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Exploring the Effectiveness of a Mindfulness-Based Social Emotional Learning Program on Kindergarteners' Risk for Social, Academic, and Emotional Problems

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EXPLORING THE EFFECTIVENESS OF A MINDFULNESS-BASED SOCIAL
EMOTIONAL LEARNING PROGRAM ON KINDERGARTENERS' RISK FOR
SOCIAL, ACADEMIC, AND EMOTIONAL PROBLEMS

A Dissertation Presented

By

MOLLY A. ALVIN

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2018

College of Education
School Psychology

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on Kindergarteners' Risk for Social, Academic, and Emotional Problems

A Dissertation Presented

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DEDICATION

Dedicated to Paramahansa Yogananda, and to all my family members who could not go to college.

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I first want to give my sincere thanks to my advisor Sara Whitcomb, whose positive energy, support, and guidance have meant so much to me over the past five years. Thank you to my committee members, Sarah and Kirby. Thank you to Fiona, Adria, and Katie of Calmer Choice, and to the amazing instructors who participated in this study. Thank you to the teachers and principals who also participated – without your interest and dedication, this dissertation would not be possible. Thank you to my research assistants, Samantha, Katie, Jess, and Justin! I also want to thank my professors at Mount Holyoke College, especially Becky Wai-Ling Packard, who encouraged me to pursue a PhD, and Kathy Binder. I also want to acknowledge the UMass Amherst Graduate School for providing partial funding for this intervention study through a Dissertation Grant and Dissertation Fellowship. Lastly, I thank my dear family for supporting me in all the many ways you could during this long journey, and I want to express my deep gratitude to Josh, for all of his love and faith in me to succeed as a first-generation college student.

ABSTRACT

EXPLORING THE EFFECTIVENESS OF A MINDFULNESS-BASED SOCIAL EMOTIONAL LEARNING PROGRAM ON KINDERGARTENERS' RISK FOR SOCIAL, ACADEMIC, AND EMOTIONAL PROBLEMS

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This intervention study explored the effectiveness of a mindfulness-based social emotional learning program, Calmer Choice, on kindergarten students' risk for social, academic, and emotional problems. The study used a quasi-experimental design with two measures collected as pretests and posttests for students in an intervention group and students in a wait-list control group. Kindergarten teachers completed the Social Academic Emotional Behavior Rating Scale (SAEBRS; Kilgus & von der Embse, 2014) and the Devereux Student Strengths Assessment-mini (DESSA-mini; Naglieri, LeBuffe & Shapiro, 2014) for each student at these two time points. The intervention, Calmer Choice, consisted of 16 lessons taught twice a week for eight weeks. Lessons, approximately 20 minutes in length, were taught by Calmer Choice instructors and included engaging activities and the practice of mindful awareness. Participants included 13 teachers, five instructors, and 214 students. Results indicated that there were no significant differences between groups, however, lessons were implemented with high treatment integrity, measured by observations of approximately one-third of lessons and

by instructor's checklists completed after each lesson. Qualitative results suggested high levels of teacher satisfaction. Teachers did not perceive any adverse effects and reported benefits in students as well as personal benefits from participating in the lessons. Limitations of this study are discussed, with implications for future research and suggestions for implementing mindfulness in early childhood.

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CHAPTER I

INTRODUCTION, BACKGROUND, AND PURPOSE

Overview

Students and teachers face problems daily that relate to behavioral, emotional, and academic challenges in public schools. School professionals often struggle with student behavior difficulties at all grade levels and have historically taken a reactive approach to discipline (Doll & Cummings, 2008). Additionally, school counselors and school psychologists, as well as teachers, are often overwhelmed with the number of students struggling with emotional and mental health problems, which may result from a combination of biological factors and environmental risks such as poverty, harsh parenting, and negative peer relationships. High-stakes testing and state standards for academics have also illuminated concern about the number of students who are struggling to learn (Merrell, Ervin, Gimpel-Peacock, 2010). In response to the increasing stresses and risk factors observed in Pre-K-12 education, districts across the United States are slowly shifting towards more preventative efforts, committing to the idea that success in school is not just related to academics, but includes one's social and emotional health (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2013). Research supports that the earlier professionals engage in prevention and build protective factors, the better (Pianta, 1999; Pressley & McCormick, 2007; Doll & Yoon, 2010).

The Problem

Most mental health problems diagnosed in adulthood actually begin in childhood and adolescence. The median age of onset for depression and other mood disorders is 13 years, and anxiety disorders is six years of age (Merikangas et al., 2010). The prevalence

of clinically relevant levels of depression is about 5% for children, and 10 to 20% for adolescents (Doll & Cummings, 2008). Furthermore, more than 20% of all young people experience significant emotional distress and nearly one in ten are impaired by severe symptoms; however, few receive the treatment or support they need (Merikangas et al., 2010). Often, these mental health impairments are related to school behaviors, such as paying attention and active engagement, which effects students' academic learning.

Attention and engagement are two examples of skills needed to succeed in classroom learning activities such as reading. The number of students who struggle with reading is alarming. For example, according to the National Center for Education Statistics (NCES, 2015), 31% of 4th graders in the U.S. have below basic reading skills, and the percentage of students in high poverty areas is even higher. As teachers work hard to teach, they are also challenged by students' behaviors. Teachers and administrators report that behavior is a primary concern, and that the time spent related to discipline and managing behavior reduces time on instruction, organization, and forming positive relationships with students (Cohn, 2015).

Children from an early age can experience bullying, school violence, and negative peer relationships. Research has found that 70% of students surveyed nationwide experienced bullying at some point in their schooling (Nasel et al., 2001). Also alarming is that 70% of school shooters had been bullied at school (Vassekuil, Fein, Reddy, Borum, & Modzeleski, 2002). Together, such statistics, along with federal guidelines, have encouraged schools to create safe school climates, develop bullying prevention approaches, and implement Positive-Behavior Interventions and Supports (PBIS) to reduce risk for behavior problems.

In addition to prevention efforts related to climate and PBIS, Social-Emotional Learning (SEL) curricula are increasingly researched and taught in schools to build students' skills related to managing emotions, developing and maintaining positive relationships, making responsible decisions, and developing self-awareness (CASEL, 2013). It has been suggested that SEL curricula allow children the opportunities to develop and practice social and emotional skills, which may lead to protective factors against the inevitable stress present in schools today (Greenberg et al., 2003; Doll & Cummings, 2009; CASEL, 2013).

CASEL (2013) defines five competencies for students that relate to their cognitive, affective, and behavioral development, including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Although not considered one of the five core competencies of SEL, mindfulness is an example of a related skill that can enhance SEL competencies. Research on the use of mindfulness as a prevention method and intervention with youth is very limited. Most empirical support is from studies with adults. While the number of studies using mindfulness-based interventions in schools is dramatically increasing, there are many gaps in the literature. One area of need is high-quality research with children in early-childhood. To date, only four studies include evaluations of mindfulness-based programs in pre-school (Flook, Goldberg, Pinger & Davidson, 2015; Razza, Bergen-Cico & Daymond, 2015; Poehlmann-Tynan et al., 2016; Thierry, Bryant, Speegle Nobles, & Norris, 2016), and only three studies look at students in first and second grades (Napoli, 2005; Flook et al., 2010). There are currently no published studies that could be found that evaluate mindfulness programs with kindergarten students, except for a longitudinal

study following a sample of preschool students through kindergarten (Thierry et al., 2016).

Kindergarten is a unique school year in which children transition from Pre-K programs or home child-care to regular schooling. Kindergarten students may not be developmentally ready to attend to learning and may not have developed SEL strengths such as emotional regulation and attention, which are needed in order to succeed in school. Therefore they may benefit from preventative programs such as mindfulness interventions. The purpose of the current study is to evaluate the effectiveness of one mindfulness program, Calmer Choice, which was delivered to kindergarten students.

School-Based Prevention

Several authors discuss the importance of having a continuum of supports in schools, and recommend preventative interventions within a three-tier model (Merrell & Gueldner, 2010; Adelman & Taylor, 2010, Sulkowski, Joyce, & Storch, 2012). For example, all students have access to universal, primary prevention through effective classroom routines, policies, and evidence-based curricula. It is likely that fifteen to 20% of students receive targeted (secondary) prevention that includes more enhanced, small group counseling and skills training. Indicated prevention at the tertiary level provides individualized interventions to about 5% of students, and sometimes leads to referral for special education (Adelman & Taylor, 2010). This three-tiered model is often referred to as the Response to Intervention (RTI) model.

Due to recent federal regulations (Individuals with Disabilities Education Act [IDEA], 2004) the RTI model is becoming a popular model for schools to adopt to prevent academic, behavioral, and emotional problems (Fuchs, Mock, Morgan, & Young,

2003; Merrel, Ervin, & Gimpel-Peacock, 2010; Sulkowski, Joyce, & Storch, 2012). The RTI model includes universal screening, progress monitoring, collaborative problem solving, and evidence-based early interventions. With the use of these components, problems or disorders may be prevented or treated as soon as symptoms are presented. Recent years have seen a shift towards a preventative, problem-solving model in education with efforts to identify problems and students at-risk at the earliest onset, and to provide universal prevention programming related to both academics and social emotional learning (SEL).

