

MINDFULNESS IN THE SPECIAL EDUCATION CLASSROOM: A MIXED
METHODS PILOT STUDY OF THE LEARNING TO BREATHE MINDFULNESS
CURRICULUM

by
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Abstract

Self-efficacy impacts the thoughts, behaviors, and attitudes students have towards activities such as reading or completing difficult homework. Using the social cognitive theory as a framework for understanding self-efficacy and self-regulation, a literature review of research on self-efficacy and self-regulation for secondary students with disabilities was conducted. Based on findings from the literature review, needs assessment data was collected from ninth grade students with conduct problems to examine the relationship between their behavior and their perceived self-efficacy and self-regulation. A mindfulness curriculum called Learning to Breathe (Broderick, 2013) was researched and implemented as a pilot intervention in two secondary special education classrooms ($n = 16$) in order to determine if mindfulness influences self-regulation skills and self-efficacy in students with disabilities who need behavior support. Although there were not any statistically significant findings from three self-report measures related to self-efficacy, self-regulation, and mindfulness, all students reported positive outcomes related to managing stress and anxiety, greater focus and attention, better conflict management, and increased self-compassion. In addition, all students reported that they will continue to use mindfulness and that the program should be expanded. The results of this study indicate that implementing mindfulness programs within special education settings is both feasible and positively accepted by students. Future research is needed to create tools for more accurately assessing mindfulness outcomes in adolescents with mild disabilities and to equip teachers with evidenced-based practices for classroom implementation.

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Dedication

This dissertation is dedicated to my grandparents, Robert and Carol Kissinger, who modeled for me the joy of inquiry in learning, the delight of exploring new places, and the importance of social justice. This dissertation is also dedicated to my parents, Bruce and Mary, and my husband, Cody, who have been my biggest cheerleaders and serve as my dearest role models. Thank you for believing in me.

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EXECUTIVE SUMMARY

Background

Adolescents with disabilities report lower self-efficacy and self-regulation skills than their peers without disabilities (Barkley, 1997; Bender, Rosenkrans, & Crane, 1999; Capara et al., 2008; Gumpel & David, 2000; Hampton & Mason, 2003; Kiuru, Leskinen, Nurmi, & Salemla-Aro, 2011; Klassen, 2010). This dissertation examines the theoretical and empirical research behind self-efficacy and self-regulation in adolescents with disabilities in an effort to find interventions that will increase these important competencies. A mindfulness intervention, Learning to Breathe (L2B) by Broderick (2013), was chosen for implementation in two public schools in Minnesota in an effort to positively influence the self-efficacy and self-regulation skills of adolescents with mild disabilities. This chapter provides an executive summary of this research including an overview of literature related to self-efficacy, self-regulation, and mindfulness interventions; a brief synopsis of a needs assessment conducted prior to the implementation of the L2B curriculum; and a review of the key findings and recommendations related to using mindfulness-based programs in special education settings.

Problem of Practice

The social cognitive theoretical perspective in education posits that knowledge is shaped through a reciprocal relationship between a student's prior behavioral, cognitive, and environmental experiences (Bandura, 1986). Learning occurs when there is a direct connection between the learner's perceived self-efficacy and their behavior (Bandura, 1977). Self-efficacy is shaped through four key mechanisms: previous performance

accomplishments, modeling by others, social persuasion, and emotional states (Bandura, 1977). Cognitive and behavioral change is dependent on accessing self-efficacy through these four mechanisms.

According to Bandura (1991), self-efficacy also acts as a key component of self-regulation. When individuals have a low self-regulatory system, they may experience less fulfillment, higher stress, and poor self-concept (Bandura, 1991). In essence, low perceived self-efficacy may lead to poor self-regulation abilities, which can have further mental health impacts. The problems associated with poor self-efficacy in adolescents with disabilities can cause significant distress in school including a disrupted learning process and a decreased motivation to succeed on academic tasks (Broderick & Jennings, 2012).

Studies by Caparara et al. (2008) and Klassen (2010) have demonstrated that the self-efficacy of students with disabilities is both lower than their non-disabled peers, and that self-efficacy has a greater effect on their academic achievement than their ability levels. Essentially, lower self-efficacy quickly becomes a self-fulfilling prophecy for adolescents with disabilities because it reinforces mindsets of failure. Further, low self-regulation skills in adolescents with disabilities has been shown to contribute to school dissatisfaction, age inappropriate social skills, and emotional challenges (Barkley, 1997; Gumpel & David, 2000; Korinek & deFur, 2016).

Needs Assessment

A needs assessment was conducted in the summer of 2016 at a public high school with ninth graders with conduct programs. The goal of the needs assessment was to

examine the relationship between a student's behavior and their self-efficacy and self-regulation. Two research questions guided the needs assessment.

RQ1: How is student behavior associated with perceived self-regulation self-efficacy?

RQ2: How is student behavior associated with self-regulation skills?

A ninth grade summer school course at a public school was chosen as the setting for the needs assessment because student participants in the course were required to attend due to on-going discipline issues. Student participants ($n = 10$) took two different self-report surveys on their first day of class in order to measure their self-efficacy and self-regulation: the Self-Efficacy for Self-Regulated Learning Scale by Bandura (2006) and the Adolescent Self-Regulatory Inventory by Moilanen (2007). Student demerit data from the 2015-2016 school year was used to demonstrate each student's level of behavioral need. Student participants ranged from receiving 58 demerits to 477 demerits over the course of the 2015-2016 school year ($M = 171.5$). The needs assessment found strong correlations between the number of demerits a student received and their self-efficacy and self-regulation. Students with higher numbers of behavioral demerits had both lower self-efficacy and self-regulation beliefs, which is consistent with previous theoretical models and empirical research as previously described.

Mindfulness-Based Interventions

Based on the findings of this needs assessment, research was conducted to identify interventions that have demonstrated positive research effects on increasing the self-efficacy and self-regulation of adolescents with disabilities. Mindfulness-based interventions emerged during this review as a promising practice with support for its use

with adolescents with disabilities (Fuchs, Mundschenk, & Groark, 2017). *Mindfulness* is defined by Kabat-Zinn (2003) as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (p. 145). According to Crane et al. (2016), mindfulness-based intervention programs should be informed by theories and practices from the research base of disciplines including contemplative sciences and education; seek to relieve human distress; utilize strategies such as present moment focus; support increased attention, self-regulation, and compassion; and be rooted in experiential, inquiry-based learning practices (p. 4). Based on these two theoretical and programmatic definitions, mindfulness programs for adolescents were researched and reviewed for their potential effectiveness with students with disabilities.

Broderick and Jennings (2012) argue that mindfulness training may help adolescents develop a more positive self-view that can strengthen their self-regulation skills. Acting within the social cognitive theoretical framework, mindfulness may be able to enhance a student’s perceived self-efficacy through developing positive emotional states and performance accomplishments, which may in turn increase their self-regulation abilities. Mindfulness has been demonstrated to have direct connections to both self-efficacy and self-regulation in a wide variety of populations ranging from early childhood students to adult business leaders. Luberto, Cotton, McLeish, Mingione, and O’Bryan (2014) and Soysa and Wilcomb (2013) have both discovered evidence that higher rates of mindfulness can be linked to higher self-efficacy. In a study conducted with business leaders, a regular mindfulness practice for 45-minutes a week led to a significant increase in self-regulatory focus as well as significant decreases in anxiety and stress (Brendel,

Hankerson, Byun, & Cunningham, 2016). Higher mindfulness skills have been associated with helping people to self-regulate and to resist desires that would interfere with their long-term goals (Frieze & Hofmann, 2016). Early childhood students have also demonstrated greater self-regulation on delay of gratification tasks after completing a mindfulness program (Flook, Goldberg, Pinger, & Davidson, 2015).

Mindfulness Interventions with Adolescents with Disabilities. Mindfulness has also been shown to improve a wide range of behaviors and skills in adolescents with disabilities. Adolescents with ADHD have shown improvements in their attention skills after receiving mindfulness instruction in studies by Kiani, Hadianfard, and Mitchell (2016), van der Oord, Bogels, and Peijnenburg (2012), van de Weijer-Bergsma, Formsma, Bruin, and Bögels (2012), and Zhang et al. (2016). Franco, Amutio, Lopez-Gonzalez, Oriol, and Martinez-Taboada's (2016) study on the use of a mindfulness program in a school setting in Spain demonstrated large effect sizes at reducing aggressive conduct problems in adolescents. Three research studies using a simple meditation technique have also shown significant reductions in aggressive behaviors for adolescents with emotional or behavioral disabilities (EBD) and Autism Spectrum Disorder (ASD) (Singh et al., 2007; Singh et al., 2011a; Singh et al., 2011b). Research has also shown promising effects of mindfulness on students with cognitive impairments such as specific learning disabilities (SLD) or intellectual developmental disabilities (IDD). Beauchemin, Hutchins, and Patterson (2008) found that five to ten minutes of daily mindfulness practice contributed to statistically significant improvements in anxiety, social skills, and academic performance for students with SLD. Parents of adolescents with IDD reported improvements in their child's prosocial behavior, feelings

of happiness, relaxation, and worry after eight weeks of mindfulness training (Heifetz & Dyson, 2016).

Evidence-Based Intervention

Empirical Research. Based on the data collected in the needs assessment, the L2B mindfulness curriculum created by Broderick (2013) was chosen as an intervention to primarily explore its potential to influence self-efficacy, self-regulation, and trait mindfulness in adolescents with disabilities. The L2B curriculum was used with student participants in this research study because of its short-term goals of increasing self-efficacy and self-regulation in adolescents and its established research base (Metz et al., 2013). Previous research and pilot studies on the L2B curriculum have shown meaningful evidence of its potential to become classified as an evidence-based practice. In its initial pilot study, students receiving the L2B intervention reported greater feelings of calm, relaxation, and self-acceptance (Broderick & Metz, 2009). Metz et al. (2013) found that students had statistically significant reductions in self-regulation, stress, and psychosomatic complaints. In a randomized, controlled experiment, students in the L2B program had a decrease in problem behaviors and emotional suppression (Fung, Guo, Jin, Bear, & Lau, 2016). Further, students in the L2B program in a study by Bluth et al. (2016) showed large effect sizes for improvements in depression and small to moderate effect sizes for increased mindfulness and decreased anxiety and stress. This study builds off of existing research on the L2B program and mindfulness interventions with adolescent students with disabilities. Fidelity of implementation data and the role it plays on student outcomes was also examined in this study to add to the research base on facilitating mindfulness programs.

Implementing the Intervention. Based on the results of the needs assessment conducted in the summer of 2016 and a review of previous literature on mindfulness with students with disabilities, a pilot study with a quasi-experimental design was created to implement the L2B intervention. Three public charter schools participated as research sites. The schools were randomly assigned to treatment ($n = 2$) or control ($n = 1$) groups. All three schools are located within 30 minutes of Minneapolis, Minnesota, and serve predominately middle-class, Caucasian students. A total of 23 students in grades 5-8 were involved in the study with 17 students in the treatment group and 6 students in the control group. All student participants have a disability label of high-functioning Autism Spectrum Disorder, Other Health Disorder, Specific Learning Disability, or Emotional-Behavior Disorder. The following four research questions were asked:

RQ1: Do students with mild disabilities who participate in the L2B curriculum report higher levels of mindfulness compared to control students?

RQ2: Do students with mild disabilities who participate in the L2B curriculum report higher levels of self-efficacy for tasks of self-regulation compared to control students?

RQ3: Do students with mild disabilities who participate in the L2B curriculum report higher levels of self-regulation skills compared to control students?

RQ4: How do students view their participation in the L2B program?

A mixed-methods research design was used to collect both qualitative and quantitative data. Student participants took the Self-Efficacy for Self-Regulated Learning Scale (Bandura, 2006), Adolescent Self-Regulatory Inventory (ASRI) (Moilanen, 2007),

and the Child and Adolescent Mindfulness Measure (CAMM) (Greco, Baer, & Smith, 2011) at both pretest and posttest intervals. The L2B intervention was delivered to students in the treatment group by their special education teacher who reviewed each student's attendance and rates of participation on a weekly basis. Students in the treatment group also participated in a focus group interview at the end of the intervention to assess their satisfaction and acceptance of the program. Teacher fidelity of implementation was assessed through weekly observations using the Mindfulness-Based Interventions Teaching Assessment Criteria (MBI:TAC) (Crane et al., 2013) and a review of their session lesson plans.

Findings

Overall, the results of the L2B intervention provided mixed evidence of its effectiveness for students with mild disabilities. Although comparisons of pretest to posttest scores did not demonstrate any statistically significant increases in mindfulness, self-efficacy, or self-regulation, all of the students reported that the L2B program positively impacted them in unique and personal ways. For instance, students shared that mindfulness training taught them how to manage their stress and anxiety, increase their focus and attention, and develop more self-compassion in the face of setbacks. All of the students in the program believed that they would continue to use mindfulness techniques, and that the program should continue to be taught because of its potential benefits.

The L2B program was taught by the special education teachers at each school and results of the study show that it is possible to implement mindfulness programs within special education settings. Both of the teachers met 100% compliance for the essential elements of their lesson plans and made positive growth in their lesson facilitation

abilities. Each teacher had specific strengths and weaknesses that affected the quality of instruction and participant responsiveness. This study was the first of its kind to assess the four components of fidelity of implementation science in mindfulness interventions with adolescents based on research by Feagans Gould et al. (2016).

Recommendations

Several recommendations for special education programs and mindfulness researchers emerged from the results of this study. Special education professionals interested in implementing a mindfulness program with their students should prioritize creating a safe and welcoming space for mindfulness practice, establishing trust between the group and teacher, and using clear and consistent procedures to aid in learning and classroom management. Mindfulness researchers should continue to evaluate the fidelity of implementation of interventions in order to develop more complete logic models and theories of change related to mindfulness instruction. In addition, research tools, which have been scientifically validated with adolescent populations and within school settings, are needed to more accurately assess the outcomes of mindfulness. As more schools adopt mindfulness-based interventions, it is critical that education professionals and academic researchers collaborate to create programs and tools that are both scientifically-based and that positively enhance adolescent social and emotional well-being.

CHAPTER ONE

PROBLEM OF PRACTICE

Why is it that some students have a more difficult time managing their learning and behavior in the classroom? This question is the basis for a literature review on self-efficacy and self-regulation. This chapter will begin by discussing the theoretical framework behind self-efficacy and self-regulation: social cognitive theory. Next, a Problem of Practice statement will highlight the challenges students with disabilities encounter as a result of lower self-efficacy and self-regulation skills. Important terms for understanding the constructs behind the Problem of Practice will then be described. A review of existing literature on the self-efficacy of self-regulation and the discrete tasks associated with self-regulation will provide a strong framework for understanding the challenges students with disabilities have in establishing strong self-regulation skills.

