 993), 2- uses a framework of understanding regarding human suffering and options for suffering relief, 3-"develops a new relationship with experience characterized by present moment focus, decentering and an approach orientation" (p. 993), 4- "supports the development of greater attentional, emotional and behavioral self-regulation, as well as positive qualities such as compassion, wisdom, equanimity" (p. 993), 5-participants actually participate in "mindfulness meditation practice, in an experiential inquiry-based learning process and in exercises to develop insight and understanding" (Crane et al., 2017, p. 993). Crane et al. further outlined standards for teachers of mindfulness-based programs. These components are: 1- the teacher has the skills needed to enact the program, 2-the teacher can demonstrate the "qualities and attitudes of mindfulness" (p. 993) as they enact the program, 3- the teacher has had sufficient training, and is willing to pursue more, 4- the teacher

is actively engaged in the "participatory learning process with their students, clients or patients" (Crane et al., 2017, p. 993). With the rigorous definition of mindfulness-based programs, it was determined that using the term mindfulness-informed would be a more inclusive term that would include all the programs and interventions considered in this research.

Self-regulation can be defined as the management of emotions, attention, and response to stimuli for a defined purpose, often through the use of executive function skills (Memisevic, 2015). This definition of self-regulation is similar to the Minnesota Department of Education's definition of self-management: "The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working toward achieving personal and academic goals" (Self-Management, internet-based reference pdf., (n.d.), p. 1). Students with intellectual disability often have lower rates of self-regulation when compared to their non-disabled peers and even have much higher rates of clinically significant deficits in self-regulation (Memisevic, 2015). Due to this deficit in self-regulation in students with intellectual disabilities, it was chosen as an area to investigate whether mindfulness-informed practices can improve these skills for adolescents with intellectual disabilities.

The other positive school behaviors of on-task behavior, decreased aggression, decreased verbal outbursts, and increased academic performance can all connect to academic engagement. When students are academically engaged, they are less likely to engage in verbal and physical aggression as well as other off-task behaviors. Academic engagement is an indicator of future academic achievement and is, therefore, a high priority for teachers to work to increase for their students (Felver & Singh, 2020). Due to many teachers wanting to increase the academic

engagement of their students, these behaviors were also included in the research to determine if mindfulness-informed interventions can positively influence them.

Mindfulness interventions have gained greater popularity as interventions in school settings. While research supports the use of mindfulness for students without disabilities, the research has been limited for students with intellectual disabilities. The researcher has had personal and professional experience both using and teaching mindfulness-informed interventions with some successes. The researcher has sought out further studies regarding the effect of mindfulness-informed interventions and available mindfulness curricula for adolescents with intellectual disabilities, the group of students that the researcher works with. Through this thesis project, this writer seeks to determine the effectiveness of mindfulness-informed interventions for adolescents with intellectual disabilities and the specific effect these interventions have on the positive school behaviors of on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance.

Thesis Question

Therefore, this thesis will address the following question, as indicated earlier in the introduction:

1) What is the effect of mindfulness-informed practices on adolescents with intellectual disability?
2) Are mindfulness-informed practices an effective intervention for the positive school behaviors of on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance?

CHAPTER II: LITERATURE REVIEW

The Research Process

Resources for this research were found through the Bethel University Library online databases. The following databases were used: Academic Search Premier, ERIC or EBSCOhost, ProQuest Education Journals, psychINFO, and the general library search engine, which helped to provide open access to research that was found from within studies on the topic. The search terms included: mindful*, intellectual disabil*, cognitive disabil*, developmental disabil*, student*, adolescent, and special education. The searches were conducted approximately between September 2021 and June 2023.

Definitions

Mindfulness has gained greater popularity in both education and the wider community. Mindfulness is a practice with roots in Buddhism and was popularized by Jon Kabat-Zihn. According to Kabat-Zinn, mindfulness can be described as " moment-to-moment, non-judgemental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, as non-judgmentally, and as open-heartedly as possible" (Kabat-Zinn, 2015, p. 1481). For the purposes of this research, studies were included that were mindfulness-informed, meaning that they had components of mindfulness such as focused attention, acceptance, or non-judgement but could also include additional components. For the purposes of this research, the term "Mindfulness-Informed" includes mindfulness and mindfulness-based programs, and mindfulness-based interventions.

Individuals with intellectual disabilities are the focus of this research. According to the Individuals With Disabilities Act, an intellectual disability: "...means significantly subaverage

general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance. The term 'intellectual disability' was formerly termed 'mental retardation.'" (Sec. 300.8(c)(6), 2018). In Minnesota, where this research was conducted, the educational term for intellectual disability is Developmental Cognitive Disability, and the Minnesota Department of Education defines Developmental Cognitive Disability as "a condition that results in intellectual functioning significantly below average and is associated with concurrent deficits in adaptive behavior that require special education and related services" (Minnesota Department of Education). While the research was conducted in Minnesota, the national term of intellectual disability was used as a more inclusive term and one which is more widely accepted.

The focus of this research was further narrowed by age. The research focuses on adolescent students. The term adolescent can have slightly varying definitions. For the purposes of this research, the term includes the ages of 10-19, as defined by the World Health Organization, and is "the phase of life between childhood and adulthood" (World Health Organization, see the website in references).

The Purpose of the Thesis

The purpose of this research is to answer the question: What is the effect of mindfulness-informed practices on adolescents with intellectual disability? Furthermore, this research seeks to answer what effect mindfulness-informed practices have on positive school behaviors for adolescents with intellectual disabilities, including on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance.

To answer these questions, a literature review has been done, examining the existing data on this topic. While these questions are important and have a high value for the researcher and those who teach and work with adolescents with intellectual disabilities, there is a shortage of research answering these specific questions. In order to answer these questions, the researcher has had to look at broader research considering the effects of mindfulness-informed practices on students with other disabilities as well as looking beyond the age range to adults.

The Research

Mindfulness-informed practices have been shown to be an effective intervention with a variety of groups. Mindfulness-informed interventions are effective in increasing on-task behavior in children (Kasson & Wilson, 2017). Mindfulness-informed practices have increased prosocial behaviors, emotional regulation, and academic achievement for early adolescents (4th graders) in an urban setting (Harpin et al., 2016). The Soles of the Feet intervention has been shown to be effective in increasing academic engagement in disruptive elementary students (Felver et al., 2014). The mindfulness intervention of the MindUp curriculum was shown to increase executive function skills, empathy, emotional control, mindfulness, peer-reported prosocial behavior, and overall math grades in 4th and 5th graders (Shonert-Reichl et al., 2015). A 5-week mindfulness intervention involving 409 youth showed improved attention, self-control, participation, and care and respect for others in a lower-income and ethnic minority elementary school (Black & Fernando, 2014). A large-scale universal mindfulness-informed intervention in 12 UK schools with 256 students found that the intervention reduced depressive symptoms for adolescents (Kuyken et al., 2013). Mindfulness-informed practices are effective with children and adolescents without disabilities.