Social Emotional Learning

SEL gives children the tools to understand and manage their emotions, work positively with others, and solve problems that can lead to improved learning. As a form of prevention, SEL programs often focus on alterable variables such as self-awareness or decision-making. With a focus on increasing self-regulation, students may learn skills that improve their overall well-being, which may impact their own health, happiness, and academic success.

The adoption of SEL programs has grown in the last 10 years, driven by the concern that children do not have the skills to succeed in school, as well as public attention to issues such as bullying and school violence. Research on SEL programs for students in grades K-12 has shown small to moderate effect sizes (Durlak, et al., 2011), although students at-risk may need and benefit the most from prevention programs. Durlak and colleagues (2011) also found that students in schools who incorporated SEL demonstrated increased academic success, with an 11% increase in achievement test scores. According to Greenberg and colleagues (2003), problem-prevention efforts for

young people are most beneficial when they are coordinated with positive outcomes, including attempts to enhance their competence (Greenberg et al., 2003). Mindfulness is seen as a skill that can facilitate SEL (Jennings, 2015) most specifically as a prevention tool to help with self-awareness, self-regulation, and relationship skills.

Mindfulness

Mindfulness is most simply defined as paying attention on purpose, without judgment (Kabat-Zinn, 2003). The use of mindfulness in education as both a prevention and as an intervention strategy is practical and needed because children experience increasing levels of stress in the school environment and at home (Meiklejohn et al., 2012). A growing number of studies in the last 10 years have explored the effects of school-based mindfulness programs. Research has found positive effects in samples of children and adolescents in schools, with increases in focus, attention, and self-esteem (Black, Milam, & Sussman, 2009); psychological and social functioning, as well as quality of sleep, (Biegel, Brown, Shapiro, & Schubert, 2009); executive functioning (Flook, Smalley, Kitil, Galla, Kaiser-Greenland, Locke...Kasari, 2010); optimism, affect, self concept, and classroom behavior (Schonert-Reichl, & Lawlor, 2010); calmness, relaxation, and self-acceptance (Broderick & Metz, 2009); and attention and social skills (Napoli, 2005). Research also suggests decreases in anxiety, behavioral problems, aggression, and blood pressure (Black et al., 2009); depression and somatic complaints, (Biegel et al., 2009); test anxiety (Napoli, 2005); and stress responses: rumination, intrusive thoughts, and emotional arousal (Mendelson, 2010) in children and adolescents.

Mindfulness in Early Childhood

Interestingly, few studies examine the effects of mindfulness-based programs in early childhood settings, such as preschool or kindergarten. To date, three studies have been published with preschool-aged participants (Flook et al., 2015; Razza et al., 2015; Poehlmann-Tynan et al., 2016) and one study has been published on a sample of preschool-aged and kindergarten students (Thierry et al., 2016).

Razza and colleagues (2015) explored the effects of a mindfulness-based yoga intervention with 29 preschool students. Measures included parent report on children's behavior, and self-regulation tasks with the students. Razza and colleagues (2015) did not find significant differences in parent report on behavior, but did find significant improvements in inhibitory control in the intervention group, especially for children with initially lower levels of self-regulation. Researchers recommended that future studies look at other behavioral or academic outcomes, such as social-emotional competence or achievement, and to consider using teacher report.

In the same year, but with a bigger sample size, Flook and colleagues (2015) studied the effects of a mindfulness based prosocial skills training called the Kindness Curriculum (KC; Rice, 2013), with 68 preschool students. Teachers completed rating scales on social competence, and researchers collected data on students' sharing, delay of gratification, and inhibitory control, using different tasks. They found significant differences in the intervention group on sharing and social competence. To look at academics, Flook and colleagues (2015) also collected data on student grades and found that students who received the KC had higher grades for general learning, health, and

SEL. Researchers recommend future studies use larger sample sizes and consider third party observations of classroom behavior, if possible.

Two studies have been published in the past year that use pre-school aged samples. In a pilot study, Poehlmann-Tynan and colleagues (2016) investigated the feasibility and effects of a mindfulness intervention on children's empathy and self-regulation. Although they used a small sample size of 29 participants, children in the mindfulness intervention showed significant increases in intentional focus and self-regulation compared to a control group; however there were no changes in empathy or compassion for either group (Poehlmann-Tynan et al., 2016). This study was limited by small sample size, lack of statistical conclusion validity, and confounding factors such as different instructors for each class. Poehlmann-Tynan and colleagues (2016) suggest that future studies look at whether mindfulness interventions may assist in school readiness and future academic performance for economically disadvantaged young children, and highlight the need for investigations of the potential mechanisms of change.

Thierry and colleagues (2016) investigated the relationship between mindful awareness training, executive function, and language and literacy skills by following an intervention group and control group from PreK through kindergarten. The mindfulness program, MindUp (The Hawm Foundation), was implemented throughout the school-year by the classroom teachers, who received one day of training. It is the first study to have a longitudinal design to examine the impact of a mindfulness program, and the first to highlight the kindergarten year.

Although there were no main effects based on parent reports, teacher reports indicated significant differences between the intervention group and control group in

areas of working memory, planning and organizing with improvements found for students in the intervention group (Thierry et al., 2016). Students in the intervention group also scored higher on kindergarten end-of-year assessments of vocabulary and literacy skills, suggesting long-term benefits to continued practice of mindfulness through kindergarten (Thierry et al., 2016). Although this study addresses gaps such as a lack of longitudinal and kindergarten studies in the field, the study is limited by a small sample size ($N=47$) and it also lacks data on teachers' fidelity of the program, as well as social validity. To increase validity and control for possible bias, the current study explores the effectiveness of a program in which teachers were asked to complete teacher-report of student behavior and strengths, but the teachers were not implementing the program. Rather, trained interventionists implemented the program within the classroom.

Calmer Choice

Calmer Choice is a mindfulness-based prevention program and non-profit on Cape Cod, in southeastern Massachusetts, which was founded in 2010. Calmer Choice was founded in response to recent evidence that reports that Cape Cod youth are at particular risk for behavior problems. A survey of Massachusetts's youth published by the Massachusetts Department of Elementary and Secondary Education (2010) reports the widespread prevalence of behaviors and conditions with potential to compromise the health, safety and future of our youth. When students experience feelings of stress and being overwhelmed, they are at higher risk for risky behavior, such as substance abuse.

The participants of the current study are from Massachusetts, a state that has higher percentages of substance abuse compared to national averages. For example, according to the Substance Abuse and Mental Health Services Administration's

(SAMHSA) Behavioral Health Barometer: Massachusetts (2015), about 47,000 adolescents in Massachusetts (9.7% of all adolescents) reported using illicit drugs within the month prior to being surveyed, in years 2013-2014. The national percentage was 9.1%. The statistics for binge alcohol use are even higher. In 2013-2014, 17.7% of all individuals aged 12 to 20 reported binge alcohol use within the month prior to being surveyed, while the national percentage was 14%. Of these individuals, only 7.5% received treatment for their alcohol abuse.

The target population for the present study is youth from Cape Cod, Barnstable County, Massachusetts. Students from Cape Cod face unique challenges living in a community with seasonal economy and high cost of living. In recent years, Cape Cod has been challenged by a dramatic increase of losing young people to opioid overdoses, suicides, and accidental death associated with high-risk behaviors. According to the Massachusetts Department of Public Health (2011) suicide rates for 10-24 year olds on Cape Cod are 1.4 times higher than the rest of the state. A recent *Community Health Needs Assessment* published by Cape Cod Healthcare (2014-16) shows that in 2010, addiction treatment admission rates for youth ages 15-24 were more than double that of the rest of the state. Calmer Choice, founded in response to these alarming statistics, aims to prevent destructive behavior in youth, by helping students manage stress, pay attention, and resolve conflict, through mindfulness training.

Calmer Choice trains mindfulness instructors (interventionists) to go into public school classrooms, grades PreK-12, and lead the whole class and the classroom teacher in mindful awareness activities for 20 minutes, twice a week for eight weeks. The length of lessons and visits to secondary school grades are adapted to fit the schedules of

adolescent students. As of 2017, Calmer Choice has provided programming to nearly 11,000 different students on Cape Cod, in 18 different schools, across eight separate school districts. Students learn mindful awareness, which is seen as a tool that enhances SEL and allows students to access the SEL lessons that classrooms implement. The Calmer Choice program follows the Social-Emotional Learning Guidelines developed by Massachusetts' Department of Elementary and Secondary Education (DESE).

The present study aims to contribute an important addition to the mindfulness-based research in school settings by examining potential benefits to this recent initiative. Although there is no published research on Calmer Choice at this time, there are several current research projects underway with Yale University and Tufts University. An outcome evaluation was conducted in years from 2012 to 2015 in which a total of 589 students in third through sixth grade were surveyed. Students were asked to self-identify challenges related to emotional regulation, social emotional functioning, impulse control, focus and attention, test anxiety and getting to sleep.