Theoretical Framework

The social cognitive theoretical perspective focuses primarily on the acquisition of knowledge through internal mental processes such as self-efficacy (Ertmer & Newby, 1993). According to social cognitive theory, a student's perceptions of their abilities are crafted by prior behavioral, cognitive, and environmental events (Bandura, 1986). Similarly, students establish, change, or abandon goals based on these past experiences and perceptions (Flavell, 1979). These past experiences lead people to form ideas about themselves based on the outcomes of situations they experience, which in turn have an impact on their future behaviors (Bandura, 1986). For example, if students regularly see the aggregate of their experiences at school as failure, then failing at school will likely

become a self-fulfilling prophecy and their self-efficacy will be quite limited in this area (Bandura, 1986). As Bandura (1991) states:

People's beliefs in their efficacy influences the choices they make, their aspirations, how much effort they mobilize in a given endeavor, how long they persevere in the face of difficulties and setbacks, whether their thought patterns are self-hindering or self-aiding, the amount of stress they experience in coping with taxing environmental demands, and their vulnerability to depression. (p. 257)

Due to its role in shaping future performance outcomes, self-efficacy has a major impact on a student's successes or failures. People who feel positive self-efficacy towards an activity will continue to enjoy that activity whereas negative perceived self-efficacy leads to the opposite effect (Bandura, 1991). For example, a child who believes they are incapable of reading will likely dislike the task of reading and will avoid it altogether. This could have far reaching effects on their future reading performance because social cognitive theory argues that a person's ideas about themselves will shape their future behaviors. Students with disabilities will likely have experienced academic failure in their school career, so understanding the social cognitive theory helps provide a possible insight as to why students with disabilities may have lower feelings of self-efficacy.

Bandura (1991) argues that self-efficacy is the most important component of self-regulation and that it is impossible to study self-regulation without also studying self-efficacy. Self-efficacy deeply influences people's motivations, performance attainments, goal-setting, and valuation of activities, which are the cornerstone of self-regulation development (Bandura, 1991). Self-regulation is essential to student's social-emotional well-being and their performance. Bandura (1991) cautions that "many of the miseries

people inflict upon themselves and others arise from dysfunctions in the self-regulatory system” (p. 273). A self-regulatory system that is low can lead to a low sense of fulfillment, stress, and a low sense of self (Bandura, 1991). If student’s have poor self-regulation, then this will impact them throughout the school day such as feeling negatively about themselves, damaging their perceptions of different classes or activities, and lowering their motivation to perform well.

Statement of Problem

Self-efficacy impacts the thoughts, behaviors, and self-beliefs of students as well as their ability to be successful in future endeavors academically, physically, and emotionally (Bandura, 1991). Research shows that students with disabilities have lower feelings of self-efficacy related to self-regulation (Baird, Scott, Dearing, & Hamill, 2009; Hampton & Mason, 2003; Tabassam & Grainger, 2002). This impacts student’s abilities to self-regulate their behavior, plan assignments, create goals, and self-monitor their performance (Barkley, 1997; Gumpel & David, 2000; Job & Klassen, 2012; Ness & Middleton, 2011; Schunk & Bursuck, 2013). Understanding the self-efficacy beliefs and self-regulation skills of students with disabilities will help researchers develop targeted interventions that can strengthen the academic and behavioral performance of students within the classroom.

Important Terms

There are several terms that must be defined prior to a review of existing literature. These terms include *perceived self-efficacy*, *self-regulation self-efficacy*, and *self-regulation*. *Perceived self-efficacy* can be defined as an “individual’s confidence in their ability to organize and execute a given course of action to solve a problem or

accomplish a task” (Eccles & Wigfield, 2002, p. 110). It is often associated with self-concept; however, self-efficacy focuses on an individual’s performance expectations rather than their self-esteem (Zimmerman, 2000). The specific self-efficacy variable examined in this paper is *self-regulation self-efficacy*, which refers to the ability to influence one’s behavior through self-monitoring, standard setting, evaluative judgment, self-appraisal, and self-reaction (Bandura, 1991). *Self-regulation* is defined by Karoly (1993) as “those processes, internal and/or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts)” (p. 25).

How do these two concepts, self-regulation self-efficacy and self-regulation, differ? The first concept of self-regulation self-efficacy refers to an individual’s perception of whether they will be successful at self-regulation tasks, and the second concept of self-regulation measures “products of self-regulation, meaning the results of self-regulatory success or failure” (Moilanen, 2007, p. 837). In essence, self-regulation self-efficacy is a precursor to self-regulation. According to the social cognitive theory, without strong feelings of self-efficacy towards self-regulation, it will be difficult for students to experience the products of self-regulation (Bandura, 1991).

Review of Literature

There are two sociocognitivist constructs in the literature that will be the main focus for this section: self-regulation self-efficacy, which will be referred to as self-efficacy for the remainder of this paper to minimize confusion, and self-regulation. The goal of each sub-section is to highlight how these constructs are connected to the problem

of lower self-efficacy and self-regulation in students with disabilities who experience behavioral problems.

Some of the research reviewed in the remainder of this chapter was conducted in other countries and the location of each study will be identified. In addition, each of these international studies used similar standards for identifying students with disabilities as in the United States including cognitive and academic achievement testing and eligibility checklists (Caprara et al., 2008; Job & Klassen, 2012; Klassen, 2007; Klassen, 2010; Lackaye & Margalit, 2008).

Self-Efficacy

Self-efficacy is established through four different mechanisms: mastery experiences, social modeling, social persuasion, and emotion (Bandura, 2012). It is often hypothesized that students with disabilities have less access to these four mechanisms than their peers because of past school failure and increased rates of depression (Bender et al., 1999; Hampton & Mason, 2003; Kiuru et al., 2011).

Klassen (2010) investigated self-efficacy and academic achievement in students with and without disabilities. His research, conducted in Canada, involved a total of 146 eighth and ninth grade students from three different schools. Students filled out a self-efficacy rating scale that measured their self-regulation and English academic achievement perceptions. Klassen (2010) found that students with disabilities had lower scores on self-efficacy rating scales and that self-efficacy contributed to the prediction of students' end of course English grades. Interestingly, student self-efficacy towards their ability to self-regulate rather than simply their reading ability contributed largely to their English grades (Klassen, 2010). This finding highlights the importance of measuring and

teaching self-regulation and cognitive monitoring skills in addition to core academic concepts.

Research by Caparara et al. (2008) found similar predictive effects of self-efficacy on academic performance. In a longitudinal study of 412 children conducted over a ten-year period, the authors found that a student's perception of their self-efficacy in junior high school predicted high school academic achievement and graduation rates. Disability status was not a variable in this study, so it is unclear if the results would remain the same for students with a disability. In addition, the study was conducted in Italy, and this should be taken into consideration when applying the results to the United States. Despite these generalization issues, these findings provide evidence that self-efficacy is connected to academic achievement.

How do low self-regulation abilities impact a student's self-efficacy, views on intelligence, and goal preferences? This important question was the basis for research by Baird et al. (2009) involving 1,500 sixth through twelfth graders in two rural schools in the United States. Baird et al. (2009) found that students with disabilities were twice as likely to be performance versus growth oriented, had significantly lower feelings of self-efficacy, and were more likely to exhibit a fixed intelligence mindset (Baird et al., 2009). All results were significant at the $p < .01$ level, which means that the likelihood of these results occurring by chance is less than 1 percent. These findings also provide evidence of a possible connection between self-efficacy and mindset, which is strongly connected to the social-cognitive theory described earlier in this chapter.

Research by Baird et al. (2009), Caparara et al. (2008), and Klassen (2010) highlight how self-efficacy may influence academic performance. Examining the self-

efficacy perceptions of students will show how well they may or may not be managing their school responsibilities that contribute to their academic performance. The next section of this chapter will further explore how the self-regulation of students with disabilities impacts their academic and behavior performance at school.

Self-Regulation

Self-regulation is an active process. In order for self-regulation to occur, a student must modulate their “thought, affect, behavior, or attention via deliberate or automated use of specific mechanisms and supportive metaskills” (Karoly, 1993, p. 25). This process can be quite challenging for students with disabilities such as ADHD, learning disabilities, Autism Spectrum Disorder, and emotional or behavioral disabilities (Barkley, 1997; Gumpel & David, 2000; Job & Klassen, 2012; Ness & Middleton, 2011; Schunk & Bursuck, 2013).

In research on students with ADHD, Barkley (1997) found that individuals with ADHD have a more difficult time with self-regulation than their non-disabled peers. In addition, students with ADHD have less ability to create positive emotions because of the metacognitive control required to alter their own moods. Barkley (1997) also cautions that students with ADHD have more impulsive emotions that last longer than their peers without ADHD.

Similarly, research on the role of self-regulation in students with learning disabilities also shows that this is a difficult process for them. Students with learning disabilities often struggle with planning assignments, setting appropriate goals, and evaluating their performance (Job & Klassen, 2012; Ness & Middleton, 2011). This

chronic underachievement due to poor self-regulation skills can lead to school dissatisfaction and frustration (Korinek & deFur, 2016).

Gumpel and David (2000) studied the difference between social skills and self-regulation in students with emotional or behavioral disabilities. They hypothesized that students already had the required social skills, but that they needed instruction in self-regulation in order to use their social skills more consistently. When given direct instruction in self-regulation skills, students with emotional or behavioral disabilities demonstrated the same age-equivalent social skills of their non-disabled peers (Gumpel & David, 2000).

Conclusion

Students with disabilities often struggle with making self-efficacy predictions and self-regulating their learning and behavior in the classroom (Baird et al., 2009; Caprara et al., 2008; Hampton and Mason, 2003, Zimmerman, 2000). Based on social cognitive theory, if students begin to think of their performance as failing, then this can have far reaching and reoccurring consequences for their success (Bandura, 1986; Bandura, 1991; Flavell, 1979). Self-efficacy and self-regulation can be linked to academic achievement, positive mental wellness, high school completion, and student discipline. Teaching students with disabilities how to better manage their self-regulation may provide them with a great equalizer as compensation for their disability.

CHAPTER TWO

NEEDS ASSESSMENT

Given the role self-efficacy and self-regulation play in a student's success in the classroom (Baird et al., 2009; Caprara et al., 2008; Hampton and Mason, 2003; Korinek & deFur, 2016; Zimmerman, 2000), a needs assessment was conducted in a public school district in the Midwest. The needs assessment examined the self-efficacy and self-regulation beliefs of a sample of ninth grade students with conduct problems. This chapter will describe the goals and objectives of the needs assessment including research questions, study methodology, and a summary of results.

Goals and Objectives

The purpose of this needs assessment was to evaluate how a sample of ninth grade students with conduct problems perceived of their self-efficacy and self-regulation. Identifying whether self-regulation and self-efficacy have an influence on student behavior will allow for the development of successful interventions that can assist students in strengthening these skills. Two research questions guided the development of this needs assessment:

RQ1: How is student behavior associated with perceived self-regulation self-efficacy?

RQ2: How is student behavior associated with self-regulation skills?

Methodology

Setting and Study Respondents

The needs assessment was conducted at an urban high school within a public school district in the Midwest. Ten students participated in the needs assessment. These ten

students were part of a summer school credit recovery course and had been required to attend the course because of discipline issues. Students took two surveys regarding their self-efficacy and self-regulation on the first day of their three-week class.

Student Demographics. All of the students in the study were current ninth graders. Five of the students identified as male and five of the students identified as female, which made the sample equal in terms of sex of the participants. The students in the class were all members of a minority ethnic group. Participants identified with three minority or ethnic groups: Hispanic/Latino ($n = 6$), American Indian ($n = 2$), and African-American ($n = 2$). All of the students are currently eligible for free or reduced lunch. An overview of participant demographics is listed in Table 1.

Table 1

Needs Assessment Participant Demographic Data

Demographic Variable		<i>n</i>	Total of Sample (%)
Gender			
	Male	5	50
	Female	5	50
Ethnicity			
	Hispanic/Latino	6	60
	American Indian	2	20
	African-American	2	20

Variables

One independent variable was used in this research: *student demerits*, which is defined as the amount of demerits a student received in ninth grade for discipline infractions during the 2015-2016 regular school year. The student sample ranged from receiving 58 demerits to 477 demerits over the course of the 2015-2016 school year. The

mean student in the sample had 171.5 demerits. According to the school's handbook, students can receive demerits for 21 different behaviors ranging from using foul language to tardiness (Hiawatha Academies, 2015). A full list of possible demerits is listed in Appendix A. Students who earn more than 40 demerits at school must take a summer school class on self-discipline.

Two concepts were used as dependent variables in this needs assessment research: *self-regulation self-efficacy* and *self-regulation*. Both of these terms have been defined in Chapter One on pages 13 and 14. These two dependent variables were measured through two different self-report surveys that students completed, which will be discussed in greater detail in the next section of this chapter.

Data Collection Methods

Instrumentation. Two different self-report measures were used to assess each student's self-efficacy and self-regulation. The Self-Efficacy for Self-Regulated Learning Scale created by Bandura (2006) was used to measure the variable of self-regulation self-efficacy, which will be referred to as self-efficacy for the remainder of this chapter. The scale consists of 10 questions, which are assigned a value on a Likert scale from 1 (*not well at all*) to 6 (*very well*). Student scores were summed in order to find their total self-efficacy score. Higher scores correspond with higher perceptions of student's abilities to self-regulate.

The Adolescent Self-Regulatory Inventory (ASRI) was used to "assess the degree to which adolescents or adults are able to activate, monitor, maintain, inhibit and adapt their emotions, thoughts, attention, and behavior" (Moilanen, 2007, p. 840). The ASRI consists of 36 questions which measure both short-term and long-term self-regulation in

adolescents as well as across the four skill domains of emotional, behavioral, attentional, and cognitive self-regulation (Moilanen, 2007). Students rate themselves on a Likert scale from 1 (*not at all true for me*) to 5 (*really true for me*). Reverse scoring is done on 16 of the 36 items, and then students receive an overall self-regulation score. Higher scores correspond to higher levels of self-regulation.

Data Collection and Management. Confidentiality, security, and analysis were at the forefront of all decisions regarding data collection and management. Students who took the surveys were assigned a code used in SPSS in order to keep their names and data confidential. The code assigned to them was written in an Excel spreadsheet, which is kept on a password-protected computer. SPSS was used for data storage and analysis, which is stored on a password-protected computer. Original paper surveys are kept in a locked safe, and the researcher is the only person with a key to the safe.

Demographic variable data such as gender, race and ethnicity, and free or reduced lunch status were given numeric codes within SPSS for ease of data analysis. Bivariate correlation tests were run for the independent variable of number of demerits and each dependent variable of self-efficacy and self-regulation. A Pearson's r was computed to assess the relationship between each of the dependent variables and student demerit data. The results of these tests are described in Table 2 by their Pearson's r and the significance of the relationship.

Summary of Results

Findings from the needs assessment were consistent with previous empirical research and demonstrated a strong relationship between student demerit data and both self-efficacy and self-regulation (Moilanen, 2007). On the Self-Efficacy for Self-

Regulated Learning Scale created by Bandura (2006), there was a strong negative correlation between student self-efficacy for self-regulation and demerit data, $r = -.67$, $N = 10$, $p = 0.03$. There was an even stronger negative correlation between the products of self-regulation, as measured by the ASRI, and student demerit data, $r = -.86$, $N = 10$, $p = .001$. In previous research using the ASRI, adolescents who reported “higher levels of long- and/or short-term self-regulation also tended to report better school grades, more prosocial behavior, and less internalizing and externalizing behavior” (Moilanen, 2007, p. 845). This finding was consistent in the needs assessment results. Overall, there was a strong negative correlation between student self-reports of self-efficacy and self-regulation and student demerit data. Students with higher demerit totals perceived of their self-efficacy as lower compared to students with fewer demerits. This finding was also consistent with the data from the ASRI. The higher the number of demerits received by a student, the more difficult time they had with self-regulation skills.