Not only have mindfulness-informed practices been effective with people without disabilities, but they have also been found to be an effective intervention for people with disabilities. Shaffer et al. showed that a mindfulness-informed intervention can be effective for kids aged 8-12 with autism spectrum disorder and/or intellectual and developmental disabilities for reducing "anxiety, social problems, thought problems, rule-breaking behavior, aggressive behavior, irritability, lethargy/social withdrawal, and inappropriate speech" (Shaffer et al., 2018, p. 504). The mindfulness-based intervention of Soles of the Feet has been shown to increase academic engagement for students aged 10-12 served under the special education categories of Emotional Behavior Disorder or Other Health Impairment with significantly disruptive behavior (Felver et al., 2017). A group that is less studied is individuals with intellectual disabilities. Students with intellectual disability make up only 6% of students aged 3-21 receiving special education under the Individuals with Disabilities Education Act (IDEA) (National Center for Education Statistics, 2023). The goal of this research was to gain a further understanding of the effectiveness of mindfulness-informed practices for adolescents with intellectual disabilities.

The literature review from Hwang and Kearney (2013) evaluated the effect of mindfulness interventions for individuals with developmental disabilities, including intellectual disability. The literature review looked at 12 studies: 11 of which involved individuals with intellectual disabilities and 1 with individuals with learning disabilities (Hwan & Kearney, 2013). The conclusion of Hwang and Kearney was that mindfulness interventions are practical and learnable for individuals with developmental disabilities and are an effective intervention for decreasing some behavioral and psychological challenges for individuals with developmental disabilities (Hwang & Kearney, 2013).

Harper et al. (2013) also looked at the effect of mindfulness-informed interventions on individuals with intellectual disability (Harper et al., 2013). Harper et al. evaluated 18 studies that focused specifically on the effects of mindfulness-based interventions on people with intellectual disabilities (Harper et al., 2013). They also reached the conclusion that mindfulness-based interventions are an effective intervention for individuals with intellectual disability (ID), specifically: "...mindfulness-based interventions can influence the behavior of people with IDs, with consistently positive outcomes across all 18 studies" (Harper et al., 2013, p. 11/15). While this literature review is helpful for demonstrating that mindfulness-based interventions are effective for individuals with intellectual disability, they mostly included studies involving adults with intellectual disability (Hwang & Kearney, 2013; Harper et al., 2013).

Kim & Kwon, 2016

Kim and Kwon (2016) conducted a study measuring the effect of a mindfulness-based intervention on three elementary-aged students with intellectual disability. The study addressed the following questions: Can a mindfulness-based intervention decrease task-avoidance behaviors? Can a mindfulness-based intervention increase on-task behaviors? Can the effect of the intervention be maintained after the intervention? The sample group included three students aged 11 and 12 with IQs between 58-66 and all with task-avoidant behaviors. A multiple baseline across participants design was used in the study.

The mindfulness-based intervention consisted of 45-minute sessions by a trained instructor two times weekly for a total of 25 sessions. The unnamed intervention included the following concepts: awareness for mindfulness, attention for mindfulness, awareness of and attention to body (breath, parts, shape, movement, behavior) and mind (feelings and thoughts),

behavior toward tasks (feelings, thoughts, actions, and breath when presented with a task), mindful management of breath, feelings, and thinking when presented with a task, and verbal self-affirmation. A fidelity checklist was completed after each session to maintain the validity of the intervention.

Baseline and post-intervention data were collected through video recording in both the school and the home environment, with two evaluators reviewing each data set. On and off-task behavior were determined based on eye focus (looking at the task person speaking), physical location (at desk/location or not), material usage (using materials as intended or not), and degree of active work engagement (doing the work/task, asking questions, etc.). The participants were also assessed for speed and accuracy on an arithmetic assessment. The maintenance period was one month following the conclusion of the intervention, and data were collected every five days.

The results of the study demonstrated a significant increase in on-task behavior and a significant decrease in task-avoidant behavior for all three participants. All three participants also maintained the levels of task-avoidant behavior and on-task behavior after the intervention for the maintenance period of one month. The following tables show the average levels of each behavior change for each participant.

Table 1 (data taken from Kim and Kwon 2016 p.92-93)

On-task behavior	**baseline**	**Midpoint of intervention**	**Maintenance period**
Participant A	**2% (0-3.3)**	**58.5% (16.7-76)**	**63.3% (63.3-66)**
Participant B	**3.5% (1.7-5)**	**66.9% (30-78.3)**	**73.6% (69-76.7)**
Participant C	**7.3% 96.3-9.7)**	**66.1% (58.3-76.7)**	**71.7% (68-75)**

Table 2 (data taken from Kim and Kwon 2016 p.92-93)

Task Avoidance behavior	baseline	Midpoint of intervention	Maintenance period
Participant A	**67.9% (65-70)**	**17.47% (4-43.3)**	**13.7% (5-8.3)**
Participant B	**53.7% (48.3-60)**	**11.6% (5-25.3)**	**7.2% (6.7-8.7)**
Participant C	**62% (51.3-68.3)**	**16.12% (8.3-33.2)**	**10.9% (8.3-16.7)**

The participants were given a self-report index to determine their perceived satisfaction with the intervention. The self-report index had seven items using a five-point rating scale. The results of the self-report index indicated high satisfaction with the intervention by the participants, with a mean rating of five on the five-point scale. Each participant's mother was interviewed after the completion of the intervention, and all three mothers reported improved behavior in the home environment. Teachers for the three students were also given a five-point scale questionnaire, and the mean rating was 4.7 indicating a high perception of success from the intervention. On the arithmetic assessment, the participants had an increase in speed and accuracy following the intervention period. Overall, Kim and Kwon's study demonstrated the significant success of a mindfulness-based intervention in increasing on-task behavior, decreasing task avoidance behavior, maintaining the effect over time, and increasing speed and accuracy for basic arithmetic tasks for kids with intellectual disabilities.

Limitations of the study included a small sample group, lack of a control group, and limited possibility of verification of study through repetition due to not naming the specific curriculum or citing it in the study. Perhaps, if the intervention material were known, the study could be repeated with a control group and a larger sample group.

Thornton et al., 2017

In this study out of the United Kingdom, Tornton, Williamson, and Cooke conducted a study of a group format mindfulness-based intervention for adolescents with intellectual disabilities and anxiety. The participants were a group of five adolescents aged (13-15) who, in addition to having an intellectual disability (called learning disability in the United Kingdom), also had concerns around anxiety, social skills, aggressive behavior, and low self-esteem. The mindfulness-based intervention was done in a group format that met for one hour weekly for six weeks. The topics covered were: "mindful breathing, movement, eating, listening, smelling and looking" (p. 261). The intervention also included the mindfulness practices of a body scan, a hand tracing technique for mindful breathing, making a glitter jar and using it as a focal point, and multiple mindfulness activities connected to the five senses. Participants were given the Screen for Child Anxiety-Related Disorders (SCARED), a self-report measure, as the pre and post-intervention data collection tool. Participants' support community completed a basic questionnaire regarding concerns for the participant, and the "impact of your child's difficulties on daily life? (0-10)" (p. 262). Participants were also asked if the session was beneficial to them after each session.

There was limited completion of the pre and post-measure data collection tool, and only two of five participants completed the screener. The data showed a slight decrease in anxiety for one of the two students who completed the forms. The support community questionnaires completed by three of the five participants' support teams showed a slight decrease in the impact of difficulties due to anxiety. The researchers admit the data set is too small to give conclusive evidence. The post-session question to participants showed that the participants overall found the sessions beneficial to themselves.