Of the 248 students surveyed in the school year of 2014-2015, 84% of students reported they still use the skills they learned from Calmer Choice one year after the program. Sixty-three percent of students identified using these strategies to calm down; 43% reported using it to fall asleep and 38% reported using it to help with test taking.

Additionally, current research with Yale University included 240 students in sixth through eighth grade. Compared to a control group, Crowley and colleagues (in prep) found significant statistical improvements in executive function and the ability to manage emotion and handle negative feelings, and found reductions in anxiety. Students with greater levels of mindful awareness perceived a more supportive school climate and

environment, and were overall happier. Consistent with other studies evaluating mindfulness in the schools (Simon, Harnett, Nagler, & Thomas, 2009; Semple, Lee, Rosa, & Miller, 2010; Razza et al., 2015), Crowley and colleagues (in prep) found that students with the greatest challenges (self-reported before the Calmer Choice program began) made the most significant improvements after the program, and made significant improvements in emotional regulation, empathy and kindness, attention and focus, and anxiety (Crowley et al., in prep).

Finally, both teachers and parents were surveyed in the Yale study, and teachers reported improvements in classroom climate, student behavior, and academic performance, as well as personal teacher benefit. Teachers had very high satisfaction of the program, with 95% wishing the program would continue in their classrooms, and 95% reporting they would continue teaching the skills after the program ended. Parents and guardians reported noticing their children were less anxious after Calmer Choice (76%), and their children were calmer (80%) (Crowley et al., in prep). Parents also noted improvements in their children's concentration, kindness, happiness, coping skills, sleep, and patience (Crowley et al., in prep).

Present Study

For this quasi-experimental, mixed group design, the effects of the Calmer Choice program as a mindfulness-based intervention were explored. Schools are ideal locations to provide evidence-based mental health services, since the interventions can reach a large number of children (Miller et al., 2011). This study, therefore, adds to the research base on Calmer Choice implementation, a popular program with a developing evidence-base. The current study aimed to examine behavioral risks and strengths in kindergarten

students exposed to the Calmer Choice curriculum. Research questions included: Does implementation of Calmer Choice result in decreased risk scores for kindergarten students in the intervention group compared to those in the control group? Does the program result in increases in student strengths? Is it feasible to teach kindergarten students mindful awareness? Is the intervention implemented with integrity? Do kindergarten teachers find Calmer Choice to be helpful or beneficial in any way? Do teachers perceive any adverse affects? What are the challenges of teaching mindfulness to kindergarteners, and how can the program improve?

As schools are increasingly concerned with students' academic, social, and emotional behaviors, it was hypothesized that an eight-week mindfulness-based prevention program, Calmer Choice, would help reduce students' risks for problem behavior, and increase student strengths. In this study, the term "problem behavior" includes the domains of academic behavior, social behavior, and emotional behavior, through the use of the Social Academic Emotional Behavior Rating Scale (SAEBRS; Kilgus & von der Embse, 2014). Example behaviors in these domains include lack of engagement, distractedness, outbursts, arguing, sadness, or worry. While some studies evaluating SEL programs observe such variables, the field of mindfulness in schools lacks feasible measurement of variables directly related to these three domains. This study considers both the domains of maladaptive and adaptive behaviors in school. To further assess adaptive behaviors, the Devereux Student Strengths Assessment-mini (DESSA-mini; Naglieri, LeBuffe & Shapiro, 2014) examined whether student strengths, such as being nice, paying attention, or accepting responsibility, increased after students participated in the mindfulness-based SEL program.

The present study also adds to the literature by including data and description of program implementation, a critical component in research that is not often measured (Durlak et al., 2011). Very few studies in the mindfulness literature report data on implementation integrity, and some have recommended to researchers that these data be included in future studies (Thierry et al., 2016). Therefore, Calmer Choice instructors were asked to complete an implementation integrity checklist after teaching each lesson to kindergarten, which is one example of how fidelity was examined in this study. To address another limitation common in the field, the current study collected qualitative data on social validity to provide further understanding of potential benefits or adverse effects of the Calmer Choice program.

CHAPTER II
LITERATURE REVIEW

Prevention

School professionals are required to balance multiple facets of education. Schools have increasing responsibilities to support students, families, and staff with diverse and challenging needs (Merrell, Ervin, & Gimpel-Peacock, 2010). The primary goal of education has long been teaching academics and cognitive skills. For decades educators have also been required to discipline students and find effective ways to manage problem behaviors (Jacob, Decker, & Hartshorne, 2011). More recently, educators have been asked to teach social and emotional skills to students to reduce problem behaviors and to support students' overall wellbeing (CASEL, 2006). Unfortunately, educators face difficulties in all three of these different areas. For example, many students do not make progress and are referred to special education (Fuchs, Mock, Morgan, & Young, 2003). Approximately one in five children have or have had a seriously debilitating mental disorder (Merikangas et al., 2010). Traditionally, schools have taken reactive approaches to academic, behavior, and emotional problems. These include placing students in special education after they have failed (Fuchs et al., 2003), suspending or expelling students who misbehave (Merrell et al., 2010), and trying to help students with emotional difficulties when it is often too late (Doll & Yoon, 2010). At worst, students are at risk for delinquent behavior or suicide.

To make appropriate school change, schools are encouraged to develop effective prevention efforts. In medicine, there is a saying that "an ounce of prevention is worth a pound of cure." According to the National Association of School Psychologists (NASP,

2014) prevention is defined as interventions that decrease the incidence or prevalence of a clearly defined, undesirable outcome, or that strengthen resiliency. Best practices assume that with universal prevention efforts, such as teaching all students a social emotional learning curriculum, we can reduce the number of students needing intensive individualized interventions at Tier 3 (Strein, Kuhn-McKearin & Finney, 2014). Research suggests that when we make the effort to prevent problems, problems are solved on smaller scales, before they become too big for school professionals to solve (Doll & Cummings, 2009).

To enhance the development of wellness and resiliency, and therefore reduce risk for problem behavior, school professionals can design and implement prevention programs. For example, challenging behaviors are often precursors to development of internalizing disorders, conduct disorders, or school dropout, which can be prevented when recognized early (Yesseldyke et al., 2008). Doll and Yoon (2010) report that early preventive interventions can be more effective and less costly than therapeutic interventions, making prevention more cost effective. Prevention science “is the empirically rigorous examination of practices that prevent psychosocial disturbances or promote psychological wellness in children and adolescents” (Doll & Yoon, 2010). This promotion of wellness not only helps students do better in school, but it also has the potential to support the mental health and well-being of teachers and other school staff, helping them to become more effective at teaching and managing behavior (Reinke, Herman & Sprick, 2011).

Rather than focusing on disorders, problems, and pathology, as schools have in the past, best practices today encourage the development of psychological wellness

(NASP, 2014). “Schools increasingly are employing preventive methods and programs to address risk factors before problems escalate. This shift to a population perspective allows schools to implement widespread preventive programs for academic and social-behavior concerns” (Ysseldyke et al., 2008, p.39). To help schools become organized to be prevention focused, there has been a shift to change towards a population-based model of prevention using a three-tier approach (Doll & Yoon, 2010) which includes universal services at Tier 1, selective services to students who show early at-risk symptoms at Tier 2, and targeted services for students with significant social or emotional problems at Tier 3. This approach, also referred to as Response to Intervention (RTI; Tilly, 2008), is included in the Individuals with Disabilities Education Act (IDEA) as a strategy to prevent higher numbers of students placed in special education (IDEA, 2004).

To insure effective change towards prevention efforts, schools are required to make school improvement comprehensive. To help prevent and improve academic, behavior, and emotional problems, schools need specific prevention programs, but also coordination with community services, creation of family resources, and an overall approach that is multi-faceted and cohesive (Adelman & Taylor, 2010). Research suggests that schools can promote students’ academic success with ecological mental health services that emphasize “early interventions to strengthen students’ psychological wellness; minimize school, community, and family adversity and maximize protective factors; and attend to school and classroom ecologies that maximize students’ engagement in classroom learning” (Doll et al., 2012, p.50).

One of the most important ways schools can promote success and prevent problem behaviors, is by creating evidence-based social and mental health services that

are grounded in strong theoretical frameworks, are comprehensive, developmentally appropriate, are compatible with community norms and culture, and delivered by trained practitioners (Doll & Yoon, 2010). There are many types of prevention programs that schools can implement, such as programs for bullying prevention, or suicide prevention, or programs that focus on the development of positive social skills. Examples of some evidence-based curricula include Promoting Alternative Thinking Strategies (PATHS; Kusche & Greenberg, 1994), and Second Step (Frey, Nolen, Edstrom, & Hirschstein, 2005). These curricula often include lessons that focus on assets-building (such as to develop protective factors, social skills, emotional intelligence), socio-emotional development (such as awareness of self and others), and stress reduction (Adelman & Taylor, 2010).