Table 2

Correlations of Variables with Demerits

Variable	Pearson's r	p
Self-efficacy	-.672*	0.033*
Self-regulation	-.864**	0.001**

Note. * $p < 0.05$. ** $p < 0.01$.

Limitations

There are several limitations to this needs assessment including the sample size and student population. There were only 10 student participants who completed the two instruments, which limits the statistical power needed for making larger inferences about the data or generalizing the findings. It may be that student demerit data as a variable is

masking another issue without a larger sample of students. Another limitation is that there was not a comparison group of students who had low demerit counts and did not need to take the summer school course. However, the students in the summer school class had widely different numbers of demerit counts ranging from 58 to 477, so they represented a diverse sample of students who had been recognized as having discipline problems.

Conclusion

Self-regulation is an essential skill adolescents need in order to be successful at school (Barkley, 1997; Gumpel & David, 2000; Job & Klassen, 2012; Ness & Middleton, 2011; Schunk & Bursuck, 2013). Previous empirical research demonstrates that when students have low self-regulation skills, they are more likely to experience academic failure and behavioral problems at school (Korinek & deFur, 2016). The results of this needs assessment demonstrate a strong correlation between the number of demerits a student received and their self-efficacy for self-regulation as well as their ability to manage self-regulation tasks. According to the social cognitive theory, if a student believes they will be unsuccessful at a self-regulation task, as measured by their self-efficacy, then this will likely become a self-fulfilling prophecy (Bandura, 1991). Interventions are needed to ensure students have the tools they need to feel confident and successful in managing their own self-regulation.

CHAPTER THREE

INTERVENTION LITERATURE REVIEW

Mindfulness has emerged recently as a popular, social-emotional learning intervention with adolescents (Biegel, Brown, Shapiro, & Schubert, 2009; Black, 2015; Burke, 2009). This literature review will begin by exploring current findings on mindfulness in relation to self-efficacy and self-regulation. Next, previous mindfulness interventions with adolescent students with disabilities will be reviewed. A review of research on the mindfulness curriculum, Learning to Breathe (L2B) (Broderick, 2013), will be conducted to determine its fit as a possible intervention for students with disabilities who need behavioral support. Finally, recommendations for future research will be provided at the conclusion of this chapter.

Mindfulness and the Role of Self-Efficacy

Job and Klassen (2012) believe that interventions that can shape student views of self are critically needed in order to influence self-efficacy performance predictions. Broderick and Jennings (2012) argue that a negative self-view is tied to the emotional distress that comes with adolescence, which “disrupts the learning process through several mechanisms, including the reduction of self-regulatory efficacy and academic motivation” (p. 115). Broderick and Jennings (2012) go on to assert that mindfulness may be the best way to address these problems because it leads adolescents to develop a more accepting, positive self-view that can “disrupt reactivity, strengthen attention, and bring problem solving and behavior under more conscious and reflective regulation” (p. 116). Given the role accurate self-efficacy predictions play in shaping academic achievement

(Bender et al., 1999; Hampton & Mason, 2003), mindfulness appears to be well-suited to address the systemic causes of poor self-regulation.

Research by Soysa and Wilcomb (2015) directly linked self-efficacy to mindfulness. Their study on 204 undergraduate students found that gender, mindfulness, and self-efficacy accounted for 34 percent of variance in overall well-being in students. Soysa and Wilcomb's (2015) findings suggest that the variables of mindfulness, self-efficacy, and gender may be interconnected and thus increasing mindfulness may increase student well-being.

Work by Luberto et al. (2014) also found connections between mindfulness and self-efficacy. Specifically, Luberto et al. (2014) discovered that greater mindfulness skills are linked to greater coping self-efficacy, which in turn partially mediate emotional regulation difficulties. The researchers also found that age and African-American racial identity positively correlated with greater coping self-efficacy, but the researchers did not hypothesize why these variables might provide a statistical difference.

Mindfulness and Self-Regulation

Schonert-Reichl et al. (2015) found positive results with using mindfulness as an intervention to increase self-regulation. The researchers randomly assigned classrooms to receive the MindUp curriculum or the existing curriculum the school used to support social-emotional learning. Students who participated in the MindUp program had a 24% gain in peer nomination of social behaviors, 20% self-reported increase in prosocial behaviors, 15% increase in math achievement, and a reduction of 24% in aggressive behaviors when compared to students in the control group. Mindfulness training has the

potential to reduce problematic behaviors related to poor self-regulation and to increase academic achievement.

Flook et al. (2015) used the Kindness Curriculum with a group of 68 preschool students twice a week for 20-30 minutes over a 12-week period. Children in the intervention group showed higher growth from baseline on all six different measurement mechanisms including the Teacher Social Competence Scale, a sharing task, a delay of gratification task, a computerized task to assess cognitive flexibility, a computerized Flanker task, and school grades. Students who had the lowest baseline executive functioning and social competence scores experienced the most growth from the Kindness Curriculum. This finding by Flook et al. (2015) is promising for students with disabilities who may have difficulties with executive functioning and social skills such as students with ADHD, autism, or emotional-behavioral disabilities because mindfulness may be able to help them close the gap in their social-emotional skills between their peers without disabilities.

Which has a greater impact on self-regulation and other leadership qualities in business leaders: a regular mindfulness practice or a graduate level leadership course? Brendel, Hankerson, Byun, and Cunningham (2016) found that regular mindfulness practice, 45-minutes a week, led to a significant increase in regulatory focus as well as significant decreases in anxiety and stress for the organizational leaders. Participants in the graduate level course did not demonstrate any changes. Although this study was conducted with an adult population, its significant findings demonstrate the potential for mindfulness to positively impact self-regulation abilities in adolescent populations.

Friese and Hofmann (2016) explored the link between mindfulness and self-regulation by asking 101 adult participants to report on their mindfulness, desires, and emotions several times a day over one week via their cell phones using experience sampling techniques. The authors found that “mindfulness was associated with four of the five common self-regulatory strategies people use to resist desires” (Friese & Hofmann, 2016, p. 10). Further, participants with higher mindfulness scores were better able to restrain themselves and to protect their long-term goals. This study provides additional support for teaching mindfulness strategies to adolescents as a way to promote their self-regulation skills.

Bornemann, Herbert, Mehling, and Singer (2015) utilized a pretest and posttest, randomized design to measure eight different variables in 232 participants through the Multidimensional Assessment of Interoceptive Awareness (MAIA) questionnaire. The treatment group ($n = 148$) participated in a daily mindfulness practice for three months, and participants with the lowest pretest scores showed the highest changes on the MAIA. Self-reported feelings about the mindfulness practice better predicted changes in participants compared to practice duration. The authors also utilized a re-test control group ($n = 80$) to account for any effects of repeated testing exposure. Self-regulation in treatment participants showed a large effect size ($d = 0.72$) relative to the control group. Attention regulation also demonstrated a large effect size ($d = 0.54$). Both of the findings for self-regulation and attention regulation were significant at the $p < .001$ level. Bornemann et al. (2015) recommends using mindfulness interventions to support individuals “suffering from difficulties in emotion recognition or distress regulation, such as in alexithymia, affective and anxiety-disorders, or patients with aggressive-impulsive

behavior” (p. 11). The results of this study demonstrate the need for further research on the use of mindfulness with adolescents with disabilities to help increase their self-regulation abilities.

Mindfulness for Students with Disabilities

Students with Attention Deficit Hyperactivity Disorder (ADHD)

Concerned by the lack of effective treatments for ADHD, van de Weijer-Bergsma et al. (2012) sought to measure the utility of mindfulness training on adolescents diagnosed with ADHD between the ages of 11 and 15. Adolescents received weekly, 90-minute sessions taught by cognitive-behavior therapists for eight weeks. The adolescents experienced “reductions in problem behavior and improvements in executive functioning [that] were maintained and became stronger” (van de Weijer-Bergsma et al., 2012, p. 783) although these reductions diminished by the sixteenth week mark.

Similar to the van de Weijer-Bergsma et al. (2012) study, van der Oord et al. (2012) conducted mindfulness training with adolescents with ADHD ($n = 21$) and their parents. Both the adolescents and their parents received parallel mindfulness instruction for 90 minutes a week for a total of eight weeks. Both treatment groups reported reductions in hyperactivity and inattention on pretest and posttest surveys. However, there was not a significant reduction in teacher described ADHD behaviors for the adolescents during the study.

Chinese adolescents with ADHD and their parents received an eight-week mindfulness intervention using the MYmind course, which is the same program used in both the van de Weijer-Bergsma et al. (2012) and van der Oord et al. (2012) studies (Zhang et al., 2016). Researchers used objective measures for determining changes in

attention related problems including the Test of Everyday Attention for Children (TEA-ch) and the computerized Conners' Continuous Performance Test 3rd Edition (CPT3). Large effect sizes were found in the posttest comparison data on sections of both the TEA-ch and the CPT3. In focus group and survey data, the intervention was positively accepted by both the adolescents and their parents.

Kiani et al. (2016) studied the impact of mindfulness training on the executive function and regulation skills of female students with elevated ADHD symptoms in a public middle school in Iran. The authors used a waitlist-control model with 15 students receiving 90-minute mindfulness sessions for 8 weeks, and 15 students serving in a waitlist-control group. The results of the study showed large effect sizes for students in the treatment group on both executive function and regulation in comparison to the control group. Executive function changes were most significant on planning and inhibition tasks with the effects on regulation most pronounced on non-acceptance of emotional responses and impulse control tasks (Kiani et al., 2016). Ultimately, the authors concluded that mindfulness programs are a promising intervention for female adolescents with ADHD.

Students with Aggressive Behaviors

Franco et al. (2016) studied the use of a mindfulness intervention in Spain with 27 adolescent students with inattentive and aggressive conduct problems. The authors used a meditation program for 15 minutes over 10 weekly sessions instead of the student's typical counseling program. Students in the treatment group demonstrated statistically significant decreases in both impulsivity and aggressiveness with effect sizes ranging from 1.16 (important) to 0.995 (important) respectively for each behavior. Franco et al.'s

(2016) research is one of the first studies to demonstrate that using mindfulness in a school setting can decrease impulsive and aggressive behaviors in adolescents.

The mindfulness practice of “Meditation on the Soles of the Feet” was utilized in three studies for use with students with Asperger’s Syndrome, Autism Spectrum Disorder, and emotional behavioral disabilities. The procedure begins by asking students to breathe, to think of a time when they were angry, and then to shift their attention to the soles of their feet (Singh et al., 2007). In the first research study, Singh et al. (2007) had therapists work with three students with emotional behavioral disabilities with a history of aggressive behaviors that placed the students at the risk for middle school expulsion. Students worked on the “Meditation on the Soles of the Feet” technique for 11 sessions with the therapist. After the initial 11 sessions, students met with a therapist once a month for about 15 minutes to review the procedure for a period of 25 weeks. Each student was able to significantly decrease their aggressive behaviors and able to graduate middle school without expulsion.

Similar studies using the “Meditation on the Soles of the Feet” protocol were conducted on students with Asperger’s Syndrome and Autism Spectrum Disorder by Singh et al. (2011a) and Singh et al. (2011b). Instead of using therapists, the mothers of each student were trained in the “Meditation on the Soles of the Feet” technique and responsible for implementing the intervention with their children. For students with Asperger’s Syndrome, none of the adolescents were ever observed to have aggressive behavior during the four-year, post-intervention period (Singh et al., 2011b). The students with Autism Spectrum Disorder, who had higher levels of baseline aggressive behaviors than the students with Asperger’s Syndrome, averaged about one aggressive event each

year during the three-year, post-intervention period (Singh et al., 2011a). Although the studies featuring “Meditation on the Soles of the Feet” had small sample sizes, their significance at decreasing aggressive behaviors in three types of disabilities is quite promising.

Riggs and Brown (2017) looked at the connection between peer victimization (e.g., physical or verbal assault, witnessing assault, and social exclusion) and mindfulness in adolescents. The researchers assessed students’ mindfulness and peer victimization using self-report measures during a baseline period and four months later. The two variables were negatively associated during both periods. Riggs and Brown (2017) conclude that

This relationship may demonstrate the potential malleability of positive psychological constructs, such as mindfulness, among vulnerable youth, suggesting that deliberate attempts to cultivate mindful attention and awareness may in turn promote positive well-being and mitigate the risks associated with peer victimization. (p. 485)

Students with disabilities are 1.5 times more likely to be the targets of peer victimization (Blake, Lund, Zhou, Kwok, & Benz, 2012), thus mindfulness training may provide them with a protective, coping tool during these moments.

Students with Specific Learning Disabilities (SLD)

Given that students with SLD often experience high anxiety due to academic school failure, Beauchemin, Hutchins, and Patterson (2008) gave 34 students a mindfulness intervention to see if it would improve their anxiety, social skills, and academic performance. After an initial 45-minute session, students were given the

intervention for 5 to 10 minutes at the beginning of class each day for five weeks. Using pretest and posttest data, all outcome measures related to anxiety, social skills, and academic performance showed significant improvement. In addition, both teachers and students positively reported that they liked the intervention and found it easy to implement. However, results from the study should be interpreted with caution because it lacked a control group and remains one of the only published research studies using mindfulness with students with SLD.

Students with Intellectual Developmental Disabilities (IDD)

Heifetz and Dyson (2016) explored the use of mindfulness programming with a small-group of eight teenagers with IDD and their parents. Teenage participants received eight, 90-minute mindfulness sessions using the Calming Thoughts and Calming Minds Program, and their parents received three sessions to learn the skills and techniques being taught to their children. Adolescent participants reported utilizing deep breathing most often at home. Their parents reported increased feelings of mindfulness for themselves and improvements related to their teenager's prosocial behavior, feelings of happiness, relaxation, and worry. Parent participants recommended continuing to have mindfulness groups in the future and to add more sessions for increased mastery of the skills for both participant groups.

Learning to Breathe Program

A popular mindfulness curriculum called Learning to Breathe (L2B), which was developed by Broderick (2013), was further reviewed to determine whether it shows promising evidence for use with students with disabilities. The L2B curriculum was chosen over other mindfulness curricula for further exploration because it shares the same

short-term outcome goals as this study of increased self-efficacy and self-regulation (Metz et al., 2013). In addition, the L2B curriculum has been recognized in the Collaborative for Academic, Social, and Emotional Learning (CASEL) (2015) guide as an effective, evidence-based program. The CASEL guide is commonly recognized as the premier tool for evaluating curriculum related to social-emotional outcomes, which adds additional credibility to the L2B curriculum (Weissberg, Durlak, Domitrovich, & Gullotta, 2015).

Previous research and pilot studies on the L2B curriculum show meaningful evidence of its potential to become a strong evidence-based practice. An initial pilot of the L2B curriculum was conducted at a private, Catholic high school for girls in Pennsylvania. Using a quasi-experimental study, Broderick and Metz (2009) found that the 120 students in the treatment group had greater awareness of their feelings and significant reductions in somatic complaints such as tiredness and aches and pains. Students also reported greater feelings of calm, relaxation, and self-acceptance (Broderick & Metz, 2009). Based on these initial findings, the researchers expanded the program to additional schools in Pennsylvania, Wisconsin, and Massachusetts (Broderick, Pinger, & Worthen, 2012; Metz et al., 2013).