The limitations of the study are in the size of the participant group and the completion of the data collection components. The study itself speaks of plans to recreate the study with some minor adaptations of the format and more specific outcome measures. While the study is limited, it does speak to the feasibility of implementation of group mindfulness-based interventions with adolescents with intellectual disability as well as the positive perception of the mindfulness-based intervention for the participants. As the study suggests, further research is needed on this population, with more robust studies as well.

Singh et al., 2017

Singh and collaborators conducted a study on the effectiveness of the Soles of the Feet intervention in reducing the incidents of verbal and physical aggression in individuals with Prader-Willi Syndrome. The study was conducted with three boys aged 16-19, all with Prader-Willi Syndrome, mild intellectual disability, and behaviors of verbal and physical aggression. Data was collected in a multiple baseline design for 3, 5, and 7 weeks for each of the participants, respectively. The parents of the participants were trained in the Soles of the Feet intervention by a trainer prior to beginning the baseline data collection. Parents had to demonstrate that they could teach the practice. The parents then taught their child the Soles of the Feet procedure. The Soles of the Feet procedure was reviewed for five days with the participant, and the instructions were recorded by the parents for the participant to review on their own. Participants were required to participate daily in the meditation with their parents and after situations that could cause aggression. The active period of the intervention was 37, 35, and 33 weeks for each participant, respectively. There was also a follow-up period after the active intervention. The follow-up period included data collection on verbal and physical aggression for one year.

The results of the study showed a decrease in verbal and physical aggression across all participants during the active intervention, which was maintained during the follow-up period. "The downward trend in verbal aggression between baseline and practice phases shown in Table 1 (Singh et al., 2017) is statistically significant, Phi = .085, $p < 0.001$" (p. 256). "The downward trend in physical aggression between baseline and practice phases shown in Table 2 (Singh et al., 2017) was statistically significant, Phi = 0.62, $p < 0.001$" (p. 256). The results were maintained during the follow-up period.

Limitations of the study include familial data collectors, familial trainers, and the training of the parents prior to baseline data collection. Another limitation of the study is the small sample size. Even with the limitations of the study, it clearly demonstrates the effectiveness of the Soles of the Feet procedure for use to reduce verbal and physical aggression in adolescents with Prader-Willi Syndrome and mild intellectual disability.

Brown & Hooper, 2009

Brown and Hooper (2009) conducted a single-participant case study that sought to determine the effectiveness of acceptance and commitment therapy (ACT) for reducing anxiety and obsessive thoughts in a person with moderate to severe intellectual disability. The study's single participant was an 18-year-old girl with a full-scale IQ of 44. The study's baseline data tool and assessment tool was an adapted version of the Acceptance and Action Questionnaire-9 (AAQ9). The intervention consisted of a 10-session intervention implemented over 17 sessions due to the need for adaptation. The intervention "was designed to deliver the core ACT processes" (Brown & Hooper, 2009, p. 197). The interventions included introductory body awareness exercises, activity-based exercises, and lesson-based components. An example of an

activity-based exercise was building a river and having thoughts represented by leaves floating on the river for a discussion of how thoughts can interact with each other.

The study is limited in its scope with a single participant. The study showed that much of the intervention had to be adapted to meet the participant's attention and understanding, which limits its replication capacity. The data of baseline to post-intervention using the adapted AAQ9 showed that the participant had a reduction in avoidance of "cognitions, emotions, and motives" (Brown & Hooper, 2009, p. 199). Anecdotal data from parents also suggested a successful intervention, with the parents reporting that the participant was calmer and had shorter times of rumination (Brown & Hooper, 2009). While there are limits to the study, it showed a positive effect of using Acceptance and Commitment Therapy (ACT), a mindfulness-based intervention for adolescents with significant intellectual disability.

McMahon et al., 2021

This study by McMahon et al. (2021) looked at the possible positive effect of wearable technology for supporting individuals with intellectual and developmental disabilities in mindfulness practices. They considered the possible benefit of neurofeedback to increase mindfulness, focus on the breath, and positive emotions of the participants following the intervention. The participants used a wearable electroencephalography (EEG) device called Muse. The device provided active feedback using sounds based on the participants' "state mindfulness, which refers to the quality of mindfulness at a particular time" (McMahon et al., 2021, p. 4/21). The sounds, such as wind in an ocean landscape, would be calm sounding when the individual was focused on breathing and had a higher "state mindfulness" (McMahon et al., 2021, p. 4/21). The sounds would become wilder if the individual was not focused on breathing or had a lower "state mindfulness" (McMahon et al., 2021, p. 4/21). The sounds would change

according to their mindfulness as measured by the Muse device, a wearable EEG device. The study used an A-B-A-B design with four phases or the A-B-A-B (A-baseline, B-intervention) sequence. A total of 20 sessions were done, over 6 weeks, each session was 5 minutes long. The sessions included a consistent script that guided participants in reviewing the concepts of paying attention to the breath and acceptance. The intervention sessions also included information about listening to the Muse device.

Table 3:

Participant	Age	Diagnoses	Trend for "State Mindfulness"
Luke	18	Down Syndrome, Autism Spectrum Disorder (ASD)	A1-Decreasing B1-Increasing A2-Decreasing B2-Decreasing
Hans	18	Down Syndrome, ASD	A1-Increasing B1-Decreasing A2-Increasing B2-Decreasing
Anakin	21	Down Syndrome	A1-Decreasing B1-Increasing A2-Increasing B2-Increasing
Leia	22	ASD	A1-Increasing B1-Decreasing A2-Decreasing B2-Increasing
Kylo	25	ASD	A1-Increasing B1-Decreasing A2-Increasing B2-Increasing

The study results revealed a “functional relation between listening to the neurofeedback cues and state mindfulness for Anakin, Leia, and Kylo. However, this was not true for Luke and Hans” (McMahon et al., 2021, p. 13/21). All participants reported an increase in positive emotions post-session, with one participant having a neutral response for one of the sets of sessions. The study gives “partial support for the hypothesized relation between the use of the neurofeedback from the MUSE and improving state mindfulness in these students” (McMahon et al., 2021, p. 14/21). All participants reported an acceptability of using the Muse device.

The study self-reports several limitations. The Muse device has not been tested specifically for young adults with intellectual disabilities. The Attentional Focus Scale and Children’s Feeling Scale have also not been rated for use with individuals with intellectual disabilities. Participants' intellectual and adaptive functioning was not collected, which clouds the data particularly due to having some individuals with developmental disabilities (ASD) and some individuals with intellectual disabilities (Down Syndrome) in the same study. Reporting on the participants' intellectual functioning could have provided greater clarity of similarities of the participants or differences. There also was no follow-up period after the intervention to determine the lasting effects of the intervention. The study is also limited in scale, with only five participants. Attention to breathing was measured using a self-report tool, which can have limitations (McMahon et al., 2021).