Social-Emotional Learning

As mentioned in Chapter 1, schools in the United States today are asked to develop and strengthen social-emotional learning (SEL) skills in students in an effort to prevent and reduce risk for social and emotional problems. These skills are embedded within five competencies defined by CASEL (2006): self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. SEL is seen as a process of developing competencies to recognize and manage emotions, make responsible decisions, and handle challenging situations effectively (Schonert-Reichl, Kitil, & Hanson-Peterson, 2017) and be aware of one's self and surroundings. SEL includes both the personal and interpersonal skills we use to have meaningful, positive relationships, which is a critical component of school and life success. Some of the lessons used in SEL curricula include how to calm down when angry, how to make a new

friend, how to take another perspective, how to resolve conflicts, and how to make good, safe choices.

SEL approaches are grounded in various theories, including systems theories, learning theories, child development theories, information-processing theories, and behavior change theories (Durlak, Domitrovich, Weissberg, & Gullotta, 2015). There is growing evidence that SEL programs benefit school children. A meta-analysis of 213 universal Tier 1 SEL programs found moderate positive effects on social and emotional learning skills, and small positive effects on positive social behavior (Durlak et al., 2011). This major study also found decreases in emotional distress and problem behaviors. Additionally, Durlak and colleagues (2011) found small positive effect sizes for academic outcomes, and programs that were delivered by classroom teachers were on average at least as effective as those led by interventionists who were not classroom teachers.

In an effort to reduce risk for academic, social, and emotional problems, and to develop fundamental skills for wellness in life, a variety of programs have been developed that demonstrate intervention efficacy. For example, the Responsive Classroom (RC; Northeast Foundation for Children, Inc., 1981) approach focuses on creating a caring community and using proactive approaches to classroom management, and helping students improve self and interpersonal skills. Example activities and components include Morning Meetings, Interactive Modeling, and use of reinforcing teacher language. Research on RC has found positive changes, including increases in students' assertiveness and prosocial skills (Elliot, 1999).

Some SEL programs include specific lessons in a set curriculum. One example is Promoting Alternative Thinking Strategies (PATHS; Kusche & Greenberg, 1994), which

is an intervention with targeted outcomes in emotional, interpersonal, and cognitive domains. One randomized controlled trial showed that after three years of participating in PATHS, intervention participants exhibited less disruptive behavior and aggression (Conduct Problems Prevention Research Group [CPPRG], 2010). Second Step (Frey et al., 2005) is another SEL intervention that has become common in schools. Lessons involve stories and videos with discussion and activities to practice skills such as staying calm, problem solving, and listening. Rigorous research has found improved social behavior and cooperation, and decreased aggression (Frey et al., 2005) as well as less anxiety and less internalizing behavior compared to students in a control group (Schick & Cierpka, 2005).

There are other less researched SEL interventions that look promising (Durlak et al., 2015). The MindUP Curriculum (The Hawn Foundation, 2011) is unique in that it integrates mindfulness and neuroscience into SEL focused lessons. Teacher ratings of elementary and middle school students showed increased attentiveness, concentration, emotional regulation, and social competence following the intervention, compared to students in a control group (Schonert-Reichl & Lawlor, 2010). According to the researchers, exercises to help students focus and pay attention to the present moment enhance management of emotions, awareness of self and others, and strengthen executive function skills, such as paying attention. This program theory suggests that development of such skills leads to improved social and academic skills, and it is this theoretical framework that guides the Calmer Choice program of the current study.

Mindfulness

The term “mindfulness” has become a buzzword in our current Western society and is increasingly common in schools, such as in the MindUP Curriculum. While mindfulness refers to a technique that has been practiced for thousands of years, it was not until the last 40 years that researchers began to scientifically understand what mindfulness is, and the different ways to define this very complex practice. There has been a dramatic increase in the number of articles published in the last 10 years especially that involve the benefits gained through mindfulness in healthcare, medicine, neuroscience, psychology, business leadership, sports, and education research (Brown, Creswell, & Ryan, 2015). The interest in mindfulness has continued to increase, and now the term and practice is popular outside of academic research.

The complexity of mindfulness is that it is simultaneously considered a technique, a method, a process, and as an outcome (Brown et al., 2015). Mindfulness can be used as a method of relaxation to reduce stress, as a way to recognize certain states of mind in therapy, and can also be described as a disposition towards life (Bishop et al., 2004). Mindfulness is also closely related to terms like “attention,” “concentration,” “insight,” “acceptance,” and “compassion,” presenting varying definitions of mindfulness depending on the researcher, clinician, or person. Bishop and colleagues (2004) describe mindfulness as the orientation to experience, which involves curiosity, nonstriving, openness and acceptance. As a mode of awareness, this definition of mindfulness is very similar to John Kabat-Zinn’s understanding that mindfulness is a process.

John Kabat-Zinn (2003) defines mindfulness as paying attention in a particular way: on purpose, in the present moment, non-judgmentally. He elaborates his definition

by including that mindfulness is not about getting anywhere else or fixing anything, but is “an invitation to allow oneself to be where one already is and to know the inner and outer landscape of the direct experience in each moment...to wake up to the full spectrum of our experience in the present moment” (Kabat-Zinn, 2003, p. 148). Because Kabat-Zinn considers mindfulness as a way of being, the process of being mindful is essential, and perhaps more important than the outcome. In fact, it is the letting go of the outcome that reflects the true nature of being present in the moment. When describing mindfulness practice as part of a Mindfulness-Based Stress Reduction (MBSR) course, Kabat-Zinn (2003) describes how participants are encouraged to let go of their expectations, goals and aspirations. With an emphasis on non-attachment to outcomes, mindfulness is quite different from other clinical interventions.

Mindfulness vs. Meditation

There is a discrepancy in mindfulness research as to the relationship between mindfulness and meditation, with a lack of agreement on best terminology and usage. Meditation most commonly refers to a process of sitting still and quiet, focusing on one thing, such as the breath (Brown et al., 2015). The term “meditation” can have religious connotations for some people, and is therefore avoided by some researchers and mindfulness instructors, in an effort to ensure the practices are secular. Susan Kaiser Greenland, founder of the program InnerKids (Greenland, 2001), replaces the term “meditation” with “mindful awareness.” Still, other researchers use mindfulness and meditation interchangeably, or combine the two, and use the phrase “mindful meditation,” to refer to a practice of sitting still to pay attention to one’s experience (Brown et al., 2015). Others describe meditation in similar ways, such as, “a state of

consciousness which involves consciously attending to one's moment-to-moment experience" (Shapiro, Oman, Thoresen, Plante, & Flinders, 2008, p. 374). Shapiro and colleagues (2008) also describe cognitive, emotional and behavioral flexibility as additional mechanisms of meditation. For example, although they use the terms meditation and mindfulness within their research, they suggest that "if we are able to see a situation and our own internal reactions to it with greater clarity, we will be able to respond with greater freedom of choice (ie., in less conditioned, automatic ways)" (Shapiro et al., 2008, p. 381). As discussed later, this "clarity" is further explored with reviews of neuroscience research.

Brown & Ryan (2004) suggest that meditative practices can be an effective way to practice and enhance mindfulness, but that mindfulness is not the same thing as meditation. They argue that mindfulness can certainly be cultivated through practices other than meditation (Brown & Ryan, 2004), such as walking or eating. The beauty of mindfulness is that as a process of paying attention on purpose, it can be practiced anywhere, anytime, making it a universal tool.

Mindfulness and Therapy

Mindfulness has been integrated in different therapies by clinicians who are interested in helping their clients become more aware of their thoughts and present experience. The most common clinical approach to using mindfulness is Mindfulness-Based Cognitive Therapy (MBCT; Teasdale, Segal & Williams, 1995), which was developed to extend cognitive therapy. MBCT emphasizes the development of a decentered perspective, referring to a shift in one's relationship to thoughts (Brown et al., 2015). With this perspective, thoughts and feelings "are experienced merely as passing

events rather than as reflections of reality, and do not need to be evaluated as true or false” (Brown et al., 2015, p. 133). Mindfulness techniques are commonly used in MBCT to help develop this awareness of thoughts. Acceptance and Commitment Therapy (ACT; Zettle & Hayes, 1986) takes a similar approach using acceptance, attention and cognition to promote contact with the present moment. ACT is used to promote psychological flexibility, and while it does not rely on mindfulness meditation, it uses acceptance similarly to the non-judgment aspect of mindfulness. Dialectical Behavior Therapy (DBT; Linehan, 1993) is another therapy that uses mindfulness practices among other techniques. DBT teaches psychological and behavioral versions of mindfulness meditation by observing, describing, participating, taking a nonjudgmental stance, and focusing on one thing in the moment (Swenson, 2016) so that clients develop effective coping with and enjoyment of life.

Mindfulness-Based Stress Reduction (MBSR)

The majority of scientific research has historically focused on using mindfulness as a clinical intervention as stress reduction for adults. Most of the research began with Kabat-Zinn in the 1980’s with his development of the Mindfulness-Based Stress Reduction (MBSR) clinic at the University of Massachusetts Medical School, in Worcester, Massachusetts. Kabat-Zinn initially created the outpatient stress reduction clinic and use of MBSR as a way to relieve suffering and help patients manage pain (Kabat-Zinn, 2003).