In Pennsylvania, Metz et al. (2013) conducted a quasi-experimental study in two Pennsylvania high schools on 216 students. The L2B curriculum was used for 15 to 25 minute sessions. The researchers found that “students in the treatment group reported small yet statistically significant reductions in emotional regulation difficulties, psychosomatic complaints, and self-report stress level, while moderately increasing self-regulation efficacy of emotions compared to their counterparts” (Metz et al., 2013, p.

267). In addition to these findings, 89.1% of the students said that they would recommend the program to a friend, which indicates a high degree of acceptability from adolescent participants (Metz et al., 2013).

Additional pilot studies in Madison, Wisconsin, and Concord, Massachusetts, have also provided rich, qualitative data on the L2B intervention (Broderick et al., 2012). Teachers conducting the intervention in the Wisconsin pilot reported that students had “less impulsivity; increased ability to recognize, talk about, and be less judgmental about sensations, thoughts, and emotions; recognition of the universality and impermanence of stressors; and willingness to engage in mindfulness practices” (Broderick et al., 2012, p. 405). In the Massachusetts pilot, students self-reported improvements in academics and athletics. The students who participated in the pilot universally agreed that all students should receive the L2B training (Broderick et al., 2012).

Recent research by Fung et al. (2016) piloted the L2B curriculum with 19 Latino and Asian-American middle school students over a 12-week period. Their study is one of the first in the field of adolescent mindfulness to use a randomized controlled experiment model. The study looked at whether L2B would have an effect on reducing internalizing and externalizing behaviors and increasing regulation in a minority youth, low-income population. Students were assessed three times: pre-treatment, post-treatment, and during a three-month follow-up. The results of the study demonstrated that the L2B curriculum was “effective in reducing behavior problems and expressive suppression among ethnic minority youth” (Fung et al., 2016, p. 825). Further, results were maintained at the three-month follow-up assessment. The Fung et al. (2016) study shows that the L2B program

has the potential to decrease behavior and increase expressive self-regulation in adolescents.

Bluth et al. (2016) also studied the use of the L2B program with ethnically-diverse adolescents. Twenty-seven students were randomly assigned to the L2B program or a substance abuse class for a weekly, 50-minute session for a total of 11 weeks. Students in the L2B program showed large effect sizes for decreases in depression and small to moderate effect sizes for improvements related to mindfulness, anxiety, and perceived stress. Interestingly, the substance abuse class had higher perceived credibility by students at the beginning of the intervention, but the L2B program had higher credibility by the end of the intervention. Students in the L2B group believed that the course should take place again during the next school year and recommended to researchers that they create an adequate and safe physical space for students when implementing mindfulness programs.

Eva and Thayer (2017) conducted a mixed-methods study using the L2B program for six-weeks for 45 minutes per week with 23 participants between the ages of 17 and 20. Participants in their study were predominately male and people of color who attended an alternative high school in the Northwest. Data was collected from both quantitative and qualitative sources including three self-report scales and a voluntary focus group with 8 of the student participants. No control group was used in the study. Small to moderate effect sizes related to perceived stress and self-esteem were found. However, there were no significant overall differences related to mindful attention. Participants in the focus group referenced self-regulation benefits most frequently. Eva and Thayer (2017)

strongly recommend that future research should operationalize self-regulation as a dependent variable based on their study's findings.

Discussion

Current research on L2B shows that it has a promising evidence-base for increasing self-efficacy and self-regulation skills in adolescents. However, future research is needed to determine if these findings are also replicable for students with mild disabilities. In addition to replicating the L2B curriculum, research should examine the role of teacher instructional fidelity and student participation in predicting student self-efficacy, self-regulation, and trait mindfulness outcomes.

Conclusion

Mindfulness has the potential to increase self-regulation in students with disabilities. Given that existing treatments, such as medication or cognitive behavioral treatment, for reducing ADHD symptoms or aggressive behaviors in students with autism or Asperger's have significant limitations (Singh et al., 2007; van der Oord et al., 2012), mindfulness may give practitioners an additional tool for improving student outcomes. As mindfulness continues to gain popularity in schools, future research on the L2B program will provide a unique contribution to the field of social-emotional learning in special education.

CHAPTER FOUR

INTERVENTION PROCEDURE

A previous needs assessment described in Chapter Three demonstrated that students with discipline issues have lower self-efficacy and self-regulation skills. Learning to Breathe (L2B) is a mindfulness curriculum for middle school and high school students consisting of 18 lessons with the goal of increasing social-emotional skills such as self-regulation (Broderick, 2013). Based on a review of existing mindfulness literature as reported in Chapter Four, the L2B curriculum was chosen for implementation with middle school students with mild disabilities in the spring of 2017. This chapter will discuss the research questions, methods, and evaluation for implementation of the L2B program.

Research Questions

Given the need for interventions that can increase social-emotional skills in adolescents with disabilities, the following research questions will be studied to determine the research effects of the L2B program:

RQ1: Do students with mild disabilities who participate in the L2B curriculum report higher levels of mindfulness compared to control students?

RQ2: Do students with mild disabilities who participate in the L2B curriculum report higher levels of self-efficacy for tasks of self-regulation compared to control students?

RQ3: Do students with mild disabilities who participate in the L2B curriculum report higher levels of self-regulation skills compared to control students?

RQ4: How do students view their participation in the L2B program?

Method

School and Participant Characteristics

The research study took place at three different public charter school sites within the Minneapolis, Minnesota, metropolitan area. Two schools, Canyon View and Desert Hills, served as experimental sites, and one school, Sunset, was the control site. The names of these three schools are fictitious. Each school site's general demographics are listed in Table 3. All three of the schools had total student populations ranging between 300 and 400 students and a low free or reduced lunch student population with ranges between 15% and 30%. Two additional school sites initially provided consent to participate in the study, but withdrew prior to initial data collection and intervention implementation. Although schools were randomly assigned to either the experimental or control groups, each school was aware of their assigned category because of the lack of active control in the study.

Table 3

School Demographics

School	Site Type	Total Student Enrollment (<i>n</i>)	Free and/or Reduced Lunch (%)	Study Participants (<i>n</i>)
Canyon View	Experimental	396	23.8	9
Desert Hills	Experimental	388	29.4	7
Sunset	Treatment	307	15.6	7

Student participants. Student participants were recruited by their special education teachers to join the study. A total of 23 students with mild disabilities participated in the research. At Canyon View, nine students participated in the study with

zero attrition. Desert Hills initially had nine students enroll; however, two students withdrew from the study prior to initial data collection. Seven students were in the control group at Sunset. The majority of student participants were male ($n = 18$) and in grades seventh or eighth ($n = 16$). Students in the experimental group who received the intervention had an average IQ of 99 with the most frequent disability categories of either Autism Spectrum Disorder (ASD) ($n = 7$) or Other Health Disorder (OHD) ($n = 7$). The control group students had a slightly higher average IQ score of 106 with disability categories of either Other Health Disorder (OHD) ($n = 3$) or Specific Learning Disability (SLD) ($n = 3$). A complete overview of participant characteristics including breakdowns by sex, grade level, disability, and IQ is listed in Table 4.

Table 4

Participant Characteristics by Sex, Grade, Disability, and IQ

Group	Sex		Grade Level				Disability			IQ		
	Male	Female	5	6	7	8	ASD	OHD	SLD	<i>M</i>	<i>SD</i>	Range
Treatment	14	2	2	5	4	5	7	7	2	99	10.75	80-118
Control	4	3	0	0	4	3	1	3	3	106	15.41	83-126
Total	18	5	2	5	8	8	8	10	5	101.8	12.59	80-126

Teacher participants. Special education teachers at each of the participating school sites were eligible for participation. A total of three special education teachers, one at each school, participated in the program. Participating teachers were licensed in special education in the state of Minnesota. Special education teacher participants did not need any advanced knowledge of mindfulness techniques.

Assessments and Measures

Students in both the control and treatment groups took all assessments at their school. Students took the Self-Efficacy for Self-Regulated Learning Scale (Bandura, 2006), Adolescent Self-Regulatory Inventory (ASRI) (Moilanen, 2007), and the Child and Adolescent Mindfulness Measure (CAMM) (Greco, Baer, & Smith, 2011). Students were also reviewed by their participating special education teachers on their attendance and rates of participation, and students were asked to participate in a post-intervention focus group. Teachers were assessed using weekly observations and a review of their lesson plans. This section will describe each of these assessments and measures in more detail.

Self-Efficacy for Self-Regulated Learning Scale. The Self-Efficacy for Self-Regulated Learning Scale was created by Bandura (2006) as part of several scales for measuring various self-efficacy concepts in children and adolescents. The scale originally consisted of 11 questions, but one question has now been omitted that focuses on library skills because it is no longer as relevant for students. The remaining 10 questions measure students' perceived self-efficacy towards self-regulated learning skills such as participation in class, planning and organizing homework, and performance motivations (Bandura, 2006). A 6 point Likert scale is used to measure each student's perceived self-efficacy and higher scores correspond with higher feelings of self-efficacy for self-regulation tasks.

Usher and Pajares (2007) conducted a validation study of the Self-Efficacy for Self-Regulated Learning Scale on 3,760 students in grades fourth through eleventh. The authors found an alpha value of .83, which is consistent with previous studies that have

found alpha coefficients between .78 and .84 on the Self-Efficacy for Self-Regulated Learning Scale (Britner & Pajares, 2006; Pajares & Graham, 1999; Pajares & Valiante, 2002; Usher & Pajares, 2006). Usher and Pajares (2007) concluded that the scale “formed a unidimensional construct and demonstrated an equivalent structure for boys and for girls, and for elementary, middle, and high school students. Thus, we believe the items provide a sound measure with which researchers can continue to assess students’ beliefs about their self-regulatory capabilities” (p. 459). Therefore, it is reasonable to predict that the Self-Efficacy for Self-Regulated Learning Scale will be a useful tool for assessing changes in each student’s self-efficacy for self-regulation.

Adolescent Self-Regulatory Inventory (ASRI). The Adolescent Self-Regulatory Inventory (ASRI) was developed by Moilanen (2007) to measure both short-term and long-term self-regulation. The measure includes five different components of self-regulation: monitoring, activating, adapting, persevering and inhibiting over four different domains including emotional, behavioral, attentional and cognitive (Moilanen, 2007). The overall scale consists of 36 questions, which are measured using a Likert scale ranging from 1 (*not at all true for me*) to 5 (*really true for me*). The construct validity of the ASRI was demonstrated by comparing it to other self-regulation measures including a scale developed by Novak and Clayton (2001). The ASRI demonstrated a strong correlation to the other measures (r range = .68–.92) (Moilanen, 2007).

Child and Adolescent Mindfulness Measure (CAMM). The Child and Adolescent Mindfulness Measures (CAMM) was developed by (Greco et al., 2011) in order to measure mindfulness in children over the age of 9. The CAMM consists of 10 questions and students rate themselves using a Likert scale from 0 (*never true*) to 4

(*always true*). All of the items are reverse scored, and students are considered to have higher levels of mindfulness if they have higher scores. Four different studies using the CAMM found that scores “correlated significantly and positively with favorable outcomes such as quality of life and academic competence and negatively with adverse outcomes such as internalizing symptoms and externalizing behavior problems” (Greco et al., 2011, p. 611). Chronbach’s alpha scores have ranged across 12 different studies from 0.58 to 0.85 with an average alpha of 0.79 (Pallozzi, Wertheim, Paxton, & Ong, 2016). According to a review conducted by Pallozzi et al. (2016) on mindfulness trait scales, the CAMM has been used with over 6,000 adolescents. Based on this review, the CAMM was shown to be one of the most widely used mindfulness scales and to have good construct and convergent validity (Pallozzi et al., 2016). In a review of existing mindfulness measures for children and adolescents, Eklund, O’Malley, and Meyer (2016) also supported the use of the CAMM because it was developed in school settings and shows good psychometric evidence. Further, Eklund et al. (2016) argues in favor of using self-report measures for adolescents because mindfulness is an internal experience and thus the beliefs of participants on their own mindfulness traits such as their thoughts and feelings, self-awareness, and self-observations or judgments are critical to understanding how mindfulness programs may impact these areas.

Adolescent Focus Group Questions. A focus group was used at the end of the intervention with student participants in order to gather valuable qualitative data on student perceptions of the L2B program. Focus group questions are listed in Appendix B. The questions ask students to reflect on the content they learned in the course, to provide feedback on content modifications they would recommend, and to share whether they

believe the course would be helpful for other students. The focus group was recorded and stored on the researcher's computer. Responses were transcribed and coded for analysis using a qualitative data analysis software program such as MAXQDA in order to determine common themes and patterns in participant responses.

Mindfulness-Based Interventions Teaching Assessment Criteria (MBI:TAC).

It is important to measure process outcomes in order to evaluate whether programs were delivered correctly and to understand how teacher practices may impact program outcomes because mindfulness research in adolescents is a relatively emerging field (Crane et al., 2013). One measure for evaluating the process of the implementation of the L2B program was evaluating each teacher using an observation and rubric. Observations were conducted using the the Mindfulness-Based Interventions Teaching Assessment Criteria (MBI:TAC) (Crane et al., 2013). The MBI:TAC rubric template is listed in Appendix C. The rubric is based off of six domains including “coverage, pacing and organization; relational skills; embodiment of mindfulness; guiding mindfulness practices; conveying course themes through interactive inquiry and didactic teaching; and holding the group learning environment” (Crane et al., 2013, p. 3). The rubric was developed in 2008 to accompany the Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) teacher training programs. These programs both have been developed by Kabat-Zinn (1990) who wrote the introduction to the L2B curriculum and who has heavily influenced the development of the L2B program.

Mindfulness Lesson Plans. The L2B program manual by Broderick (2013) specifies that lessons should have three components: a review of the lesson theme, an

activity around the theme, and in-class mindfulness practice. A lesson plan template was created to assist teachers in planning instruction that aligns around these three components. The lesson plan template is in Appendix D. Lesson plans were reviewed at the end of each week and a point was assigned for documentation of each of the three core components. Perfect adherence to the program would equal 54 points because there are 18 lessons and 3 points available for each lesson. Measuring adherence is important because it explains whether participants have had appropriate instruction, which could directly impact whether a participant completes the program to fidelity.

Student Attendance Sheets. The L2B program manual recommends students receive the 18 sessions for 15 to 20 minutes, three times per week (Broderick, 2013). In order to measure whether students are receiving the program with the correct dose and attending the sessions, teachers recorded attendance at each session (Appendix E). At the end of the six-week course, attendance sheets were reviewed in order to determine each student's dose. It is important to measure the program completion rate for students and whether students have had appropriate exposure to the curriculum because the L2B program is sequential and skills build throughout the course.

Student Participation Rubric. Student participation in the intervention was measured using a six-point rubric as adapted from Bean & Peterson (1998) (Appendix F). Each week students were assigned a score ranging from one to six on the rubric related to their participation. Students receiving a score between one and four for two consecutive weeks had a brief, one-on-one check-in with the instructor to review expectations and provide encouragement as recommended by Bean & Peterson (1998). High participant

responsiveness would be 36 points ranging down to low participant responsiveness at 6 points.