Heifetz & Dyson, 2017

Heifetz and Dyson (2017) conducted a group-based mindfulness study with adolescents with intellectual or developmental disabilities and their families. They used a pre-post design to determine the effectiveness of the program. The program for the participants included six sessions over six weeks, each lasting 90 minutes, with two follow-up sessions at two weeks and

one month later. The parental component included joint participation in the first session, joint participation in the final, one month later, follow-up session, and one separate parents-only session midway through the six-week portion for their children. The mindfulness program was based partially on the Soles of the Feet Curriculum and also included components from mindfulness programs not focused on individuals with intellectual and developmental disabilities. The main themes of the program were a general understanding of mindfulness, using mindfulness to manage emotions, and regular practice in a variety of environments. The components of the program were: "Awareness, Mind and Body Connection, Acceptance, Investigate and Non-Identify, Safe Place" (Heifetz & Dyson, 2017, p. 447). Each session was structured in a consistent format. Following each session, participants and families were given home practice to complete together.

The participants were adolescents aged 12-17 with diagnoses of intellectual and developmental disability in the mild range. Participants also had emotional regulation difficulties. A total of eight participants were included in the program, with ten parents. Six of the eight participants with their corresponding eight parents completed the program.

The measures used to evaluate the program and intervention were the Interpersonal Mindfulness in Parenting Scales, Children's Social Behavior Questionnaire, participant satisfaction survey, use of program strategies survey, and weekly emotional check-ins. Parents completed the Interpersonal Mindfulness in Parenting Scale and the Children's Social Behavior Questionnaire prior to the intervention and at the completion of the program. The data from the participants were collected pre-intervention, at the end of the intervention, and at the one-month follow session.

The weekly emotional check-in data showed a positive trend for increased feelings of happiness following the sessions. The data from the Children's Social Behavior Questionnaire showed a trend toward increased social behavior for four out of five participants. The data from the Interpersonal Mindfulness in Parenting Scales showed an increase in the use of mindful parenting strategies from the pre-intervention to post-intervention. The survey regarding the use of the mindfulness strategies by the participants showed that they were sometimes using the strategies, but that their use of the strategies was decreasing already by the one-month follow-up session. The study demonstrated a positive effect on social behavior, general mood, and mindful parenting of a group-based mindfulness intervention for adolescents with intellectual or developmental disabilities together with their parents. The study also showed that an intervention that utilizes components from a curriculum aimed at individuals with intellectual disabilities, as well as components from general mindfulness programs, can be effective.

The study also had several limits. The limits included a small non-random sample group, a short follow-up period, and self-reports that may have inflated the positive mood results due to a bias toward wanting to please the facilitators or give a positive response. Additionally, adding more data collection points may have provided more comprehensive results. While the study has many limits, it does show a positive effect for a variety of measures for implementing a group-based mindfulness program for adolescents with intellectual or developmental disabilities with their parents (Heifetz & Dyson, 2017).

Miodrag et al., 2013

Miodrag, Lens, and Dykens conducted a study with adults with Williams syndrome using a mindfulness intervention (Miodrag et al., 2013). Williams syndrome has a characteristic of intellectual disability in addition to externalizing and internalizing behavioral challenges

(Miodrag et al., 2013). The study looked at whether there would be a direct relationship between cortisol levels and the salivary enzyme alpha-amylase (sAA) and self-reports of mood prior to and following a mindfulness intervention based on the Mindfulness-Based Stress Reduction (MBSR) program. Cortisol and the salivary enzyme alpha-amylase (sAA) are physiological markers for stress in the body.

There were twenty-four participants in the program with an average age of 27.5 and with IQs ranging between 43 and 91. 83.3% of the participants met the criteria for some type of intellectual disability (33.3% borderline, 37.5% mild intellectual disability, and 12.5% moderate intellectual disability). Participants were part of a larger week-long music camp for individuals with Williams syndrome and other developmental disabilities.

The mindfulness intervention was implemented as part of the week-long camp. The twenty-four participants were divided into three smaller groups for the intervention. The intervention was a daily 20-minute intervention for five days. The intervention was based on the 8-week Mindfulness-Based Stress Reduction (MBSR) program. The components of the program included: “Qigong movement, deep belly breathing and breath awareness, body scans, sitting meditation, and brief lesson of the day about mindfulness” (Miodrag et al., 2013, p. 141). The session followed a structured format for each lesson, with a script for leaders to follow to increase fidelity to the intervention.

To measure the effect of the intervention, salivary cortisol and the salivary enzyme alpha-amylase (sAA) were collected prior to the intervention and 15 minutes following the intervention. A six-point mood rating scale was also used before the intervention and after the intervention each day. Additionally, the Child Behavior Checklist was completed by parents and primary caregivers.

The results of the study showed a decrease in cortisol levels following each of the sessions for the participants. It also showed a correlation between self-reported mood and cortisol levels. An overall decrease in cortisol over time was not noted. The self-reported mood scale indicated a trend of lowered anxiety following each session as well. The salivary enzyme alpha-amylase (sAA) results showed a decrease from sessions one and two to sessions four and five instead of a session effect decrease.

Some limits of the study include setting and limited time. The week-long music camp could have been particularly arousing for the participants affecting the results of the study. Also, due to the setting, the intervention was relatively brief, only 20 minutes for five days. The self-reported mood scale reports are also a potential limit of the study due to the potential of individuals seeking to give a perceived positive response to the leaders. Even with the limits of the study, it did demonstrate a positive effect for decreasing salivary cortisol and self-reported anxiety of a relatively brief MBSR-based mindfulness intervention for adults with Williams syndrome (83.3% having some form of intellectual disability) (Miodrag et al., 2013).

Myers et al., 2023

Myers et al. (2023) conducted a randomized control study of the implementation of the Mindfulness-Based Health Wellness (MBHW) program through telehealth delivery with families teaching the program to their adolescent children with intellectual or developmental disabilities. The Mindfulness-Based Health Wellness (MBHW) program has lifestyle and weight management goals and includes the following components: exercise, nutrition and healthy eating, mindful eating, “visualizing, labeling, and responding to hunger between meals” (Myers, et al., 2023, p. 529), and using the meditation Soles of the Feet. There were a total of 86 participants aged between 13-20, all with mild intellectual functioning impairment and were

overweight or obese. The MBHW program group (42 participants) was compared to a treatment-as-usual control group (44 participants). The program was implemented through the training of family members with an average of 10-12 hours of training. The family members then taught and implemented the MBHW program with their adolescent family members. The measures used to determine effectiveness were: weight (measured weekly), weight goals met, body mass index (BMI), and a social validity rating scale.

The treatment group using the Mindfulness-Based Health Wellness (MBHW) program all reached their target weights in an average of 83 weeks with an average weight loss of 38 lbs compared to the treatment-as-usual group, which had an average weight loss of 3.47 lbs. The BMI of the treatment group had an average reduction of 6.34 compared to the treatment-as-usual group, which had a BMI reduction of 0.63. The social validity rating scale showed high social validity of the intervention for adolescents with Intellectual or Developmental Disabilities.

The study showed that a Mindfulness-Based Health Wellness program can be implemented through trained family members and that it is an effective intervention for weight loss and lifestyle change for adolescents with intellectual or developmental disabilities. The study has limits in using a treatment-as-usual control group compared with an active control group. The study also had a limit in the lack of data for a maintenance period following the intervention. Despite the limitations of the study, it clearly showed that a Mindfulness-Based Health Wellness program is an effective intervention for adolescents with intellectual or developmental disabilities (Myers et al., 2023).