The results of MBSR studies show us that mindfulness is an effective treatment for physical and psychological illnesses (Kabat-Zinn, 2003; Kabat-Zinn, Massion, Kristeller, & Peterson, 1992). The secular mindfulness-based techniques aim to increase

and clarify awareness of experience. As an intervention, MBSR has a participatory engagement focus, meaning that participants are invited to actively participate in their own journey of reducing stress and increasing well-being, and are expected to practice mindfulness at home in-between sessions of the eight week program.

Although randomized control trials (RCTs) of mindfulness interventions are limited by small samples and few follow-up measures, the number of research studies involving these interventions continues to increase and improve. According to a review by Creswell (2017), well-controlled studies have suggested a stress-buffering effect of mindfulness practice. For example, participants in MBSR have demonstrated decreased pain, stress, and risk for depression, and increased immunity, sustained attention, working memory, and affective outcomes such as reducing rumination, compared to control participants (Creswell, 2017). Mindfulness involves noticing when the mind wanders, bringing attention back to a focus area (such as the breath) and developing an awareness and acceptance of thoughts and emotions. As a result, several RCT studies demonstrate how MBSR participants also benefit in attention-related outcomes (Creswell, 2017).

Neuroscience of Mindfulness

Some researchers have used neuroimaging to show the effects of MBSR on participants' brain gray matter density. Holzel and colleagues (2010), found that participants in a MBSR course showed changes in gray matter concentration in brain regions involved in learning, memory processes, emotion regulation, self-referential processing, and perspective taking, compared to participants in a wait-list control group. Froeliger, Gardner, and McClernon (2012) researched adult participants who practiced meditation and hatha yoga in a matched control group study. They found that participants

who practiced yoga meditation had increased gray matter volume in frontal, limbic, temporal, occipital, and cerebellar regions, compared to the control group, which had no changes in gray matter (Froeliger et al., 2012). Additionally, the intervention group reported fewer cognitive failures. The results suggest that meditation, or mindfulness, may be associated with neuroplastic changes in executive brain systems. Changes in the brain were positively correlated with the duration of practice, suggesting the benefits of repeated practice. However this study was limited by small sample size.

A more recent study by Singleton, Holzel, Vangel, Brach, Carmody, and Lazar (2014) investigated the relationship between brainstem gray matter, psychological well-being, and mindfulness. Fourteen participants of an eight-week MBSR course had increased gray matter concentration in brain regions (including pons and raphe) associated with well-being (Singleton et al., 2014). Additionally, participants' psychological well-being scores (self-assessed) increased after the course, and were positively correlated with gray matter density. Areas of the brain that showed increased matter or connectivity included regions associated with serotonin, which relates to mood and conditioned fear, which relates to stress. Another neural area studied by Singleton and colleagues (2014) was the locus coeruleus, which controls the neurotransmitter norepinephrine, which relates to cognitive, affective, and behavioral functions including attention, focus, and positive emotions.

A recent review of the neuroscience of mindfulness by Tang, Holzel, & Posner (2015) suggests that the underlying neural mechanisms remain unclear and require more rigorous studies. Still, a number of strong studies suggest benefits related to overall stress reduction and health prevention. Tang and colleagues (2015) suggest a framework of

mindfulness meditation that includes three core components: attention control, emotion regulation, and self-awareness. Studies investigating the relationship between mindfulness practice and brain structure have shown effects in multiple regions that include the cerebral cortex, subcortical gray and white matter, brain stem and cerebellum (Tang et al., 2015). To further understand how structural changes are related to improved functioning, research provides evidence that attention, emotion regulation, and self-awareness are improved following participation in mindfulness interventions. In assessing attention, some researchers have found enhanced attention in mindfulness practitioners, and activation of attention-related brain regions such as the prefrontal cortex (Tang et al., 2015). Research has also reported positive effects of mindfulness on reduced emotional interference, reactivity and difficulties in emotion regulation, and improved positive moods (Tang et al., 2015; Cresswell, 2017).

Mechanisms of Mindfulness

In addition to neurobiological mechanisms that include structural alterations of the brain, an additional theory of the underlying mechanisms of mindfulness is mindfulness as a buffer against stress. According to Creswell and Lindsay (2014) mindfulness training increases the activity and functional connectivity of prefrontal cortical regions. These regions are important in top-down stress regulation. Creswell and Lindsay (2014) also found decreasing activity and connectivity in brain regions associated with the fight-or-flight response, such as the amygdala.

According to Tang and colleagues (2015), the hypothesis that drives many neurobiological studies is “that mindful emotion regulation works by strengthening prefrontal cognitive control mechanisms and thus down regulates activity in regions

relevant to affect processing, such as the amygdala” (p.6). Several researchers have investigated the effects of mindfulness on the amygdala, which is associated with the “fight, flight or freeze” fear response, and have found decreased activation in participants following mindfulness practice (Cresswell & Lindsay, 2014; Holzel, 2014; Singleton et al., 2004; Tang et al., 2015). It is these results from scientific research that inform some curricula to teach mindfulness skills to children and adolescents – see descriptions and research on the MindUP curriculum (The Hawn Foundation, 2011) and Calmer Choice in the mindfulness in schools section.

Social and Emotional Outcomes with Adults

Because healthy and appropriate emotion regulation affects our behaviors, it is seen as necessary for success and survival. Many research studies exploring mindfulness with adults have found emotional benefits. Medium effect sizes related to decreases in negative symptoms, such as those pertaining to depression and anxiety, were found in a meta-analysis of studies involving otherwise healthy adults (Brown et al., 2015). Brown and colleagues (2015) found that adults experience social and emotional benefits of mindfulness, including greater attentiveness to and reduced appraisal of emotional stimuli, greater clarity and acceptance of emotions, less intense emotional responses, increased emotional well-being, and faster recovery from negative emotions. Some researchers have also investigated the relationship between mindfulness and interpersonal outcomes (Karremans, Schellekens, & Kappen, 2016) suggesting improved relationship satisfaction and prosocial behaviors in participants who practice mindfulness. Overall, it is theorized that mindfulness, through enhanced attention, impacts cognitive appraisals

and emotional responses, and is seen as an antecedent-focused strategy to enhance emotion regulation (Brown et al., 2015).

Dosage

People often wonder how often or how much time is needed to practice mindfulness and receive benefits. Results vary according to “ideal” dosage, and include small effects for brief interventions (5-10 minutes), and moderate to large effects for longer interventions such as the eight-week MBSR program (Creswell, 2017). It is suggested that larger doses may lead to larger effects, and that regular home practice helps skills to generalize (Cresswell, 2017). Studies with youth also suggest greater benefits with longer programs (Zenner, Hernleben-Kurz, & Walach, 2014).

Mindfulness for Children and Adolescents

While mindfulness has been researched with adults for decades, it has only been in the past 15 years that researchers have explored potential benefits with children and adolescents. The field is nascent and requires ongoing rigorous research. Despite limited evidence, programs teaching mindfulness to youth are becoming increasingly popular. Initial results are encouraging, and research has focused on youth from preschool to college, in both school and clinical settings. Most mindfulness training programs are adapted from MBSR or MBCT, including Mindfulness-Based Cognitive Therapy for Children (MBCT-c; Semple & Lee, 2011), Mindful Awareness Practices (MAPs; UCLA Mindful Awareness Research Center), the Attention Academy Program (AAP; Napoli, 2005), MindUP (The Hawn Foundation, 2011), and the Kindness Curriculum (Rice, 2013).

Some researchers attempt to articulate mechanisms involved in teaching mindfulness effectively to children. Zelazo and Lyons (2012) discuss the relationship between mindfulness and children's bottom-up (automatic) and top-down (controlled) influences on behavior. In schools, educators try to increase top-down influences such as reflection, cognitive flexibility, and sustained attention, and to decrease bottom-up influences such as anxiety and stress. Zelazo and Lyons (2012) suggest that an effective mindfulness program for children would need to be shorter, simplified, and more movement-based, and use more props or concrete metaphors compared to adult trainings. Drawing from current, evidence-based research and analyses of different models related to self-regulation, they argue that mindfulness is a unique intervention and superior to relaxation training or cognitive training because it targets both top-down and bottom-up influences on self-regulation (Zelazo & Lyons, 2012).

Meta-Analyses

There have been five meta-analyses published in the past three years that focus on mindfulness interventions with youth. The first meta-analysis for mindfulness-based interventions specifically in schools found small-to-medium effects, with larger effects on measures of cognitive performance than on measures of emotional problems (Zenner et al., 2014). For example, they found that overall effect sizes were Hedges's $g=0.40$; however many studies in the meta-analysis were underpowered. Dosage was also important, with higher dosage associated with greater effectiveness (Zenner et al., 2014).

A recent meta-analysis of mindfulness interventions with youth in both school and clinical settings through the year 2011 found an effect size in the small to moderate range, $d=0.23$ (Zoogman, Goldberg, Hoyt, & Miller, 2015). Interestingly, Zoogman and

colleagues (2015) found that the effect size for clinical samples were in the moderate range ($d=0.5$) which was more than twice the magnitude of non-clinical samples ($d=0.197$). However the meta-analysis was limited by examining a small number of studies (20), which varied in methodology, and came from the field of psychology only.