Independent Variable

The L2B curriculum consists of 18 sessions based around the acronym of BREATHE, which stands for body, reflections, emotions, attentions, tenderness, habits, and empowerment (Broderick, 2013). Each section of the L2B curriculum focuses on a different topic and includes four to six activities aligned around the topic. Table 5 describes the intended outputs of each section of the curriculum. For example, in the first section called “Body,” participants do a breath-awareness activity, mindful eating activity, and a writing prompt called “Mindfulness in My Life”. These activities culminate in the final output of a body scan practice. The outputs for each topic are common methods used in mindfulness instruction and will provide students with a solid foundation of mindfulness tools (Broderick, 2013; Broderick & Frank, 2014). The curriculum comes with an instructor’s manual with lesson plan ideas and printable student workbooks that provide students with the ability to apply their skills.

Table 5

Session Themes and Outputs for the Learning to Breathe Curriculum

Theme	Sessions	Outputs
Body	1-3	Students will begin a body scan practice and begin to understand intention in daily life.
Reflections	4-6	Students will develop a focused attention practice and learn how we all have different perceptions of events.
Emotions	7-9	Students will practice mindfulness with feelings and emotions.
Attention	10-12	Students will use mindful movement to combat chronic and acute stress.
Tenderness	13-15	Students will focus on gratitude and loving-kindness practices to increase their self-compassion.
Habits	16-18	Students will review previous themes and discuss ways to continue their mindfulness practices.

Procedure

Research was conducted over an eight-month period from October 2016 to May 2017. Beginning in October, schools were recruited by the researcher for participation in the study through emails. The intervention was advertised to approximately 75 different charter schools with grades fifth to eighth in the Minneapolis and St. Paul metropolitan area. Interested schools were selected in February and matched as either the control or experimental site. Specific protocols for matching schools will be discussed in detail later in this chapter.

Teachers received a one-day training in the beginning of December, so that they could learn more about the program. This training and the intervention materials were provided to teachers at no cost and with no obligation to join the research study. Teachers did not receive any compensation for attending the one-day training.

In February, the focus was placed on securing both teacher and student consent. Teachers were given a consent form prior to the recruitment of student participants. Guardians of eligible students were notified about the study through their child's participating school. Guardians who wished to have their student participate in the intervention completed a consent form. The participating teacher at each school site also notified students about the intervention. Students who wanted to participate in the intervention completed a consent form. The consent forms for each participating teacher, student, and student's guardian are being kept in a locked filing cabinet. Students did not receive any compensation for participating in the intervention.

Baseline pretesting using the three student self-report measures, the Self-Efficacy for Self-Regulated Learning Scale, ASRI, and CAMM, occurred in March at each participating school site. The three measures were read aloud to students in order to minimize any potential reading challenges. The researcher administered these three questionnaires for the pretest and posttest data collection periods at each school site. In total, the three measures were estimated to take students approximately ten to fifteen minutes to complete.

The L2B curriculum was administered to students in the experimental group between March and May. Students received lessons three times a week for 15 to 20 minutes each session over a six-week period. Weekly observations were attempted or conducted at each school site in the experimental group. Both quantitative and qualitative feedback regarding the lesson was recorded using the MBI:TAC. Both students in the experimental and control groups completed a posttest using the three self-report measures

at the end of the L2B program in May 2017. Students in the experimental group were also asked to complete a focus group. Final data analysis occurred in May 2017.

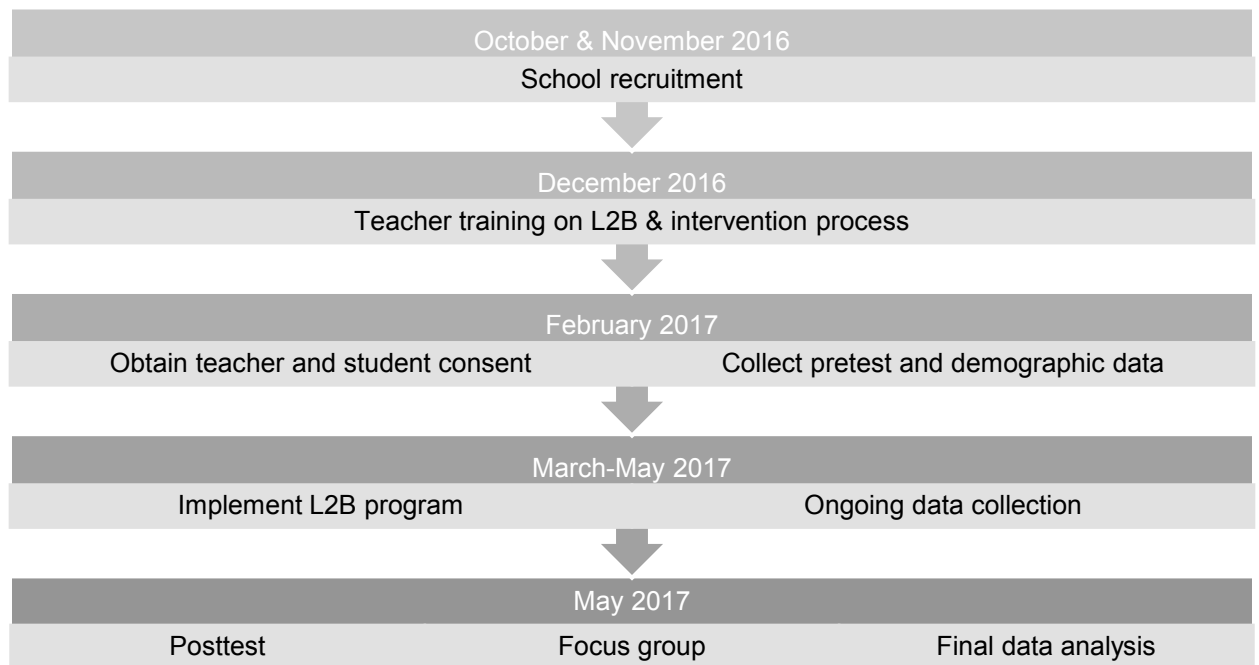


Figure 1. Intervention procedural timeline.

Design

Choosing an appropriate evaluation design is essential to reducing bias and alternative explanations related to outcomes (Shadish, Cook, & Campbell, 2002). A pilot, quasi-experimental design was chosen in order to reduce threats to validity and to match similar schools for comparison. Schools were matched based on their demographics including student ethnic population, size, grade level of participating students, and free or reduced lunch percentages. After schools were most appropriately matched, a coin was tossed to assign one school to the treatment group and the other school to the control group. The treatment group received the L2B curriculum intervention, but the control group was passive, i.e. they did not receive any additional training or courses and continued with their typical class schedule. Schools knew whether they were in the

experimental or control group due to the passive nature of the control group.

Design Strengths. Using a quasi-experimental research design for this research comes with several strengths including the ability to match schools, a minimized risk to treatment diffusion, and its consistency with previous research on L2B. Schools were matched based on their demographic characteristics in an attempt to keep bias at a minimum. An additional strength of this design is that it minimized treatment diffusion by assigning one school to the role of the treatment group and the other matched school to the role of the control group. This prevented the possibility that students in the control group received the L2B intervention and allowed for comparisons between pretest and posttest data to determine the influence of the mindfulness curriculum. A quasi-experimental research design enhanced existing research by replicating similar design models (Black, 2015; Shadish et al., 2002; Zoogman, Goldberg, Hoyt, & Miller, 2015). Previous studies on L2B have also featured quasi-experimental designs (Broderick & Metz, 2009; Metz et al., 2013), so this study builds off of this existing work in the field of mindfulness to assist with comparison and analysis between data from new and existing research.

Design Limitations. Although a quasi-experimental design allowed for more appropriate comparison between schools and students, it did come with several limitations. These limitations included a possible selection bias, a potential history effect, the use of single rating sources for assessing dependent variables, and the lack of an active control.

Selection bias. One limitation is the potential threat to selection bias because it is unlikely that the schools would have been matched together through random selection of

all of the public middle schools in the Minneapolis area. In addition, the research school sites had to opt-in to participate. It may be possible that these schools had other unique characteristics that produced a selection bias effect on the outcomes.

History. In school settings, there are numerous variables from curriculum to teacher changes that may impact the experiment outcomes. Given that the treatment and control groups were completely different schools, there may be other events that produced or influenced the treatment outcomes. In order to guard against a potential history bias related to the control group, the participating control group schools were asked to not implement any mindfulness, relaxation, or yoga interventions until after the experiment had been conducted. Experimental data was only collected over a three-month period, which may have helped minimize potential history effects, yet it is a threat that should be considered when interpreting the results of the experiment.

Single rating sources. Several of the dimensions of this study were measured using single rating sources. For instance, participant engagement was measured only by teacher rubrics; social acceptance by focus groups; teacher quality by one observer; and the variables of mindfulness, self-regulation, and self-efficacy by one student self-report measure for each outcome. Self-reporting measures can be affected by participant motivation or reactivity. There may also be a bias related to a practicing effect on these three self-report measures because participants will take the same measures two different times over a three-month period. Analyzing the means of the experimental and control groups for each testing period may help determine whether there is evidence of construct validity issues because control group scores should remain consistent across the three-month period. The use of single rating sources as applied in this study will limit the

generalizability of the results because of the potential bias of the rater and the problems associated with the various measures.

Passive control group. The absence of an active control group makes it difficult to interpret the treatment effects of the L2B curriculum. An additional limitation related to the control group in this experiment is that students knew whether they were receiving the mindfulness intervention. The open trial design with the use of a passive control group in this experiment limits the ability to compare treatment effects.

Program Evaluation

Data will be analyzed differently for each research questions and type of measure. Figure 2 contains a summary of each research question and the type of data analysis that will be conducted. Two control variables and one moderating variable will also be taken into account in the analysis of the data. Both IQ and age were recorded for each student participant at the start of the study. IQ was generated from cognitive testing from the student's most recent special education evaluation. Given the short nature of the study, IQ scores were not re-collected. Disability type serves as a moderating variable because there is the potential that students with certain disabilities will respond better or worse to the treatment. For example, students with an Autism Spectrum Disorder (ASD) diagnosis may have a more difficult time than students with an Other Health Disabilities diagnosis or vice versa. It may be that the treatment effects are moderated by this component. Descriptive statistics will be used to determine the mean and percentages of each of these control or moderating student demographic variables for both the experimental and control groups.

The first three research question compare the levels of mindfulness, self-efficacy,

and self-regulation in students in both the experimental and control groups. Mean scores for each group on each of the pretests and posttests will be analyzed using a mixed-methods ANOVA test. The ANOVA model will help determine whether there is a difference between the group means as a result of the variable of the L2B curriculum intervention.

The fourth research question on student views of the L2B intervention will be determined through three different data sources including attendance sheets, weekly student participation rubrics, and focus groups. Descriptive statistics will be used to determine the mean rate of attendance and level of participation. Qualitative data collected from the student focus group will be coded and analyzed in order to provide further analysis of how student's viewed their participation in the program.

Intervention instructional fidelity will also be measured through teacher lesson plans and observations. For determining the level of teacher lesson plan adherence to the L2B curriculum, a total score will be given for each of the 18 lessons based on the three elements from each teacher's lesson plans. Each teacher's quantitative score from their weekly observations will be recorded. In addition, thematic coding and analysis will be used from the observer's qualitative notes from each observation. Final analysis of instructional fidelity will use both the quantitative and qualitative data tools to evaluate the teacher's fidelity in delivering the L2B curriculum.

RQ1-3	<ul style="list-style-type: none"> •SPSS mixed model ANOVA using pretest and posttest mean scores on each of the 3 self-reported scales for self-efficacy, self-regulation, and mindfulness
RQ4	<ul style="list-style-type: none"> •Descriptive statistics will be used to measure rate and level of student participation • Coding and thematic analysis will be used to determine student's views of the L2B program •Data will be integrated in order to interpret and explain the quantitative and qualitative results of this RQ
Instructional Fidelity	<ul style="list-style-type: none"> •Descriptive statistics will be used to measure adherence to the L2B curriculum •Coding and thematic analysis will be used to measure teacher instructional competence based off of observation data •Data will be integrated in order to interpret and explain the quantitative and qualitative results of this RQ

Figure 2. Types of data analysis for each research question.

Conclusion

A pilot, quasi-experimental design study was conducted in order to determine whether the L2B curriculum intervention increases self-efficacy, self-regulation, and mindfulness in students in a treatment group compared to a control group. An additional research question evaluated student views of the intervention through their attendance, participation, and feelings about the program. A quasi-experimental design was chosen in order to allow the researcher to make more reliable casual inferences about the effects of treatment on participants by matching participating schools and by further building off of existing L2B research designs. Results of this study will help contribute to the field of mindfulness research by showing whether the L2B intervention may positively impact outcomes for adolescents with disabilities in school settings.

CHAPTER FIVE

FINDINGS

This research study examined the effects of the L2B mindfulness curriculum on adolescents with mild disabilities through four different research questions. This study evaluated the influence of the L2B curriculum on the variables of mindfulness (RQ1), self-efficacy (RQ2), and self-regulation (RQ3). Student views of the program (RQ4) were also explored to determine the social validity of mindfulness-based interventions with adolescents with mild disabilities. This chapter will begin by describing the process of implementation by participating teachers, followed by the results for each of the four research questions and an interpretation of the results. A final discussion including the theoretical and applied implications, limitations, and recommendations for research on mindfulness in special education programs will conclude this chapter.

Process of Implementation

Due to the relatively new nature of mindfulness research within school settings, Feagans Gould et al. (2016) have found that less than 20% of mindfulness research studies with adolescents have examined more than one fidelity of implementation (FOI) indicator. This study intentionally measured these four FOI concepts including attendance, participant responsiveness, program adherence, and quality. The findings from the first two FOI concepts, attendance and participant responsiveness, will be described in Research Question 4. The findings related to program adherence and quality will be described in this section. Program adherence was monitored through two mechanisms: a review of teacher lesson plans for each session and weekly observations by the student investigator. Quality was measured during weekly observations through

quantitative scores using the MBI:TAC rubric and qualitative note-taking with thematic coding to identify instructional strengths and weaknesses (Crane et al., 2013). The results from each of these measures will be discussed in this section.

Lesson plan review. Teachers were given a lesson plan template (Appendix D) with each of the three required sections to be taught: a review of the previous lesson, mindfulness activity, and meditation practice. These three sections were recommended as the core curriculum components in the L2B manual (Broderick, 2013). The completed lesson plans were provided to the researcher and documented as meeting full adherence if they included each of the three components in their plan. Both teachers met 100% instructional adherence based on their lesson plans for all 18 sessions. Teachers also self-reported that creating lesson plans was quick and straightforward because of the way the L2B curriculum manual is written. In the manual, each lesson already has activity options described and target language for each of the three sections. Teachers simply had to pick activities that would work best for their classroom and setting and put them on their lesson plan. This allowed for teachers to easily demonstrate mastery in this area.

Observations of instructional quality. Teachers received weekly observations to measure their instructional competence using the MBI:TAC rubric developed by Crane et al. (2013). The rubric measures teaching mastery in six domains and provides a section for qualitative feedback (Appendix C). Teachers were provided with a total score out of 36 for each lesson. Higher scores indicate stronger teaching skills. The observer also recorded teaching strengths and weaknesses that were then coded and analyzed for re-occurring themes. Table 6 lists the quantitative observation scores for each teacher.