Summary

The above research helps to answer the research questions put forth in this thesis. In seeking to answer the question: What is the effect of mindfulness-informed practices on

adolescents with intellectual disability? The overall effect of mindfulness-informed practices for adolescents with intellectual disability is neutral to positive based on the research outcomes of the above researchers (Brown & Hooper, 2009; Heifetz & Dyson, 2017; Kim & Kwon, 2016; McMahon et al., 2021; Miodrag et al., 2013; Myers et al., 2023; Singh et al., 2017; Thornton et al., 2017). Furthermore, this research sought to answer what effect mindfulness-informed practices have on positive school behaviors for adolescents with intellectual disabilities, including on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance. Kim and Kwon provided evidence in support of mindfulness-informed practices increasing on-task behavior and speed and accuracy on basic arithmetic tasks for adolescents with intellectual disabilities (Kim and Kwon, 2016). Mindfulness-informed practices were shown to increase self-regulation (Brown & Hooper, 2009; Miodrag et al., 2013; Myers et al., 2023). Mindfulness-informed practices were also shown to decrease aggression and verbal outbursts (Singh et al., 2017).

The above research demonstrates that mindfulness-informed practices are an effective intervention for individuals with intellectual disabilities. They are acceptable to people with intellectual disabilities (Kim & Kwon, 2016; McMahon et al., 2021; Myers et al., 2023; Thornton et al., 2017). Mindfulness-informed practices are effective with people of a variety of ages with intellectual disability, both adults (Miodrag et al., 2013) and adolescents (Brown & Hooper, 2009; Heifetz & Dyson, 2017; Kim & Kwon, 2009; Myers et al., 2023; Singh et al., 2017; Thornton et al., 2017). The studies also show that mindfulness-informed practices can be done in a group format (Heifetz & Dyson, 2017; Miodrag et al., 2013; Thornton et al., 2017). The research supports claims that mindfulness-informed practices are effective in decreasing cortisol levels and self-reported anxiety (Miodrag et al., 2013), verbal and physical aggression

(Singh et al., 2017), task avoidance behavior (Kim and Kwon, 2016), and avoidance of specific types of cognition (Brown & Hooper, 2009). The studies also show that mindfulness-informed practices are effective with people with intellectual disabilities for increasing social behavior, general mood (Heifetz & Dyson, 2017), weight management (Myers et al., 2023), and on-task behavior (Kim & Kwon, 2009). There is also partial support for mindfulness-informed practices improving “state mindfulness” in individuals with intellectual disabilities (McMahon et al., 2021, p. 14/21).

CHAPTER III: APPLICATION OF RESEARCH

As a special education teacher, research can be very helpful for guiding practice, but research without resources leaves teachers knowing what to do, without having the means to implement it. The above research fully supports mindfulness-informed practices as an effective and evidence-based intervention for adolescents with intellectual disabilities. The next phase of research is applying it. There can be many barriers to research applications, including but not limited to cost and ease of use. Many mindfulness-informed curricula can have high costs associated with their training and materials. Two of the mindfulness-informed interventions that I have discovered as a special education teacher that are both evidence-based, have a reasonable cost for an individual teacher to take on, and are relatively easy to implement are the MindUp curriculum and the Soles of the Feet intervention.

The MindUp Curriculum is published by Scholastic and comes from the Hawn Foundation. The MindUp curriculum was developed with influence from "cognitive developmental neuroscience, SEL (social and emotional learning), and positive psychology" (Maloney et al., 2016, p. 315). It has tenants of universal participation, creating an "optimistic classroom" (Maloney et al., 2016 p. 315), an easy-to-use manual for implementers, training for teachers, and connections between learning in the classroom and the general school environment (Maloney et al., 2016). The core features of the program are learning "...mindfulness attention awareness practices that have been identified as those that promote children's executive functions" (Maloney et al., 2016, p. 315). The curriculum moves students from mindful internal experiences and processes to mindful external and social practices with peers and the larger

community (Maloney et al., 2016). The curriculum has three different developmental levels: grades K-2, 3-5, and 6-8 (Maloney et al., 2016).

The research on the effectiveness of the curriculum has shown the MindUp curriculum to be an effective mindfulness-based intervention across multiple measures. MindUp has been shown to be effective with fourth-grade students in an urban setting for increasing prosocial behaviors, emotional regulation, and academic achievement (Harpin et al., 2016). In a randomized controlled study with fourth and fifth-grade students, the MindUp curriculum was shown to increase executive function skills (Schonert-Reichl et al., 2015). Student self-report measures showed an increase in empathy, emotional control, and mindfulness with decreased symptoms of depression (Schonert-Reichl et al., 2015). The peer-reported measures used also showed an increase in peer-rated prosocial behavior for those students who participated in the MindUp intervention (Schonert-Reichl et al., 2015). The overall math grades for the students in the MindUp group were also significantly higher than the control group (Schonert-Reichl et al., 2015). Due to the MindUp Curriculum's evidence base and ease of use, it was chosen as one of the curricula to include as part of the application of research for this thesis project.

The Soles of the Feet mindfulness intervention was the other curriculum that was included in the application of research due to its evidence base and ease of implementation. The Soles of the Feet program was developed by Joshua Felver and Nirbhay Singh (Felver & Singh, 2020). The Soles of the Feet program was developed "...to help children and youth with intellectual disabilities or autism spectrum disorder to manage their aggressive and disruptive behavior without external control by their caregivers" (Felver & Singh, 2020, p. 3). Further, Soles of the Feet was developed to be "... a mindfulness practice that is portable, that is easy to use, that requires no equipment, that needs no continuous instructions from others, and that

assists with self-management of socially undesirable behavior" (Felver & Singh, 2020, p. 4). Different from a true curriculum, Soles of the Feet teaches individuals a technique of shifting their attention from a strong emotional state to a neutral part of their body, the soles of their feet, thus disrupting the automatic response that would have been triggered by the strong emotional state (Felver & Singh, 2020). Once individuals have mastered the technique, there is no need for continued instruction other than refreshers as needed (Felver & Singh, 2020).

Soles of the Feet has been researched thoroughly and shown to be an effective intervention across many different groups. The Soles of the Feet has been shown to be effective with adults with intellectual disability and significant physical aggression at decreasing incidents of physical aggression (Singh et al., 2011). The intervention has been shown to be effective with adolescents with Prader-Willi syndrome for decreasing verbal and physical aggression (Singh et al., 2017). Elementary students without disabilities that were disruptive saw an increase in academic engagement with using the Soles of the Feet (Felver et al., 2014). Additionally, students with Emotional Behavioral Disability (EBD) and Other Health Disabilities (OHD) also had an increase in academic engagement with the use of Soles of the Feet (Felver et al., 2017). These are just some of the research studies that have evaluated the effect of the Soles of the Feet.