A meta-analysis of mindfulness-based interventions for youth with anxiety explored experimental and quasi-experimental studies from 1980 to 2015 (Borquist-Conlong, Maynard, Brendel, & Farina, 2017). The meta-analysis yielded five studies and included a total of 188 youth, and researchers found a moderate effect size of Hedge's $g=.62$ on anxiety outcomes. Although these studies were mostly conducted in clinical settings, Borquist-Conlong and colleagues (2017) suggest that mindfulness-based approaches may be effective in the treatment of anxiety disorders with youth. The most recent meta-analysis for group design research for studies that evaluated mindfulness-based interventions with youth in clinical, school, and other settings, found an effect size in the small range with $g=0.305$ (Klingbeil et al., 2017).

The above meta-analyses excluded single-case research designs. A meta-analysis of the effects of mindfulness-based interventions using single-case research examined 10 studies involving youth (Klingbeil et al., 2016). Results showed an average medium effect size for decreases in disruptive behavior during treatment ($g=1.04$). Outcomes included decreased physical aggression, and increased compliance and on-task classroom behavior, using direct observations. Klingbeil and colleagues (2016) also found improvement in studies of disruptive behavior, targeting youth with developmental disabilities.

Clinical Settings

Many studies that use a mindfulness intervention with youth include clinical samples with outcomes related to anxiety and or depression. Semple, Lee, Rosa, and Miller (2010) discuss several ways mindfulness training can be modified to be developmentally appropriate for school-aged children and used as an anxiety intervention. In this study the participants were recruited from a clinic-based remedial tutoring program for children with reading difficulties who had attention and anxiety problems. The MBCT-c program consisted of one 90-minute training session per week for 12 weeks for urban children who were ages nine to 13 years old. The mindfulness program included games, activities, and movements, which varied between focused sensory activities, short breathing exercises, mindful body scan, visualization practices, and drawing or writing. Children were randomly assigned to one of four groups based on age and timing of the treatment (winter or spring). There were several measures that were used as pre and posttests to assess anxiety and behavior. Results showed fewer attention problems than were reported at the beginning of the program, and the improvements were maintained at a three-month follow-up. Other results include significant reductions in anxiety symptoms found for children who initially reported high levels of anxiety at pretest (Semple et al., 2010). The study has several limitations, such as a small sample size ($N=25$) with restricted variability, however it does suggest a relationship between anxiety and mindfulness, with possible reduction of child anxiety symptoms following participation in a mindfulness intervention.

Using a randomized control trial (RCT), Biegel, Brow, Shapiro, & Schubert (2009) studied the effects of a MBSR program on adolescents in a psychiatric facility. Participants who received the mindfulness intervention later reported reduced symptoms

of anxiety, depression, somatic distress, and increased self-esteem and sleep quality, compared to participants in the control group. Although mental health outcomes were self-reported by participants ($N=74$), researchers suggest benefits for adolescents who participate in a modified MBSR program.

Adolescents in Schools

The majority of studies that explore the effectiveness of mindfulness interventions in schools include youth in adolescence. One of the earliest studies examined the effects of a mindfulness meditation intervention in a Vermont private high school for students with learning disabilities (Beauchemin, Hutchins, & Patterson, 2008). The intervention consisted of mindfulness practice five to ten minutes each day of the week for five weeks. Beauchemin and colleagues (2008) used a very simple design with pre and posttest data collected for all intervention participants ($N=34$). They found significant improvement in social skills, academic improvement, and lower anxiety scores. This study is limited in that there was no control group, low power, and there was no description of the intervention.

Wisner and Norton (2013) examined the effects of a mindfulness intervention that was implemented as part of counseling sessions twice a week for 30 minutes, for eight weeks. Teachers of 28 high school student participants completed behavior rating scales before and after intervention participation. Results showed significant improvement in intrapersonal strengths, school function, affective strengths, interpersonal strengths, and family involvement; however this study had a small sample size and no control group (Wisner & Norton, 2013).

Similar to Wisner & Norton (2013), another group of researchers used a mindfulness program in a counseling group, but participants were in middle school. Fung, Guo, Jin, Bear, and Lau (2015) studied the feasibility and efficacy of a 12-week mindfulness intervention with 19 minority middle school students. Researchers pre-screened students to identify participants who met diagnostic criteria for depression. Using the Learning to BREATHE (Broderick & Metz, 2009) mindfulness curriculum, participants learned mindfulness skills during twelve different 60-minute sessions. Assessments included both self-report and parent report. Results indicated significant reduction in parent-reported externalizing behavior problems, and self-reported internalizing behavior problems (Fung et al., 2015). Again, this study is limited by low power and very small sample size.

The Learning to BREATHE curriculum was originally studied by Broderick and Metz (2009). Broderick and Metz (2009) discuss the effects of a pilot mindfulness curriculum, Learning to BREATHE, to support the development of emotion regulation skills and to enhance the well-being of 120 adolescent girls. The mindfulness training was integrated into the health curriculum, and lessons were delivered twice a week for 32 - 43 minutes, for five weeks. The program offered the adolescents' tools to manage negative emotions, develop body awareness, understand and work with thoughts and feelings, reduce harmful self-judgments and cultivate emotional balance. Compared to the control group (30 adolescent girls), participants in the mindfulness class reported decreased negative affect and increased feelings of calmness, relaxation, and self-acceptance. Data was also collected on student participation and satisfaction, and level of

homework practice. A small, homogeneous sample and non-equivalent control group limit this study.

While the adolescent studies mentioned thus far have been limited by weak research designs, Sibinga, Perry-Parrish, Chung, Johnson, Smith, and Ellen (2013) investigated the effects of a MBSR program on urban youth using a randomized control trial. Forty-one males in seventh and eighth grade were randomly assigned to the MBSR program or health education. The program consisted of 12 weekly 50-minute sessions. Measures were collected at baseline, post-program, and follow up, and included data on psychological functioning, sleep, and salivary cortisol. Results showed that boys in the MBSR program reported less anxiety, less negative coping, and less rumination (Sibinga et al., 2013). Cortisol levels remained constant for these participants, while the control-group participants receiving health education showed increases in cortisol levels (Sibinga et al., 2013).

Using a similar design, Bergen-Cico, Razza, and Timmins (2015) explored the effectiveness of a mindful yoga program on the self-regulation of sixth grade students ($N=72$). Students were randomly assigned to a control group or intervention, which was delivered within an English Language Arts class. Researchers found higher self-report of self-regulation from pre to post and pre to follow-up in the intervention group compared to control group. This study also collected feedback from students in which 60% of intervention participants reported the intervention was helpful. Teachers who implemented the intervention also kept a journal of feasibility. This study is again limited by the small sample size and use of self-report only (Bergen-Cico et al., 2015) but it provides an example of integrating mindfulness in academic classrooms.

Schonert-Reichl and Lawlor (2010) made an important contribution to the field by having an adequately powered study with appropriate sample size. Schonert-Reichl and Lawlor (2010) discuss the results of a Mindfulness Education (ME) program that is teacher-taught, daily. The study included 246 students in grades four through seven. Students were randomly assigned to a treatment or to a control group, and completed pre and posttests (self-report on optimism, resiliency, and negative affect). Teachers also completed measures of students' social competence. The ME program included 10 lessons over 10 weeks and focused on quieting the mind, mindful attention, managing negative emotions and negative thinking, and acknowledgment of self and others. The program also incorporated breathing exercises for just a few minutes, three times per day. The program used "the breath as a focal point for being mindful in the present moment ...seen as central to the program with the intention of enhancing children's self-awareness, focused attention, self-regulation, and stress reduction" (Schonert-Reichl & Lawlor, 2010, p. 7). The lessons used a variety of activities that lasted 40 - 50 minutes.

Results supported the hypothesis that teachers in the intervention classrooms described their students as significantly more attentive, emotionally regulated, and socially and emotionally competent than did teachers in the control classrooms (Schonert-Reichl & Lawlor, 2010). There was also significant evidence of improvements in children's positive emotions, particularly optimism. Interestingly, they found evidence of benefits in self-concept for pre-adolescence (grades 4-5) but not for early adolescents (grades 6-7). Authors suggest early adolescence is an age with increased self-consciousness due to increased competence in cognitive and social cognitive abilities and information processing, which can perhaps lead to increased attention and more critical

reflection of the self (Schonert-Reichl & Lawlor, 2010). This study also measured program implementation by asking teachers to complete a log to record completion of program components, and researchers found high levels of fidelity (Schonert-Reichl & Lawlor, 2010).

More recently, Sibinga, Webb, Ghazarian, and Ellen (2016) explored the effectiveness of an adapted 12-week MBSR program on the negative effects of stress and trauma among low-income, minority middle school students. Three-hundred students in grades five through eight were randomly assigned by grade level to receive either the mindfulness intervention (MBSR) or a health education program, Healthy Topics. Self-report data was collected to assess mindfulness and symptoms of stress, depression, and anxiety. Students in the mindfulness intervention reported significantly lower levels of somatization, depression, negative affect, negative coping, rumination, self-hostility, and posttraumatic symptom severity. One of the strengths of this study is its ample power and sample size, as well as the rigor of its research design.