Rubric quantitative scores. At Canyon View, mindfulness observations took place for five out of the six weeks. The first week was missed due to a last-minute scheduling change at the school. Overall, the teacher showed improvements in her quantitative rubric score as the weeks progressed. It was much more challenging to observe the teacher at Desert Hills and observations only occurred three out of the six weeks. This teacher changed the day or time for the L2B group throughout the six weeks, and thus observations were unable to occur systematically. The teacher's rubric score varied from week-to-week, but had an upward projection from the first observation.

Table 6

Teacher Quantitative Observation Scores

School Site	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Canyon View	--	15/36	18/36	22/36	24/36	23/36
Desert Hills	--	16/36	--	21/36	18/36	--

Qualitative observation results. Qualitative teacher observation notes revealed specific patterns of strengths and weaknesses for each teacher as well as themes that emerged for both teachers. The observer took written notes during each observation through the MBI:TAC. These notes were then transferred into a database for coding and analysis in order to look for specific, re-occurring themes.

The teacher at Canyon View demonstrated deep relationship building skills with students, which appeared to enhance classroom trust. For example, the facilitating teacher is also a former collegiate athlete, and she used this background to connect with student interests and to explain the value of mindfulness in relatable terms. The teacher provided students with positive feedback when they shared and participated in activities. Her

encouragement to students was well-received by them, and the majority of students from Canyon View regularly shared and participated in the class.

Finding a space for mindfulness lessons was somewhat challenging at Canyon View. The majority of lessons took place in the school's computer lab, which was adjacent to the school cafeteria and school lunch service occurred co-currently with the mindfulness group. This made it challenging at times for students to focus on lessons. For example, the cafeteria erupted in the "Happy Birthday" song during one lesson when students were doing a silent reflection activity, which pulled the mindfulness group off-task. During another observation, the class was unable to use the computer lab because of state standardized testing and no other rooms were available, so the class went outside. Within one minute of being outside, students found a grass snake and struggled to re-focus on the lesson because of their curiosity about the snake. Although the students at Canyon View received several opportunities to practice mindfulness outside, they did not use yoga mats like the students at Desert Hills. The challenges and opportunities of finding space for mindfulness practice is an important consideration for future mindfulness interventions.

The teacher at Desert Hills did an excellent job of creating a comfortable and well-structured space for students to practice mindfulness. Prior to each lesson, the teacher would re-arrange the classroom to fit the needs of the activity. For example, chairs would be pushed to the side to make space for yoga mats, tables would have the necessary supplies ready to go on them, or the chairs would form a circle prior to student's entering the space. In addition to creating a welcoming space for mindfulness

practice, the teacher at Desert Hills also exhibited a calm, positive, and present focus demeanor throughout each observation.

The teacher's biggest weakness at Desert Hills was managing the group's energy and participation. In all three observations, participants appeared very reluctant to share with the group. For example, students only shared or volunteered when prompted by the teacher in 30% of the observed opportunities. During the student focus group, several participants commented on the fact that they did not have a good relationship or trust the teacher facilitating the L2B lessons. This may have impacted the overall group dynamic.

Both teachers used a formal procedure to begin the class. The teacher at Canyon View asked students to take several deep breaths and engage in a stretching activity, and the teacher at Desert Hills used a bell to start lessons. These specific procedures appeared to help students become more focused and to begin the lesson on a solid foundation for learning.

The teachers at both Canyon View and Desert Hills demonstrated challenges with the meditation component of each lesson. At Desert Hills, only one student was observed participating in the meditations, and students at Canyon View participated approximately half of the time. These low rates of participation by students are likely due to two primary factors: lack of understanding of how to transition students into a meditation and the perceived limited value of meditation by students because of teacher framing. For instance, neither teacher explained to students how to best set-up and prepare for a meditation in any of the observations. This seemed to confuse students as they appeared unsure of the directions or what they should be doing during each meditation.

Overall, teachers demonstrated 100% program adherence on their session lesson plans. The teachers also made positive improvements in their teaching skills over the six weeks. The quality of instruction varied because each of the teachers had specific strengths and weaknesses.

Results

Research Question 1: Curriculum Effects on Mindfulness

A mixed model analysis of variance (ANOVA) test was conducted in SPSS to determine if students who received the L2B intervention reported higher levels of mindfulness compared to their peers in the control group. The means and standard deviations for both the pretest and posttest scores for the treatment ($n = 16$) and control groups ($n = 7$) are shown in Table 7. The results of the mixed model ANOVA (Table 8) did not indicate a significant effect of Group, $F(1, 21) = 0.001, p > .05$. There was neither a significant effect of Test, $F(1, 21) = 0.65, p > .05$, nor a significant effect of Group by Test, $F(1, 21) = 0.34, p > .05$. Although the experimental group did show a larger mean score and positive increase in mindfulness at posttest than the control group, these results were not statistically significant. The research hypothesis is not supported by these results.

Table 7

Means and Standard Deviations of Mindfulness, Reported by Group and Test

Group	Test	
	Pretest	Posttest
	<i>M (SD)</i>	<i>M (SD)</i>
Experimental	22.34 (7.68)	24.13 (6.9)
Control	23 (6.66)	23.29 (7.83)
Total	22.57 (7.24)	23.87 (7.04)

Table 8

Results of Factorial ANOVA, Investigating the Effect of the L2B Intervention on Mindfulness

	Source	<i>df</i>	<i>MS</i>	<i>F</i>
Between Subjects				
	Group	1	0.11	0.001
	Error	21	91.03	
Within Subjects				
	Test	1	10.09	0.65
	Test by Group	1	5.22	0.34
	Error	21	15.58	

Research Question 2: Curriculum Effects on Self-Efficacy

A mixed model ANOVA test was also conducted to determine whether students who received the L2B intervention had greater self-efficacy than students in the control group. The mean and standard deviation scores for each participant group by both the pretest and posttest scores on the Self-Efficacy for Self-Regulated Learning scale (Bandura, 2006) are provided in Table 9. Students in both groups actually had lower average scores on the posttest compared to the pretest. Comparisons between the two groups and tests are listed in Table 10 and do not indicate any statistically significant findings. ANOVA results between Groups resulted in an $F(1, 20) = 0.12, p > .05$. There were not any significant findings between Test, $F(1, 20) = 0.03, p > .05$, or by the Test within Groups, $F(1, 20) = 0, p > .05$. Based on these findings, the hypothesis that students in the L2B intervention group would have higher levels of self-efficacy than students in the control group should be rejected because no statistically significant differences were found.

Table 9

Means and Standard Deviations of Self-Efficacy, Reported by Group and Test

Group	Test	
	Pretest	Posttest
	<i>M (SD)</i>	<i>M (SD)</i>
Experimental	36.44 (7.87)	35.94 (10.34)
Control	37.83 (15.48)	37.5 (8.92)
Total	36.82 (10.09)	36.36 (9.79)

Table 10

Results of Factorial ANOVA, Investigating the Effect of the L2B Intervention on Self-Efficacy

Source	<i>df</i>	<i>MS</i>	<i>F</i>
Between Subjects			
Group	1	19.1	0.12
Error	20	160.28	
Within Subjects			
Test	1	1.52	0.03
Test by Group	1	0.06	0
Error	20	46.28	

Research Question 3: Curriculum Effects on Self-Regulation

A third mixed model ANOVA was conducted to compare the effects of the L2B intervention on self-regulation in students in with the experimental and control groups. Self-regulation was measured by the Adolescent Self-Regulation Inventory (ASRI) by Moilanen (2007). The means and standard deviations for both student groups are reported in Table 11 by test. Students in both groups had an average decrease in their posttest levels of self-regulation compared to pretest results. None of the effects were statistically significant at the $p < .05$ level as documented in Table 12. The main effect between Groups yielded an F score of $F(1, 19) = 2.21, p > .05$. The F score within subjects by

Test produced an effect of $F(1, 19) = 0.25, p > .05$ and the F score from Test by Group produced an $F(1, 19) = 0.22, p > .05$. The hypothesis that the L2B intervention will increase self-regulation in students with mild disabilities who receive the intervention should be rejected.

Table 11

Means and Standard Deviations of Self-Regulation, Reported by Group and Test

Group	Test	
	Pretest	Posttest
	<i>M (SD)</i>	<i>M (SD)</i>
Experimental	109.88 (18.29)	109.75 (11.68)
Control	121.2 (13.9)	117.6 (7.16)
Total	112.57 (17.72)	111.62 (11.15)

Table 12

Results of Factorial ANOVA, Investigating the Effect of the L2B Intervention on Self-Regulation

Source	<i>Df</i>	<i>MS</i>	<i>F</i>
Between Subjects			
Group	1	700.34	2.21
Error	19	317.49	
Within Subjects			
Test	1	26.43	0.25
Test by Group	1	23	0.22
Error	19	105.92	

Research Question 4: Student Participation Views

Student acceptance of the intervention was judged by three main characteristics: their attendance, participation, and views of the L2B program. All three of these characteristics are useful for triangulating data on the social validity of mindfulness interventions for adolescents because of the weaknesses inherent in solely using student self-report data. The results of each of these three characteristics will be described.

Rate of student participation. Student rate of participation was determined through their session attendance, which was documented by their teacher. Students attended an average of 14.81 sessions out of 18 total sessions (Table 13). This means that the average student attended 82% of the L2B program.

Level of student participation. Teachers completed weekly participation rubrics for each participant using a rubric adapted from Bean and Peterson (1998) (Appendix F). The average participant had a total rubric score for six weeks of 24.31 (Table 13). Full participation for six weeks would be a score between 30 and 36. A score between 25 and 30 would be given to a student who makes comments, contributes occasionally, and participates in small group conversations or activities, and a score between 19 and 24 would be given to a student who may talk too much, make tangential contributions, interrupt the teacher, or dominate discussions.

Table 13

Student Engagement

Measure	<i>M</i>	<i>SD</i>	Range
Attendance	14.81	2.58	12-18
Participation Rubric Points	24.31	6.71	10-30

One interesting finding from the student participation rubrics is that there was little change from the beginning to the end of the program. Students averaged a rubric score each week between 3.9 and 4.3 points out of 6 points with a standard deviation between 1.2 and 1.5 points throughout the six-week program (Table 14). Instead of this gradual increase in participation seen in previous research by Bluth et al. (2016), students in this intervention demonstrated relatively consistent participation rates throughout the six-week intervention.

Table 14

Weekly Participation Changes

Session Week	<i>M</i>	<i>SD</i>
Week 1	3.9	1.2
Week 2	4.3	1.3
Week 3	4	1.2
Week 4	3.9	1.5
Week 5	4	1.5
Week 6	4.2	1.3

Student views. Students at each school site were asked to share their feelings about the L2B program through a structured focus group at the end of the six-week intervention. A list of the questions that were asked during the focus group are in Appendix B. A total of 14 of the participants were able to attend the focus groups. Audio data were transcribed and then coded to identify key themes from the interviews. Four main themes emerged during this process including student's views of mindfulness, benefits to participants from the program, curriculum and program recommendations, and expanding the audience of the L2B intervention. Each of these themes will be discussed in this section.

Changing views of mindfulness. All students agreed that their understanding of mindfulness changed over time. Some students thought that the course might be writing intensive, and other students worried that it would be boring. For example, all of the students at Desert Hills believed that it would be six weeks of filling out a workbook by writing. One student explained that he thought this due to the nature of the pretest surveys because this is the first thing the students completed before starting the L2B lessons. This change in beliefs about mindfulness programs is exemplified best by a quote from one of

the participants on his initial perceptions of the program and how it ended up benefiting him:

I felt kind of weird about it at first, but then started to like it. I actually finally realized some things that were going wrong in my life that I should fix, but can't because they are out of my control but it makes sense that they were stressing me out. In the end I liked it.

This student's experience is similar to others in the focus group, especially in developing greater self-compassion to problems outside of their direct control.

Benefits. Each student was able to articulate different and deeply personal ways in which the L2B program has helped them. For instance, two students shared that it has helped them with their athletics. One participant shared a story about how he uses it to stay calm and relaxed during baseball:

Relax. Like when you are hitting you don't want to choke the bat. When your hands are like so tight on it. You don't want to do that. You want to have loose hands. Stay calm in the box. It's just kind of helped me like when I get scared or something. Step up, take a deep breath, and get back at it. Get a big hit or something.

In this example, the student identifies how staying calm can help him be a better athlete, a technique for achieving this, e.g., breathing, and increased resiliency in the face of fear. Another participant shared that she has started "opening up more. Like learning to love yourself a little bit. And not like listening to what over people think basically".

Students also believed that mindfulness was helping them control their feelings related to anger, anxiety, or depression. For instance, all students at Desert Hills believed

that their anxiety has decreased from taking the course. One student shared she has been using mindfulness to help listen better rather than talk all the time. She mentioned that her family has been praising her a lot because they notice a huge difference in her control over her emotions. In addition, students shared that it has helped them pay attention better in class and to not blurt out as frequently. Several students also mentioned that it has helped them focus on their homework, which they identified as a source of chronic stress in their lives.

All of the students said that they will continue to use mindfulness after the program. Students shared that they would use it in the following scenarios: tough situations or dilemmas, sports, conflicts with teachers or their parents, and to deal with stress from homework. Students appeared to receive numerous benefits from the program that were unique to each individual, but readily identified during the focus groups.

Curriculum components. Students greatly preferred hands-on activities where they were able to move around over the static meditations. Several students recommended that the course incorporate an electronic component such as meditations on their phones, being able to listen to calming music, or even using gaming. The students at Canyon View particularly liked the opportunities to go outside for mindful walking activities because it gave them a different perspective. Students in the Desert Hills focus group also recommended that the program be taught twice a week rather than three times a week. All of the students shared that they did not like the meditation practices.

All of the students named taking deep breaths as the top tool they have practiced and will continue using. However, when asked about other specific mindfulness techniques that they will continue to use, students were unable to name any additional

practices or strategies. This is possibly related to the way in which these skills were taught to students, which will be discussed later in this chapter.

During the Desert Hills focus group, students had significant concerns about the teacher who facilitated the sessions and some of their classmates' disruptive behavior. Two students shared that it was hard for them to participate because of the negative influence of other peers who would run around the classroom and destroy things. One student discussed a major altercation he had with the teacher and that he almost dropped out of the program; however, his parents and paraprofessionals encouraged him to keep going. Two other students echoed this student's concern and said that they did not trust the instructor because she made them feel like they were bad kids. The students at Desert Hills recommended having a different instructor for future mindfulness programs at their school.

Expanding the program. When asked if they believed the L2B program could be useful to other teenagers, students in the focus groups had generally positive but mixed feelings. For instance, some students believed that the program should be provided to all of their classmates, but other students thought it should be offered on an individual basis or even to their families. The exchange below between several students helps showcase their thoughts on expanding the program to their entire school:

Student 1: I would turn this into uh a class like a class like math to help everybody even if they are really good at it just to upgrade their skills.

Student 2: I think if our entire school. It would just help us come together as a school. Really make a good environment here.

Student 3: It would help us stop being so mean to each other.

Student 2: I think it will help the way people see each other. If you like opened it up to where you could say anything

Student 1: And you actually know their personal life.

Student 3: Yeah and then it will just ya know kinda help people, you know how some people say "I am the only one experiencing this stuff." Well, if you have it as the entire school, then you will find out that other people are experiencing things, too. You aren't the only person with problems.

Other students believed that the mindfulness class could benefit more students, but that it should be offered to specific students rather than the entire school. One student also shared that he has asked his baseball coach to start mindfulness practice for his team because it has helped improve his own skills and his self-compassion when he makes a mistake. Two students also wished that the mindfulness program was available for their whole family, especially for their siblings. These students thought it might make their family stronger and more peaceful if they completed the mindfulness program together.