Application of Research Plan

My plan to apply the above research is to incorporate components of both the MindUP curriculum and the Soles of the Feet program with supplemental materials into a mindfulness-informed intervention for my students who are adolescents with intellectual disabilities. When considering how to apply the research that supports using mindfulness-informed interventions for adolescents with intellectual disabilities, there are some good recommendations for practice. It is important to use clear language, accommodate sensory

needs, “use concrete examples, visual imagery, practical demonstrations, and role play to explain concepts” (Griffith & Hastings, n.d.), provide opportunities to check for understanding, and give plenty of time for reflection following mindfulness practices (Griffith & Hastings, n.d.). From these recommendations, I have decided to use the Pre K-2 MindUp curriculum for adaptation in my teaching due to the increase in concrete examples, simplicity of language and concepts, and opportunities for physical experiences (The MindUp Curriculum, 2011). I have also adapted some components of the Soles of the Feet program to include more straightforward language and visual supports.

I have used components of the MindUp curriculum previously and have had high engagement from students and support staff. I have had to create many materials to help my students understand the concepts and to help guide them in the mindfulness practice of deep breathing while attending to a calming bell. Some of the materials included below have come out of my successes and failures at teaching this curriculum. The materials from the Soles of the Feet program are adapted for use with my students but have not yet been used with them. As stated previously, the plan to apply this research is to implement a mindfulness-informed intervention with my students using components of the MindUp Curriculum and the Soles of the Feet program.

Included below are some hands-on materials, a visually supported guided meditation script, and example lesson plans. **Visual 1** is a worksheet based on the initial concepts taught in MindUp Lesson One about getting to know parts of the brain and how they help and can hinder us (The MindUp Curriculum, 2011). The names of the parts of the brain are challenging for my students to learn and even say. When teaching, I always use the easier-to-understand phrases that are associated with each part in addition to a hand gesture to go with them: amygdala (“security

guard"), prefrontal cortex ("wise leader") (The MindUp Curriculum, 2011, p. 152) and hippocampus (memory keeper). This worksheet is designed to give the students further practice with the names of the parts of the brain and how they help us. The following image sources were used for this resource (https://www.seekpng.com/ima/u2r5q8a9r5i1y3w7/; https://sharonselby.com/parenting/the-importance-of-developing-executive-functions-a-summary-of-dr-adele-diamonds-work).

Visuals 2 and 3 are adapted worksheets from the Soles of the Feet program (Felver & Singh, 2020, Appendix 1B). The goal of these worksheets is to help students to work with the names of the parts of the feet and to better learn the names and locations of the different parts of the feet. The adaptations that I made were dividing the concepts into two separate worksheets to give multiple opportunities for practice and to make the visuals larger. I further adapted the worksheets to include a no-writing option where students can cut out the words and glue them instead of writing them in the boxes by the parts of the feet.

Visual 4 is a visually supported and adapted script for the belly breathing and the soles of the feet routines (Felver & Singh, 2020, Appendix 1C and Appendix 1D). I combined the belly breathing script with the soles of the feet script, because I have noticed that my students need many prompts to think about their breathing and to try to slow themselves down. While the script encourages students to close their eyes, I have found in my mindfulness instruction with students that many of them prefer to keep their eyes open. Visual supports are such a common part of my teaching instruction that it seemed natural to adapt this script to include visual supports to help with some of the harder concepts, like breathing into and out of your belly.

Visual 5 is an example lesson plan based on MindUp Lesson Four: Mindful Listening (The MindUp Curriculum, 2011). The lesson plan includes standards from the Early Childhood

Indicators of Progress (2017) and The Self-Management Competency portion of the Minnesota Department of Education Social and Emotional Learning (SEL) Implementation Guide (Self-Management, internet-based reference pdf., (n.d.), p. 2). The lesson includes a literacy connection with a book that has many sound descriptions. I also adapted the lesson to include an arts-based activity to reinforce the learning because I have seen such high engagement with arts-based activities that connect to learning with my students.

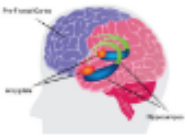
Visual 6 is another example lesson plan. This lesson plan is an adapted lesson from the Soles of the Feet program from the second lesson in the program (Felver and Singh, 2020, p. 37-45). This lesson also includes standards from the Early Childhood Indicators of Progress (2017) and The Self-Awareness Competency portion of the Minnesota Department of Education Social and Emotional Learning (SEL) Implementation Guide (Self-Awareness, internet-based reference pdf., (n.d.) p. 2). The lesson adaptation includes a review of feelings and talking about where in the body that we feel our feelings. This would be done with a visual of a person to help students describe the place in their body where they feel emotions. The lesson also includes the visually supported and adapted guided meditation script of Visual 4.

These example resources that I have created would all be a part of my mindfulness-informed intervention with my students. These resources are based on the MindUp curriculum and the Soles of the Feet program, which are both evidence-based mindfulness interventions. Combining these resources for this intervention is a valuable and practical application of the research of this thesis.

Visual 1

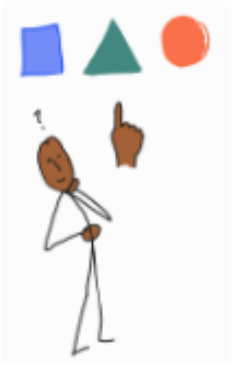
Getting to Know Your Brain!

Draw a line from the picture to the correct word or phrase to describe it. Hint: Each picture has 2 phrases



☐ Helps when you are scared

☐ Helps you make good decisions



☐ Prefrontal cortex

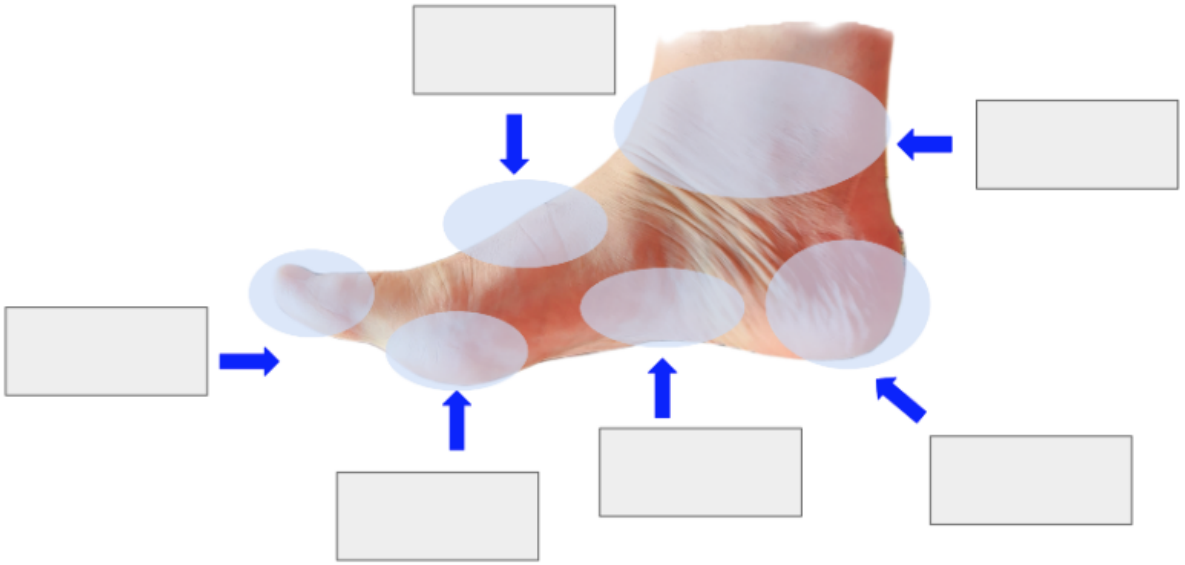
☐ Helps you to remember

☐ Hippocampus

☐ Amygdala

Image sources: https://www.seekpng.com/ima/u2r5q8a9r5i1y3w7/
https://sharonselby.com/parenting/the-importance-of-developing-executive-functions-a-summary-of-dr-adele-diamonds-work

Getting to Know your Feet!: Cut out the words below and glue them on the correct part of the foot



ball
toes
arch
heel
top of the foot
ankle

Visual 3

Getting to Know your Feet!