Elementary School Children

Studies that involve children in elementary school grades are less common, perhaps due to the challenges in collecting self-report data from young children. One study did not explore the effectiveness of an intervention, but collected data to conduct analyses to understand the relationship between stress, mindfulness, and executive functioning in elementary school children. Oberle, Schonert-Reichl, Lawlor, and Thomson (2011) examined cortisol levels and self-reported mindfulness scores with 99 fourth and fifth grade students. They found that higher scores on the mindfulness attention awareness measure significantly predicted improved performance on inhibitory

control tasks, and that cortisol was a significant negative predictor of inhibitory control (Oberle et al., 2011). This supports research on adults and previous findings that mindfulness relates to attentional control (Brown et al., 2015; Tang et al., 2015).

One pilot study by Liehr and Diaz (2010) used participants recruited from a summer education camp to explore the effectiveness of a mindfulness-based intervention. The study was conducted to test the effect of mindfulness on depression and anxiety for minority children in elementary school experiencing attention problems related to reading difficulties. The program used the Mindful Schools (2011) curriculum and although there was a very small sample size of only 18 children, participants were randomly assigned to an intervention group or control group. Results showed that children receiving the mindfulness intervention reported lower levels of depression over time and a greater decrease in anxiety symptoms (Liehr & Diaz, 2010).

In a study evaluating the effectiveness of a mindfulness program called Master Mind, researchers Parker, Kupersmidt, Mathis, Scull & Sims (2014) trained teachers to teach 15-minute lessons once a day for one month. Parker and colleagues (2014) randomly assigned schools to either the Master Mind mindfulness intervention or to a control group. One hundred and eleven students in grades four and five participated. Children participated in tasks to assess executive functioning, and completed a self-report form to assess children's intentions to use substances. Teachers completed a behavior checklist to assess children's behavior and emotion regulation (scales included aggression problems, attention problems, social problems, and anxiety/depression problems).

Additionally, Parker and colleagues (2014) assessed implementation fidelity by conducting observations of 75% of the lessons and rating the completion of lesson

sections taught by the classroom teacher. Teachers were also asked to complete a daily fidelity checklist for teaching lessons, and were asked questions about their experience teaching the program at the conclusion of the study. Children participants completed a satisfaction survey at the end of the study. Results indicated that students in the intervention group had higher executive functioning skills, and lower teacher-rated social problems and aggressive behaviors following the intervention compared to the control group. There was no significant difference in students' intentions to use alcohol or tobacco. Interestingly, girls in the intervention group had lower teacher-rated anxiety at posttest compared to girls in the control group (Parker et al., 2014). Both teachers and students reported enjoying the mindfulness program. Although the program was implemented with high fidelity and satisfaction, it is limited by potential teacher bias, since teachers completed assessments and taught the mindfulness lessons. Future studies could also use a longer follow-up interval, as the data collection in this pilot study was only five weeks apart.

Instead of training teachers, such as in the Parker and colleagues (2014) study, Mendelson and colleagues (2010) used an experimental design to assess preliminary outcomes for a different mindfulness intervention taught by outside instructors. Two urban public schools were randomized to receive the 12-week mindfulness intervention provided through the non-profit the Holistic Life Foundation. The other two schools were wait-list controls. The total sample size was 97 students (fourth and fifth graders) with 95.9% of students with a non-White ethnicity. Mendelson and colleagues (2010) used assessments that attempted to measure children's self-report outcomes related to affect, relationship, stress, and engagement, through pre and posttests. The intervention lasted 45

minutes, four days a week for 12 weeks. The program involved yoga-based physical activity, breathing techniques, and guided mindfulness practice, led by instructors of the program (Mendelson et al., 2010).

To assess acceptability, three focus groups were conducted with student participants, and students reported learning skills that helped them daily, such as how to “deal” with stress and calm down, instead of fighting (Mendelson et al., 2010). A teacher focus group also revealed that all teachers supported the mindfulness program and teaching youth the techniques. Several teachers commented on the advantages of teaching mindfulness to youth who struggle with behavior and attentional problems. Teachers reported that they noted changes in some students, but other students did not show change. Teachers (who did not attend the intervention class with students) also reported wanting to know more about the mindfulness curriculum so they could reinforce the skills students learned. The intervention group reported significant improvement in involuntary engagement compared to the control group. There were no significant differences related to mood or relationships. This study is limited by its small sample size and lack of Type I error rate. Authors recommend future studies include teacher report of student behavior, student grades, and physiological measures.

Following the recommendations of Mendelson and colleagues (2010), Schonert-Reichl and colleagues (2015) used a variety of outcomes to assess the relationship between mindfulness practice, stress, executive functions, well-being, peer acceptance, and math grades. Researchers randomly assigned four classrooms to either an intervention or control group. A total of 99 students in fourth and fifth grade participated. Students in the intervention group received the MindUP intervention once a week for 40-

50 minutes, plus three minutes of mindfulness practice three times each day, for twelve weeks.

One of the strengths of this study was the use of multi-informants and multi-methods. In addition to collecting cortisol levels, child self-report, peer nominations, end of year math grades, and executive functions tasks, Schonert-Reichl and colleagues (2015) also assessed implementation dosage and quality. They asked teachers to report how many lessons they taught, and to record daily mindfulness (“core practices”) with students in a lesson diary. Although there was no difference in cortisol levels between groups, children who participated in the MindUP program had shorter response times and outperformed children in the control group on tasks that measured the ability to selectively attend and inhibit distraction. Using a MANCOVA and ANCOVA analysis, researchers found that children in the MindUP program, compared to children in the control group, also showed significant improvement in empathy, emotional control, school self-concept, and mindfulness, and significantly decreased depressive symptoms (Schonert-Reichl et al., 2015). There was also a trend of higher end of year math grades in the intervention group compared to control group, but the difference was not significant. Authors suggest that future studies include appropriate statistical analysis, be grounded in strong developmental theory, and be conducted from teams from multiple disciplines, to shed light on effects of mindfulness interventions across biological, cognitive, and contextual functioning (Schonert-Reichl et al., 2015).

Most of the studies discussed so far focus on late childhood and the last couple of years of elementary school. One school-based mindfulness study that used participants in the primary grades also had sufficient power and a larger sample size. Napoli, Krech, and

Holley (2005) evaluated the mindfulness-based Attention Academy Program (AAP) with 194 students in first through third grades (nine classrooms across two schools).

Mindfulness sessions were for 45 minutes, bimonthly (12 sessions total), and involved breathwork, movement, bodyscan, and sensorimotor awareness activities, taught by an AAP instructor. Teachers and students completed pre and posttests measures and activities. Napoli and colleagues (2005) reported significant improvement for children in the intervention group with decreased test anxiety and increased attention. Although the study has ample sample size, it is limited by a weak analysis that used the difference in scores between pre and post and paired t-tests, which is not a very reliable statistic (Kline, 2009). Nevertheless, this study offers promise that mindfulness may benefit young children's ability to pay attention.

Some studies in the primary grades involve training teachers to implement a mindfulness curriculum. For example, a recent study trained classroom teachers to implement a mindfulness program and explored differences in children's academic grades (Bakosh, Snow, Tobias, Houlihan, & Barbosa-Leiker, 2016). Bakosh et al. (2016) used a quasi-experimental design and the intervention involved using a pre-recorded mindfulness-based audio program for 10-minutes each day of eight weeks. Participants included 93 third-graders. Results suggested that students in the intervention group had higher grades in reading and science compared to students in the control group. Teachers were also asked to record the number of behavior events each day, such as suspensions or negative call home. The number of disruptive behavior events decreased over the eight weeks in the intervention group, and increased in the control group, suggesting that there is a relationship between students' behavior and mindfulness. Teachers were asked to

keep track of lessons that were implemented and at the end of the study reported high fidelity, and high satisfaction.

Black and Fernando (2013) evaluated the effect of a different five-week mindfulness-based curriculum that was taught by instructors instead of classroom teachers. The study looked at pre and posttests for 409 children in grades kindergarten to six, all of whom received the mindfulness intervention. Similar to Liehr and Diaz (2010), Black and Fernando (2013) used the Mindful Schools (MS) curriculum. Classes were 15-minute sessions, three times a week for five weeks. Interestingly, researchers randomly assigned classrooms to receive the MS curriculum or MS plus seven more once-weekly classes (MS+). Teachers used the Student Behavior Rubric by Kinder Associates, LLC, as a measure to assess student behavior. All teacher-reported outcomes for both groups improved over time from pre- to post-intervention, as well as seven weeks later at follow-up. There did not seem to be much difference between the MS and MS+ group (both groups showed improvement in paying attention, calm and self-control, and care/respect for others) although paying attention continued to rise with the additional lessons in the MS+ group (Black & Fernando, 2013). While the study was limited in not having a control group, it did suggest benefits of mindfulness with improved classroom behavior perceived by classroom teachers.