Overall, student participants had positive views of the L2B program and showed a high degree of acceptability. The average participant attended over 80% of the sessions and was able to regularly participate in the program although with some challenges. During focus group interviews, all of the students named benefits that they received from participating in the intervention and believed that it should be offered in the future in some capacity.

Interpretation of Results

Mindfulness. Mindfulness is comprised of three main components: developing awareness, a focus on the present moment, and remaining nonjudgmental (Eklund et al.,

2016). Students exhibited these three components during observations and focus group interviews. For instance, students practiced developing their awareness and focusing on the present moment during regular activities such as nature walks, mindful eating exercises, and creating waterlines with paint brushes. Students also practiced remaining nonjudgmental through sessions that explored observing their feelings, emotions, and stressors. During focus groups, many students identified having greater attention and focus as well as nonjudgmental, self-compassion as a result of the intervention. However, the posttest results on the CAMM (Greco et al., 2016) did not demonstrate any statistical significant changes or differences between the intervention and control group or testing periods on mindfulness. It may be that students needed greater repetition of these skills in order to show statistically significant changes in their dispositional mindfulness. Students reported a desire for incorporating technology into future mindfulness-based interventions. More frequent assessments of mindfulness through technology-based applications such as online journals, emails, or text messages may be a better way to document changes in mindfulness in students with disabilities.

Self-efficacy. The results (or lack thereof) related to self-efficacy in this study are surprising. Students in both the control and experimental groups demonstrated negative average posttest scores. In addition, focus group conversations and classroom observations revealed no mentions related to self-efficacy. Measuring self-efficacy in mindfulness interventions has rarely been conducted with adolescents, and at the time of this writing, there have been zero published results on self-efficacy as an outcome for adolescents with disabilities. One possibility for these results is that mindfulness programs for adolescents do not target self-efficacy in a meaningful way. In addition, the

SRSL by Bandura (2006) has not previously been used in mindfulness research and may not be an appropriate choice for measuring self-efficacy changes from an intervention with a short duration. Previous research has also demonstrated that students with disabilities have lower baseline self-efficacy compared to their peers without disabilities (Klassen, 2010). If students with disabilities have lower self-efficacy, then they may need interventions with greater opportunities for practice that are longer and more intensive in scope.

Self-regulation. Similar to the results related to self-efficacy, the average student score in both the treatment and control groups decreased on the posttest. Given that self-efficacy is a vital precursor to self-regulation (Bandura, 1991), this result is not entirely surprising. However, students discussed many self-regulation benefits from the program in the focus groups including greater focus and attention during class and more control over their emotions such as anger. One explanation for the non-significant findings on the ASRI may be related to the length of the L2B program. Previous research measuring self-regulation from mindfulness-based interventions in students with disabilities have used programs with an average of 388 minutes of instructional time compared to 270 minutes with the L2B curriculum. By increasing the amount of instructional time to 388 minutes, students would have gained an additional 8 sessions or 30% more practice in developing their self-regulation. These additional opportunities to learn self-regulation strategies may be particularly important for students with disabilities who typically require more repetitions to master new material.

Student program views. Overall, data from student participation rubrics, attendance sheets, and participant focus groups indicates that the intervention was

positively received by students. Students described many positive benefits from the program including help with focus, staying calm during stressful situations, reduced anxiety and depression, and increased self-compassion. Student attendance was most impacted by the amount of service established in their Individualized Education Program (IEP). The average student in the intervention also demonstrated some barriers with full participation. In addition, focus group and observation data highlighted the importance of building group trust and using consistent procedures to increase student participation and engagement.

The average student attended over 80% of the L2B sessions. However, this data was affected by the alignment of the L2B intervention requirements to student IEP minutes and services. For example, some students only received social skills services two times a week as written in their IEPs, but the intervention was provided three times a week. In order to maintain the least restrictive environment for these students, they were only able to attend a total of 12 sessions. This reduced the mean attendance rates for the overall group of participants.

Given that the mean participation score was a 24.31 out of a possible 36 points, it is likely that the average student had some difficulties achieving full engagement in activities and discussions. These difficulties may be related to the disability categories or baseline levels of social skills of the students involved in the program because these types of skills are frequent challenges associated with students with ASD or ADHD (Ashburner, Ziviani, & Rodger, 2010; Gaub & Carlson, 1997; Loe & Feldman, 2007). Participation may have also been affected by the relationship between students and their instructor.

Data from student focus groups and teacher observations highlighted the importance of developing trust between the participants and their instructor. Canyon View and Desert Hills served as quite binary examples of this. At Canyon View, students had higher rates of participation during lessons and shared their feelings more deeply with each other. The teacher at Canyon View made an effort to connect the mindfulness material to student interests. For example, classroom conversations reflected the hobbies of students such as baseball, motorbike racing, and computer programming in addition to each of their personal areas of development such as blurting out in class, work refusal due to anxiety, and expressing angry feelings towards staff and students. The students at Canyon View expressed a desire for the L2B program to be implemented with their entire school because they felt it could increase trust and feelings of support between students. The positive example of Canyon View is contrasted with Desert Hills, where students participated during observation on a surface level and appeared to dislike their instructor. Students in the focus group at Desert Hills discussed a desire for better classroom management and a different instructor whom they trusted as a way to make the L2B program stronger.

The use of specific procedures to begin class by both of the teachers also appeared to help with engagement. When the teachers used clear procedures and pre-taught expectations for activities, students typically had higher levels of participation and decreased classroom behavior issues. The opposite of this was observed during meditation practices. Neither teacher used consistent language to help students transition from mindfulness activity to meditation practice, and students often appeared confused about what they should be doing. During focus group interviews with students, they

frequently shared that they did not understand the purpose of the meditations and this likely affected their participation during this component of each lesson.

Discussion

Theoretical Implications

Students in the treatment group in this research study showed non-significant increases in mindfulness, self-efficacy, and self-regulation. This finding is not consistent with previous research on the L2B program (Bluth et al., 2016; Broderick & Metz, 2009; Eva & Thayer, 2017; Fung et al., 2016; Metz et al., 2013). However, this study is different from previous L2B research because of its implementation with students with diagnosed disabilities within a special education setting. It is possible that students with disabilities may require significant differences in treatment when using mindfulness interventions. For instance, research on students with disabilities through the lens of the social cognitive theory has found that they have lower self-efficacy perceptions and that these perceptions are less accurate than their peers without disabilities (Klassen, 2010). Further, students with disabilities may have less experience increasing their self-efficacy through tools such as mastery, social modeling, social persuasion, and emotional because of previous school failure (Bandura, 2012). Given that self-efficacy acts as an essential building block for self-regulation (Bandura, 1991), it is possible that students with disabilities need mindfulness intervention that can first strengthen their self-efficacy perceptions prior to targeting their self-regulation or general mindfulness skills. Potential exercises that could accomplish this may include providing direct instruction on goal setting, accurate self-reflection, and planning (Eisenberger, Conti-D'Antonio, & Bertrando, 2005).

Applications to Practice

The field of mindfulness research with adolescents is still at an early stage of development. In addition, previous mindfulness studies with students with disabilities described in Chapter Four have solely studied one disability category at a time such as ASD or EBD. However, this method does not reflect the cross-categorical nature of special education programs (Brownell, Sindelar, Kiely, & Danielson, 2010). In cross-categorical special education settings, students from multiple disability categories may be put in a social skills group together to work on similar goals. By evaluating and implementing the L2B intervention in this similar manner, this research demonstrates that mindfulness is a relatively easy intervention for teachers to adopt and implement with students from multiple disability categories. Further, adolescents with mild disabilities had favorable views of the L2B program including beliefs that they received positive outcomes from it and a desire for the program to be expanded.

Limitations

This mixed-methods study was conducted to explore the efficacy and outcomes of implementing mindfulness programs with adolescents with mild disabilities. Due to its exploratory nature as a pilot program and the student population studied, there are many limitations which reduce the generalizability and validity of these findings. Several of these limitations include the study population, school settings and facilitators, and the use of the 18-week L2B program instead of the 6-week program. Each of these limitations will be explored in detail.

Study population. Initially, five school sites had planned to participate in the research study for a total of 55 participants. Due to the attrition of two school sites prior

to the beginning of the study, the resulting number of participants was smaller ($N = 23$), and thus the results are underpowered. The small size of the study and specific student characteristics limit the generalizability of the results.

Disability. The small sample size of this study is further impacted by the number of different disability categories ($n = 3$) because it may be that this variable is producing an influence on the results. If students of only one disability category had been in the intervention such as students with ASD, there may have been a different treatment effect. It is not possible to generalize the findings of this study to any specific disability category because a larger sample size would be needed to isolate any potential correlations between disability category and the dependent variables.

Gender. There were significantly more male participants ($n = 18$) than female participants ($n = 5$). This makes the findings difficult to generalize to female students with disabilities. Previous research on the role of gender in adolescent mindfulness interventions has shown that female students typically have more positive outcomes from treatment, and thus the small rates of female students in the treatment group ($n = 2$) could have an effect on the overall study's outcomes (Bluth, Roberson, & Girdler, 2017).

Pretest effect. Each of the program participants were given a pretest prior to the start of the L2B program. It is possible that students may have responded differently to the intervention because they knew they were taking part in a research study and may have had a reaction to the pretest. During focus groups, one student in particular mentioned that the pretest shaped his initial view of the program. Since students received a pretest prior to instruction, these results are only generalizable to other pretested groups.

School setting. Although all of the research school sites shared similar demographic characteristics, the three schools were public charters located within the Minneapolis metropolitan area. The study site schools were approximately 40% smaller ($M = 364$) than the average middle school in the Minneapolis Public Schools (MPS) district ($M = 594$) (Minneapolis Public Schools, 2017). In addition, MPS has a much different demographic base than the charter schools which were studied. For instance, 62.6% of MPS students received free or reduced lunch compared to an average of 22.9% of students at the research sites (Minneapolis Public Schools, 2016). Based on the specific school settings used for this research, the findings of this study should be limited to charter schools with similar demographics including size and a low-to-medium free or reduced lunch percentage population of students.

The two intervention school sites also offered vastly different spaces for mindfulness practice. At Desert Hills, students practiced in a classroom that was modified each day depending on the lesson objectives. Canyon View participants received their instruction in a noisy computer lab and faced many interruptions from students coming in to use the lab and even being re-located outdoors for one week when state standardized testing was being conducted in the computer lab. These physical location disparities also make it challenging to generalize these findings to greater special education programs.

There is also the potential for a treatment effect due to the differences in the two intervention teachers. For instance, students at Desert Hills reported a strong mistrust of their instructor. The instructor at Desert Hills may have negatively affected the participants at this school, which may have passively biased the effects of the intervention. The adverse relationship between the students and instructor at Desert Hills

provides an additional limitation on the generalizability of student outcomes and programmatic views.

Treatment options. There are two different versions of the L2B curriculum, which are based on the length of the lessons. For instance, Version A has 45 minute lessons taught once per week compared to Version B which has 15 minute lessons facilitated three times per week (Broderick, 2013). Essentially, teachers either provide a total of 6 or 18 lessons depending on the version. This study used Version B, and the generalizability of the findings are limited to this specific treatment option. It is unclear whether similar results would hold if Version A was used, especially since the lessons are given in significantly different doses and frequencies depending on the treatment option.

Future Research Recommendations

Although this study is limited in its generalizability, the research revealed several recommendations for both mindfulness researchers and special educators. These recommendations include the creation of a common framework for mindfulness interventions in order to more accurately develop and link new outcome measures, the development of scientifically validated tools for measuring both student outcomes and fidelity of implementation, and important classroom factors for consideration when implementing mindfulness-based intervention within special education settings.

Common elements. What are the essential elements all school-based mindfulness interventions should have in common? The answer to this question is still relatively unknown in the current state of adolescent mindfulness research. Crane et al. (2016) recently attempted to define this for mindfulness-based programs in a broad sense; however, characteristics unique to school settings such as teacher background and

curriculum elements remain unestablished. Adolescent mindfulness researchers can use Crane's et al. (2016) framework as a starting point, but should determine which elements are firm or flexible for mindfulness programs with adolescent populations in order to support ongoing research. Without well-established program criteria, it will be difficult for researchers to design outcome measurement tools or to evaluate intervention and implementation fidelity.

Recommendations for research on mindfulness in schools. Without consistently used and commonly shared measures for studying adolescent populations, it will be challenging for researchers to understand and interpret the results of studies as well as to have an in-depth theoretical view of how mindfulness relates to student outcomes, especially the discrete programmatic components necessary for change. Although participant self-reporting is the primary measurement tool used in mindfulness research, its limitations suggest that researchers should use a wider variety of tools to help triangulate data from multiple stakeholder perspectives. For instance, researchers could gain feedback on participant performance through information from their parents or teachers to better understand participant self-report data. Likewise, additional qualitative and quantitative tools could be used that do not rely solely on student judgement. These tools include data from sources such as observations; interviews; surveys; focus groups; questionnaires; and reviewing student achievement data including grades, work samples, and attendance.

As the field of mindfulness advances, more research tools typically used with adult participant populations to study mindfulness should be adapted and normed to fit adolescent populations. For instance, the teacher observation tool, MBI:TAC, used in this

study was created to evaluate facilitators of adult participants (Crane et al., 2013). However, given the absence of mindfulness teaching rubrics for school populations, it was adapted for use in this study. Researchers should create new rubrics that align with educational settings that incorporate the unique needs of teachers such as classroom procedures, behavior management, and student engagement. There is also an absence of standardized tools for measuring student participation in mindfulness interventions. This study used a previously normed rubric by Bean and Peterson (1998). Although teachers reported this rubric as helpful for monitoring participation, it has not been changed to fit the requirements of mindfulness curriculum. For example, future participation rubrics might include key indicators about what participation looks like during activities that require less talking such as silent meditations. Creating additional tools for monitoring the effectiveness of mindfulness program implementation such as observation and participation rubrics will help stakeholders to collaborate and refine their teaching through the use of data.

Recommendations for special education programs. As special education programs continue to use mindfulness-based interventions, four key lessons emerged from this research study: teachers should use clear and consistent procedures, physical space should be considered and adapted to fit the needs of the program and students, trust between the adult facilitator and other students is important for increasing engagement, and special educators should consider how mindfulness interventions fit into a broader school context. Each of these recommendations will be discussed in further detail.

Procedures. As previously discussed, students in the intervention appeared to have higher levels of engagement and understanding when teachers used clear and

consistent procedures. Teachers should assist in making the purpose of meditations more transparent through repetitive language and practice of those skills. Schools implementing mindfulness interventions should consider using regular routines and consistent language with students to increase their engagement, classroom management, and student understanding of all program components.

Physical space. The importance of a welcoming physical space has been documented in this research study as well as other related mindfulness research studies with adolescents (Dariotis et al., 2016). Teachers should create a physical space that allows for privacy, a quiet environment for practice, and with minimal distracting elements such as computers or a dirty appearance. Novel objects such as yoga mats or bells may also be used to create an enticing physical space.