Cut out the words below and glue them on the correct part of the foot.

sole of the foot	heel	ball
	arch	toes

Visual 4

My Soles of the Feet Routine
As we begin, sit up straight, put your feet flat on the floor, and let your eyes close if that feels comfortable...
Sitting up, put one hand on your belly.
Imagine breathing into and out of your belly....
Feel your belly move with your breath...
Breathe low into your belly....breathe through your nose and imagine each breath going down down down into your belly and then out again slowly through your nose.
Continue to breathe low and slow into your belly..
Paying attention to your breath, coming into and out of your belly....notice your breath..... Notice your belly moving with your breath....breathing low and slow into your belly
Now, quickly shift the focus of your attention to your feet...

Visual 4 continued

Visual 5

<table>
<tr><td>Lesson Plan</td><td>Mindfulness</td><td>Date:</td></tr>
<tr><td colspan="3">MindUp Lesson 4: Mindful Listening</td></tr>
<tr><td>Learning Objective:</td><td>Standards:</td><td>Materials:</td></tr>
<tr><td>-I can focus my attention on sounds
-I can use mindful listening in conversation</td><td>Early Childhood Indicators of Progress:
AL3.9 Listens to others
S4.12 Sustains attention and persistence with a task of interest for at least 5 minutes
SEL benchmark K-3
Self-Management: Demonstrate calming strategies in order to manage emotions, thoughts, impulses, and stress.</td><td>-Book: Nighttime Symphony
-bag/box with different everyday objects that make sounds (stapler, pen, scissors, tearing paper, coins, marker and cap, velcro
-youtube video of book with background sounds: https://www.youtube.com/watch?v=BaXaB5IUdOc</td></tr>
<tr><td colspan="2">Introduction:</td><td>Going Further:</td></tr>
<tr><td colspan="2">-Soles of the Feet Routine
-Review parts of the brain (highlight prefrontal cortex for focused attention)
-Listening activity- hand clapping pattern match
-Questions- ask if it was easy or hard; why?</td><td rowspan="4">Arts and Music Connection:
Match sounds and make your own Shaker

Materials:
4 pairs yogurt containers taped closed with sound-making material inside (sand, beans, rice, small rocks)
1 yogurt container per student
1 template for designing the outside of their shaker per student
Masking tape
Sound-making materials: (sand, beans, rice, small rocks)

- Shake 1 shaker and have 1 student at a time try to match the sound with the other shaker with the same materials until all that want to have participated.
-Explain project:Student can choose up to 2 materials for their shaker; design shaker cover, cut out shaker cover, tape shaker closed, tape non cover pieces
-Shake it!!</td></tr>
<tr><td colspan="2">Instruction:</td></tr>
<tr><td colspan="2">-We can train our brain to pay attention to what we want. Today we will focus on training our brain to focus on sounds.
-Question- Think of a time you listened very carefully. When can listening help you? When can we practice mindful listening?
-Listen to read aloud of Nighttime Symphony
- Ask students about what sounds they heard
-Do listening activity with noise-producing everyday objects and have them guess what the objects are.
-Do 1 sound at a time, asking students for what they heard or how it sounded
-Talk about how our brain helps us focus our attention to listen</td></tr>
<tr><td colspan="2">Check for Understanding: (10 minutes)</td></tr>
<tr><td colspan="2">Review parts of the brain and ask which part helps us to focus our attention for listening.
Practice Mindful Listening with a “share” question (What will you do after school today?) Give each student a chance to share and point out how other students are using mindful listening.</td></tr>
<tr><td colspan="2">Follow Up:</td><td>Reflection</td></tr>
<tr><td colspan="2">-Review learning targets
-change listening activity to partner conversation
-repeat clapping pattern game if time</td><td>Were learning targets achieved?
How do you know?</td></tr>
</table>

Visual 6

Lesson Plan	Mindfulness	Date:
Soles of the Feet Lesson 2: Practicing with a Pleasant Feeling		
Learning Objective:	Standards:	Materials:
-I can focus my attention on my feet -I think of and describe a happy memory -I can change my feelings by focusing my attention	Early Childhood Indicators of Progress: S3.5 Recognizes and describes own emotions S4.12 Sustains attention and persistence with a task of interest for at least 5 minutes S7.8 Shares information and participates in activities with adults and peers SEL benchmark K-3 Self-Awareness: Identify emotions related to different situations or events.	-slides to support lesson - feelings review -where do we feel happiness -5 senses visuals to support remembering a pleasant memory -pictures from large group fun activity
Introduction:		
-Soles of the Feet Routine -Review feelings -Feelings check in- How are you feeling today? What does it feel like in your body?		
Instruction:		
-We have been working on training our brain to focus on what we want. Today we are going to practice shifting our attention from a pleasant feeling to our feet. - Today we are going to talk about feeling happy - How do you know when you are feeling happy? When someone else is feeling happy? What do you notice in your body when you are feeling happy? -Now, we are going to think of a time when we were feeling happy. -Who was there? Where were you? What could you see? Hear? Taste? Smell? Feel? -Ask 1 student to share: retell as needed, ask further details as needed to get a vivid memory; switch memories if needed -reference large group fun event photos from previous day/week if no student can come up with a memory -Now, we are going to practice our Soles of the Feet routine. We practice the soles of the feet routine to help us stay calm when we feel strong emotions. Today we are going to practice while we are feeling the strong emotion of happiness. -Soles of the feet routine with happy memory guides at the beginning		
Check for Understanding: (10 minutes)		
How did it feel to remember something happy? What did you notice when we shifted our attention to our feet? Did you notice any changes in your feelings? Highlight any comments of the feeling diminishing or disappearing. We can make our strong feelings smaller when we focus on our feet.		
Follow Up:		Reflection
- Review Learning targets - Depending on how students noticed changes in their feeling of happiness, repeat lesson again focusing on how our feelings change when we shift our focus to our feet.		Were learning targets achieved? How do you know?