Group cohesion. Mindfulness programs conducted within special education settings should focus on building group standards for behavior and establishing trust between participants and the instructor. Future mindfulness teacher training programs should develop ways to enhance the competencies of instructors in these areas in order to increase student buy-in and engagement with mindfulness. Teachers may need to learn new practices for managing classroom behavior that embrace the concepts and philosophy of mindfulness such as remaining nonjudgmental and providing space for students to explore negative feelings or behaviors that arise during class through inquiry rather than punitive measures.

Alignment with school systems. Prior to implementation of a mindfulness intervention, special educators should consider how their intervention fits into broader school systems and the needs of their students within their special education programs.

For instance, previous research on the use of mindfulness interventions with adolescents has occurred primarily within regular education settings and many schools are moving to implement mindfulness programs as a Tier 1 intervention (Black, 2015). However, the findings from this study show that students with disabilities may need interventions that are more intensive in scope and thus special educators should consider how their program can be integrated within school contexts to create a multi-tiered system of support. In the absence of a multi-tiered mindfulness framework, special educators should provide all school staff with general knowledge about mindfulness techniques to ensure students can practice activities such as deep breathing or body scans in all areas of the school day. Further, special educators should look at the goals of the curriculum prior to implementation to ensure that the program aligns with the Individualized Education Program (IEP) needs of their students. Special educators should give priority to evidence-based programs given the obligation under the Individuals with Disabilities Education Act (2004) to choose scientifically-based programs and practices that are based on peer-reviewed research when possible.

Final Conclusion

This research study explored the use of the L2B mindfulness curriculum over a six-week period with middle school students with mild disabilities. Although students in the treatment group did not demonstrate any statistically significant improvements on pretest to posttest measurements in the areas of mindfulness, self-regulation, or self-efficacy, participants reported improvements in self-compassion; acceptance of their feelings; decreases in depression, anger, anxiety; increases in attention; help dealing with stress; and improved athletic performance. Results of the study indicated that students attended an average of 14.81 of the 18 sessions with an average participation rate of

24.31 out of 36 total points. Focus group data demonstrated that all students received a personal benefit from the intervention and that students believed the program should be offered in the future to either select groups of students or their entire school. In addition, all students reported that they will continue to use mindfulness techniques. The special education teachers who facilitated the program showed 100% instructional fidelity on their lesson plans and made gradual improvements in their teaching. Overall, the results of the study showed that mindfulness interventions can be effectively implemented within special education settings and that there are high levels of acceptance for mindfulness programs by both teachers and students.

While further research is needed to determine whether mindfulness interventions can positively influence outcomes for students with mild disabilities, special education teachers interested in establishing a mindfulness intervention in their schools should prioritize creating a quiet and welcoming space, building classroom rapport and trust to create emotional safety with participants, and using consistent procedures to anchor essential program components such as meditation practice. As mindfulness programs continue to grow in popularity within school settings, it is essential that researchers continue to create shared measurement tools that have been normed for adolescents and for use with teachers. Mixed-methods research provides a valuable framework for building off of existing research, explaining program implementation characteristics, and triangulating data to better inform future developments in the field of mindfulness.

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Appendix A

School Demerit Policy (Hiawatha Academies, 2015, p. 37-38)

Demerits: A scholars [*sic*] can be assigned from 1–4 demerits for a rule infraction. More serious infractions may earn more severe consequences as outlined in the SCC.

Infraction	Demerit Count
Foul language (curse words)	Min. 1
Rowdy or loud behavior anywhere in the schools	Min. 1
Loitering	Min. 1
Standing, yelling, or throwing anything in the lunchroom	Min. 1
Not returning a tray or not cleaning up in the lunchroom	Min. 1
Inappropriate Behavior	Min. 1
Dress code violation that can be instantly corrected (untucked shirt, unbuttoned button, etc.)	1
Food or drink visible outside the lunchroom (note: water in clear 1 plastic bottles is permissible)	1
Eating or drinking outside the lunchroom (note: water in clear plastic bottles is permissible)	2
Chewing gum	2
Inappropriate public displays of affection	2
Tardy to school - Less than 1 minute - Between 1 and 15 minutes - More than 15 minutes	1 2 4
Tardy to class - Less than 1 minute - Between 1 and 3 minutes - More than 3 minutes	1 2 4
Unexcused absence from a class or school-mandated function (such as 6th Hour, detention, or a community service event)	4
In the hallways without permission	4
Talking during an emergency drill	4
Dress code violation that cannot be instantly corrected (no belt, etc.)	4
Hate speech (derogatory slurs)	4
Bullying or verbal harassment	4
Disciplinary removal from class	4
Cell phone or audible electronic device (including headphones) visible, audible, or used without permission during school hours	4+ confiscation until parent retrieves item from school
Academic dishonesty, cheating, or plagiarism	4 + a “0” score

Appendix B

Focus Group Questions

- 1) Before the program started, what did you expect a mindfulness class to be like?
How has your opinion changed over the past weeks?
- 2) What were the most important skills you learned from this class?
- 3) How and when do you use mindfulness?
- 4) Think back over the past few weeks of this class. What was your favorite thing about the class?
- 5) Suppose that you were in charge and could make one change that would make the program better. What would you do?
- 6) Now that the class has ended, do you plan to still use any mindfulness techniques?
- 7) Do you think other teens could benefit from this program?
- 8) Is there anything else you would like to share?

Appendix C

Mindfulness-Based Interventions: Teaching Assessment Criteria

MINDFULNESS-BASED INTERVENTIONS: TEACHING ASSESSMENT CRITERIA – SUMMARY SHEET							
Domain	Key features (use following page to offer qualitative feedback)	Incompetent 1	Beginner 2	Advanced Beginner 3	Competent 4	Proficient 5	Advanced 6
Coverage, pacing and organisation of session curriculum	Adherence to curriculum Responsiveness and flexibility in adhering Appropriateness of themes and content Organisation of teacher, room and materials Session flow and pacing						
Relational skills	Authenticity and potency Connection and acceptance Compassion and warmth Curiosity and respect Mutuality						
Embodiment of mindfulness	Present moment focus Present moment responsiveness Calm and alertness Attitudinal foundations Person of the teacher						
Guiding mindfulness practices	Language – precise and spacious Key learning for each practice available Elements to consider when guiding						
Conveying course themes through interactive inquiry and didactic teaching	Experiential focus Layers within the inquiry process Conveying learning Teaching skills Fluency						
Holding the group learning environment	Learning container Group development Common humanity Leadership style						

MINDFULNESS-BASED INTERVENTIONS: TEACHING ASSESSMENT CRITERIA – COMMENTARY SHEET		
Domain	Teaching strengths	Learning needs
1. Coverage, pacing and organisation of session curriculum		
2. Relational skills		
3. Embodiment of mindfulness		
4. Guiding mindfulness practices		
5. Conveying course themes through interactive inquiry and didactic teaching		
6. Holding the group learning environment		

Appendix D
Lesson Plan Template

Session Topic: _____

Session Number (1-18) & Theme (BREATHE): _____

Materials Needed:

-
-
-

Review of the Lesson Theme:

Activity:

Mindfulness Practice:

Appendix E

Attendance Sheet

Learning to Breathe Attendance Sheet

Session Dates																	
Student Name																	

Appendix F

Participation Rubric

Student Name: _____

Week (circle one): 1 2 3 4 5 6

Score	Description
6	A student receiving a 6 comes to class prepared; contributes readily to the conversation but doesn't dominate it; makes thoughtful contributions that advance the conversation; shows interest in and respect for others' views; participates actively in small groups.
5	Comes to class prepared and makes thoughtful comments when called upon; contributes occasionally without prompting; shows interest in and respect for others' views; participates actively in small groups. A 5 score may also be appropriate to an active participant whose contributions are less developed or cogent than those of a 6 but still advance the conversation
4	A student receiving a 4 participates in discussion, but in a problematic way. Such students may talk too much, make rambling or tangential contributions, continually interrupt the instructor with digressive questions, bluff their way when unprepared, or otherwise dominate discussions, not acknowledging cues of annoyance from instructor or students. Students in this category often profit from a conference with the instructor.
3	A student receiving a 3 comes to class prepared, but does not voluntarily contribute to discussions and gives only minimal answers when called upon. Nevertheless these students show interest in the discussion, listen attentively, and take notes. Students in this category may be shy or introverted. The instructor may choose to give such students a 5 if they participate fully in small group discussions or if they make progress in overcoming shyness as the course progresses. Sympathetic counseling of such students often helps
2	Students in this range often seem on the margins of the class and may have a negative effect on the participation of others. Students receiving a 2 often don't participate because they haven't read the material or done the homework.
1	Students in this range often seem on the margins of the class and may have a negative effect on the participation of others. Students receiving a 1 may be actually disruptive, radiating negative energy via hostile or bored body language, or be overtly rude.

Adapted from Bean, J. C., & Peterson, D. (1998). Grading classroom participation. *New Directions for Teaching and Learning*, 74, 33-40.

Comments:

Appendix G

Curriculum Vitae

Candace Burckhardt

Contact Information:

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Minneapolis, Minnesota 55428
715-316-1159

candaceburckhardt@gmail.com

Date of Birth and Location: September, 15, 1986 in St. Louis Park, Minnesota, United States of America

Education:

2014-2017 Doctor of Education
 Johns Hopkins University
 Baltimore, Maryland

Dissertation Title: Mindfulness in the Special Education Classroom: A Mixed Methods Pilot Study of the Learning to Breathe Mindfulness Curriculum

Committee: Patricia Hershfeltdt (Chair), Kimberly Yanek, and Deborah Carran

2017-2018 Superintendent & Director of Special Education Licensure
 Bethel University
 St. Paul, Minnesota

2009-2011 M.A. in Teaching
 Marian University
 Indianapolis, Indiana

2006-2009 B.A. in History & Political Science
 University of Wisconsin – Madison
 Madison, Wisconsin

Languages:

Intermediate proficiency in Spanish

School Administration Experience:

2016-present: *Special Education Coordinator*, Indigo Education, Arden Hills, MN

- Train over 700 special education professionals on professional development topics such as evaluations, crisis de-escalation, teacher leadership, and childhood trauma
- Develop the professional competencies of new special education teachers

- Provide special education evaluation services and consultation

2015-2016: *Special Education Coordinator*, Hiawatha Academies, Minneapolis, MN

- Supervised 60 teachers and school professionals in the fields of special education, social work, and school health to support over 1,100 students at Hiawatha Academies
- Researched and evaluated school programming practices under the direction of the Board of Directors and Executive Director
- Led and developed professional development opportunities related to special education, social-emotional learning, and trauma for 150 staff members
- Responsible for developing and implementing a 3-million-dollar budget

Summer 2014: *Education Director*, Envision Experience, Vienna, VA

- Responsible for the academic outcomes at experiential science learning overnight camps in Colorado, Maryland, and New Jersey
- Managed, trained, and evaluated a staff of 20 teaching professionals and 10 teaching assistants who provided instruction
- Ordered and organized over 1,000 different curriculum components and experiment tools
- Formally presented to over 2,500 parents over the course of the summer

2013: *Academy Director*, New Vision Wilderness, Medford, WI

- Responsible for academy operations in 2 locations in Wisconsin and Oregon
- Developed comprehensive academic curriculum for use in a therapeutic wilderness setting for clients in grades 6-12
- Coordinated and executed academic plans for over 150 clients from a variety of academic backgrounds and ability levels through consultation with schools, IEP committees, parents, and education consultants
- Oversaw the national school accreditation process for the private New Vision Wilderness Academy

2012: *District Director*, Steve & Kate's Camp, San Francisco Bay Area, CA

- Managed and recruited a team of 8 camp directors and 75 staff members at 4 locations in the San Francisco Bay Area to work with over 500 children daily in an experiential education setting
- Point person for all communications and inquires for over 1,500 families
- Collaborated with decision-makers in school districts and dioceses to formalize agreements for locations and to create site use plans

2011-2012: *Vice-Principal*, Escuela Futuro Verde, Montezuma, Costa Rica

- Created and led professional development sessions on working with English Language Learners, effective classroom management, and investing students and parents in their education

- Coordinated and created a volunteer program for enrichment classes including organic gardening, watershed education, theater, yoga, music, and physical education
- Provided instruction to 40 students in grades 1st-4th in English, science, math, and gym
- Handled school-wide communication with families and donors from around the world

Teaching Experience:

Summer 2017: *Graduate Teaching Assistant*, Johns Hopkins University, Baltimore, MD

- Supported the practical content application of multicultural education topics to students enrolled in a doctoral level course
- Enhanced the course through the addition of relevant readings, media, and discussion prompts related to course material
- Provided timely and constructive feedback to students on course assignments

2013-2015: *Special Education Teacher*, Medford Area School District, Medford, WI

- Cross-categorical special education teacher for 15 students in grades 1st-4th including students with cognitive, emotional, visual, and learning disabilities as well as other health impairments
- Managed and trained a staff of 5 full-time paraprofessionals that work with students with special needs

2009-2011: *English Language Learners Teacher/Teach For America Corps Member*, Christel House Academy, Indianapolis, IN

- Selected as a Teach For America Corps Member from over 35,000 applicants with a 10% acceptance rate
- Organized and facilitated four professional development classes on teaching English as a Second Language students for over 90 Teach for America corps members
- Developed a rigorous English language education curriculum and instructed over 200 students in grades kindergarten through 9th grade leading students to over 86% mastery of the Indiana state assessment in English and math
- Selected and videotaped for the Indiana Department of Education's Excellent Teacher Project
- Served as co-chair of the RTI team for identifying students with disabilities
- Selected as 1 of 25 members to represent Teach For America internationally in Israel through a summer program in 2011 in order to develop cross-cultural collaboration with teachers in Israel

Professional Associations:

- American Mindfulness Research Association (AMRA)
- Council for Exceptional Children

Committee Service:

- Minnesota Special Education Federal Setting 3 & 4 Working Group member, 2015-present
- Child Trauma Academy / Neurosequential Model of Education Trainer, 2015-present
- Crisis Prevent Institute Trainer, 2015-present
- Young Education Professionals – Twin Cities: Board Member, 2015-2017
- Co-Chair of Professional Learning Community: Students with Complex Communication Needs, Medford Area School District, 2013-2015
- Committee Member of Positive Behavioral Intervention Supports, Medford Area School District, 2013-2015
- Committee Member of Response to Intervention team, Medford Area School District, 2013-2015
- Committee Member of Response to Intervention team, Christel House Academy, 2009-2011

Professional Certifications & Licensures:

K-6 Elementary Education	MN, IN, & WI	2011-present
PK-12 English Language Learners	MN, IN, & WI	2011-present
K-12 Special Education	MN, IN, & WI	2011-present
6-12 Secondary Social Studies	IN, & WI	2011-present

Honors & Awards:

- Minnesota Administrators for Special Education Stenwick Benson Scholarship, 2017-2018
- Mind & Life Europe Research Fellow, 2016
- International Symposium for Contemplative Science, 2016 Sponsored Student
- Aileen & Gilbert Schiffman Fellowship, 2014-2017
- EdD Program Merit Scholarship, 2014-2016

Presentations & Workshops:

- Child Trauma Academy: Understanding the Impact of Trauma on Learning and Supports for Schools, Presentation at the Minnesota Administrators for Special Education Fall Conference, October 27, 2016
- Mindfulness in the Special Education Classroom: A Mixed Methods Pilot Study of the Learning to Breathe Mindfulness Curriculum. Poster presentation at the Mind & Life European Summer Research Institute, Germany, August 23, 2016