CHAPTER IV: DISCUSSION AND CONCLUSION

SUMMARY OF LITERATURE

The research of this thesis sought to answer the question: What is the effect of mindfulness-informed practices on adolescents with intellectual disabilities? The overall effect of mindfulness-informed practices for adolescents with intellectual disability is neutral to positive based on the research outcomes of the researchers named in Chapter II (Brown & Hooper, 2009; Heifetz & Dyson, 2017; Kim & Kwon, 2016; McMahon et al., 2021; Miodrag et al., 2013; Myers et al., 2023; Singh et al., 2017; Thornton et al., 2017). Furthermore, this research sought to answer what effect mindfulness-informed practices have on positive school behaviors for adolescents with intellectual disabilities, including on-task behavior, emotional regulation, decreased aggression, decreased verbal outbursts, and increased academic performance. Kim and Kwon provided evidence in support of mindfulness-informed practices increasing on-task behavior and speed and accuracy on basic arithmetic tasks for adolescents with intellectual disabilities (Kim &Kwon, 2016). Mindfulness-informed practices were shown to increase self-regulation for individuals with intellectual disabilities (Brown & Hooper, 2009; Miodrag et al., 2013; Myers et al., 2023). Mindfulness-informed practices were also shown to decrease aggression and verbal outbursts (Singh et al., 2017).

The above research demonstrates that mindfulness-informed practices are an effective intervention for individuals with intellectual disabilities. They are acceptable to people with intellectual disabilities (Kim & Kwon, 2016; McMahon et al., 2021; Myers et al., 2023; Thornton et al., 2017). Mindfulness-informed practices are effective with people of a variety of ages with intellectual disability, both adults (Miodrag et al., 2013) and adolescents (Brown & Hooper, 2009; Heifetz & Dyson, 2017; Kim & Kwon, 2009; Myers et al., 2023; Singh et al.,

2017; Thornton et al., 2017). The studies also show that mindfulness-informed practices can be done in a group format (Heifetz & Dyson, 2017; Miodrag et al., 2013; Thornton et al., 2017). The research supports claims that mindfulness-informed practices are effective in decreasing cortisol levels and self-reported anxiety (Miodrag et al., 2013), verbal and physical aggression (Singh et al., 2017), task avoidance behavior (Kim and Kwon, 2016) and avoidance of specific types of cognition (Brown & Hooper, 2009). The studies also showed that mindfulness-informed practices are effective with people with intellectual disabilities for increasing social behavior, general mood (Heifetz & Dyson, 2017), weight management (Myers et al., 2023), and on-task behavior (Kim & Kwon, 2009). There is also partial support for mindfulness-informed practices improving "state mindfulness" in individuals with intellectual disabilities (McMahon et al., 2021, p. 14/21).

The above research supports the use of group-based mindfulness-informed interventions for adolescents with intellectual disabilities. For special education teachers that serve this group of students and are seeking to improve positive school behaviors, a mindfulness-informed intervention would be a logical, practical, and worthwhile endeavor to pursue. The application of research, as described in Chapter III, seeks to bridge the gap between knowledge and practice, by providing some practical implementation ideas for mindfulness-informed interventions with adolescents with intellectual disabilities in the special education classroom.

PROFESSIONAL APPLICATION

Many mindfulness-informed curricula and materials exist and are available to teachers. Often teachers are limited in their resources of time and money. The following two mindfulness-informed interventions are not only evidence-based but are also reasonable in cost and ease of implementation for a special education teacher to actually put into practice.

The MindUp curriculum has been shown to be an effective mindfulness-based intervention for students across multiple measures: increasing prosocial behaviors, emotional regulation, and academic achievement (Harpin et al., 2016), executive function, empathy, emotional control, prosocial behavior, and even math grades (Schonert-Reichl et al., 2015). The Soles of the Feet program has been shown to decrease verbal aggression (Singh et al., 2017) and physical aggression (Singh et al., 2011; Singh et al., 2017) in individuals with intellectual disabilities. It has also been used to demonstrate an increase in academic engagement in students with and without disabilities (Felver et al., 2014; Felver et al., 2017). Both of these programs have research to support their use.

The MindUp Curriculum and the Soles of the Feet program both have an easy-to-use book/manual which is reasonably priced. While the MindUp program has training available, it is possible to implement it without teacher training. Both programs require some prep work to understand the concepts, self-practice, and in-program implementation. Compared to other programs and curricula available, these two have a low barrier to entry for a special education teacher.

Even the best curricula often need adaptation. For both of these curricula, it was determined that additional visuals, more concise language, and more opportunities for hands-on learning would be beneficial. The examples included in Chapter III demonstrate how these curricula can be adapted for these purposes. While these examples are a good beginning, they are far from exhaustive. More adaptation will be needed for the full implementation of the two curricula for adolescents with intellectual disabilities in the special education classroom.

LIMITATIONS OF RESEARCH

There are many limitations of the research in the field of study of mindfulness and adolescents with intellectual disabilities. Many of the studies done with individuals with intellectual disabilities have a very small sample size. This can lead to either exaggerated results or minimized results due to the effect of one individual in the study having a much greater sway on the results. A further limitation is the common practice of having heterogeneous experimental groups, including individuals with different disabilities alongside individuals with intellectual disabilities. Even when the experimental group includes only individuals with intellectual disabilities, the range of disability can be very wide. This researcher found a very small number of studies that used the school setting as the experimental setting, which, for many adolescents, is the setting for much of their time. Additionally, there were few studies that specifically targeted adolescents with intellectual disabilities. Many studies were focused on adults instead of adolescents. With the exception of the studies that used the Soles of the Feet program, many of the interventions were not described in enough detail to be replicated. There was a shortage of studies that used the same intervention as another study which draws results into question, because the results may have been due to other factors other than the specific mindfulness intervention. The outcome measures often included subjective measures (self-reports and support community reports). There were also few randomized control studies. The limitations of the research, as stated above, are many.

IMPLICATIONS OF FUTURE RESEARCH

More research regarding mindfulness-informed intervention with adolescents with intellectual disabilities should be done to address the above limitations. Future research should include more randomized control studies with larger experimental and control groups. Future

research could utilize the special education classroom setting for the research setting. Special education teachers could be recruited for this purpose as they are very invested in outcomes for their students. Further research should include easy-to-replicate interventions so that the validity of the effect of the intervention can be determined. Many studies did not report actual full-scale IQ scores for the participants. Reporting these full-scale IQ scores can help to disaggregate heterogeneous experimental groups by level of disability, which can be helpful for those working with individuals with more severe intellectual disabilities. Additionally, research should be done with groups of individuals with intellectual disabilities instead of groups with various disabilities to better determine the effect for individuals with intellectual disabilities compared with individuals with disabilities in general.

CONCLUSION

The research supports using mindfulness-informed intervention for adolescents with intellectual disabilities to increase their positive school behaviors. While this was something that was hypothesized prior to engaging in this research, it is helpful to have the research to support it. As stated in Chapter I, I have used some mindfulness-informed interventions with my students with intellectual disabilities in the past, specifically some components of the MindUp curriculum described in Chapter III. The use of these mindfulness-informed interventions has been highly engaging for my students and grounding for myself and the support staff within my classroom. I have seen students grow in their skills of being able to manage their emotions. This research has helped to solidify my position that mindfulness-informed interventions are a valuable use of my classroom instruction time. My plan going forward is to further increase my implementation of mindfulness-informed interventions with my students by combining components from the MindUp curriculum and the Soles of the Feet program. With some of the materials that I have

adapted, I am at a jumping-off point for implementing these interventions. It is my hope that this more robust implementation of a mindfulness-informed intervention will further grow my students' skills in emotional regulation as well as academic engagement.

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