Flook and colleagues (2010) conducted a randomized control study of 64 second and third grade students who participated in a mindfulness intervention taught by instructors. Teachers and parents completed pre and posttest assessments on children's executive functioning. The intervention, Mindful Awareness Practices (MAPs) involved 30-minute lessons twice a week for eight weeks, taught by MAPs instructors. Lessons

included age appropriate exercises and games to promote awareness of self through sensory awareness, attentional regulation, awareness of thoughts and feelings, awareness of others, and awareness of the environment (Flook et al., 2010). Researchers found a strong effect for children who participated in the mindfulness program who had poor executive functioning skills at baseline; these students made the greatest gains in behavioral regulation, metacognition, and overall global executive control, compared to students in the control group. Flook and colleagues (2010) recommend that future researchers conduct individual interviews with teachers, to capture “some of the details and nuance of individual experience” that standardized assessments might miss (Flook et al., 2010, p. 80). They also suggest direct behavior observations be conducted and compared to distal outcomes such as school performance and classroom behavior (Flook et al., 2010).

Early Childhood

To date, four studies explore potential benefits of mindfulness in early childhood grades such as preschool (Flook et al., 2015; Razza et al., 2015; Poehlmann-Tynan et al., 2016; Thierry et al., 2016). During preschool, children are just beginning to develop the cognitive skills and structure that are foundational for social-awareness and self-awareness, such as perspective taking (Durlak et al., 2015). SEL programs that target these skills are important in early childhood because they provide the basic foundational skills that support later social-emotional development, such as responsible decision making. During the transition from ages three to six, children’s social skills and social reasoning, emotional understanding and regulation, self-awareness, and self-control develop (Durlak et al., 2015). Neuro-development indicates that the prefrontal cortex

grows rapidly between ages three to six which helps improve executive function, working memory, inhibitory control, and attention set-shifting (Durlak et al., 2015). Current research on mindfulness programs using early childhood samples is limited.

Flook and colleagues (2015) studied the effects of a mindfulness based prosocial skills training, the Kindness Curriculum (KC; Rice, 2013), with 68 preschool students in seven different classrooms. Students were randomly assigned by classroom level to the intervention group or a wait-list control group. The KC intervention consisted of 20 to 30-minute lessons twice a week over 12 weeks, and involved mindfulness practice and kindness practice, and was taught by mindfulness instructors. Teachers completed pre and posttest on students' social competence, and researchers collected data on students' sharing, delay of gratification, and inhibitory control, using different tasks. Using a repeated measures analysis of variance with pretest scores as a covariate, Flook and colleagues (2015) found significant improvements in the intervention group on sharing and social competence. Flook et al. (2015) also collected data on student grades and found that students who received the KC had higher grades for general learning, health, and SEL. Researchers recommend that future studies use larger sample sizes and consider third party observations of classroom behavior, if possible.

Razza and colleagues (2015) evaluated the feasibility and effectiveness of a mindfulness-based yoga intervention, which was implemented daily by a classroom teacher who received training. Razza and colleagues (2015) used a quasi-experimental design and collected data from parents of 29 preschool students. Researchers also gave children self-regulation tasks. Data was also collected on teacher implementation through a daily log of the mindful yoga activities that were taught to students each day, kept by

the classroom teacher. The intervention occurred for 10-30 minutes a day throughout the year. Razza and colleagues (2015) used multiple regression to explore the intervention effect between the intervention and business-as-usual control group, using the pretest score as a covariate. Results suggested that children in the intervention group showed significant improvements in inhibitory control and maintained average levels of attention, while the control group declined in attention over time. There were no differences between the groups as results of the intervention for the parent-report of behavior, and researchers suggested that future studies use teacher report of behavior. This study is limited in its small sample size and low power, as well as lack of standardization without a set curriculum followed. Researchers recommend that future studies look at other behavioral or academic outcomes associated with self-regulation, such as social-emotional competence or achievement.

Thierry and colleagues (2016) also trained teachers to implement a mindfulness program, and like Schonert-Reichl et al. (2015), used the MindUP curriculum although with preschool students. The mindfulness lessons occurred for 20-30 minutes once a week with a total of 15 lessons. There was also a mindfulness “core” practice three times a day. Thierry and colleagues (2016) followed two cohorts of students, which served as an intervention group and a business-as-usual control group, and totaled 47 preschool students from a public urban school. Seventy-two percent of students were considered economically disadvantaged. Interestingly, this study is the first study to follow students into a second year, and followed both cohorts through preschool and through kindergarten.

Parents and teachers completed measures of executive functioning and vocabulary. Results indicated that the students in the intervention group had higher levels of regulation and improved working memory compared to students in the control group. Students who received the mindfulness program also had increased vocabulary scores compared to students in the control group.

Thierry and colleagues (2016) also attempted to collect data on treatment integrity. They asked teachers to report whether lessons were delivered each week, and to rate student engagement during the lesson on a scale from one to five. Teachers reported high levels of engagement on average and reported being consistent with teaching the lessons. This study is limited by a small sample size. Another limitation is that the study used teacher report only, which may be biased since teachers also implemented the mindfulness program. This is a limitation in other studies (Parker et al., 2014) that can be removed if outside instructors implement the intervention. Researchers recommend that future studies include more than one school and randomization if possible, and use of a control group that is equivalent to the intervention group (Thierry et al., 2016). While this study attempted to assess treatment integrity, it would be stronger if it included observations of the teachers' fidelity.

Poehlmann-Tynan and colleagues (2016) also investigated preschool children and whether participation in a mindfulness-based kindness curriculum would affect students' compassion, self-regulation, and executive function. Researchers randomly assigned five classrooms to either a mindfulness intervention, an adapted version of the Kindness Curriculum (Rice, 2013), or to a business-as-usual control group. The total sample included 29 children from a low-income federally subsidized full-day preschool, and

100% of students were living in poverty. Data included assessing children individually on empathy and compassion tasks at three time points: pre, post, and follow-up.

Unlike other studies with early childhood samples (Razza et al., 2015, Thierry et al., 2016) Poehlmann-Tynan and colleagues (2016) used trained mindfulness instructors to deliver the intervention. The intervention consisted of 12 lessons of 20-30 minutes twice a week. More than half of the lessons were observed by the research team. However, observations were not systematic, and involved detailed field notes of children's activity level and engagement. At the end of the program the research team conducted an open-ended interview with each of the mindfulness instructors, to learn about their experiences and thoughts about children's engagement. Researchers used a grounded theory approach with the qualitative analysis of interviews and found four themes: importance of movement activities, variations in implementation affected children's engagement, timing of the program affected children's attention, and modifications could be made to the curriculum to make it developmentally appropriate (Poehlmann-Tynan et al., 2016). Results indicated that children in the mindfulness intervention showed increased attentional focus and increased self-regulation compared to the students in the control group. There were no significant differences in children's empathy and compassion. As a pilot study this study is limited by small sample size and lack of sufficient power, however it makes a contribution with being the first mindfulness study with an early childhood population to share qualitative results.

Calmer Choice

The present study explores the effectiveness of a mindfulness-based SEL intervention, Calmer Choice. There have been two studies of Calmer Choice, both of

which focus on middle-school aged students and are in preparation for publication. One study used a randomized controlled trial to investigate whether children in sixth grade who participated in an adapted Calmer Choice program had altered brain physiology or enhanced cognitive ability (Bauer, Caballero, Scherer, West & Gabrieli, in press).

Participants were 99 students from a charter middle school. The intervention consisted of 45-minute lessons four times a week for eight weeks. Students were randomly assigned to the intervention or to an active control group, which received a computer program.

Outcome measures assessed before and after the programs included attention tasks and MRI scans of 20 children in the intervention group. Results indicated that students in the intervention group had higher accuracy on attention tasks, suggesting improved sustained attention, while students in the control group showed a decline in accuracy, or sustained attention. There was also reduced functional connectivity between the cortical midline structures (CMS) and the default-mode network (DMN), suggesting greater cognitive flexibility.

A second study explored the effectiveness of Calmer Choice on students' psychological flexibility and anxiety (Crowley et al., in press). The sample included 199 students in sixth grade and used a quasi-experimental design with outcomes measured at pretest, posttest, and two-month follow-up. The Calmer Choice program was delivered to students in the intervention group ($n=105$) for 45 minutes once a week for eight weeks. Results indicated significantly greater decreases in anxiety from baseline to follow-up in students in the intervention group compared to those in the control group (Crowley et al., in press). Additionally, change in psychological inflexibility partially mediated the reduced anxiety in the intervention group (Crowley et al., in press).

Present Study

While both of these Calmer Choice studies in press found significant results, neither one assessed implementation integrity, which is an important factor in understanding intervention success and planning for future studies (Durlak et al., 2011). Another limitation is lack of social validity or qualitative data. As mentioned in this literature review, some studies reported an element of treatment integrity (Bakosh et al., 2016; Parker et al., 2014; Razza et al., 2016; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015; Thierry et al., 2016) but only two reported any qualitative data (Mendelson et al., 2010; Poehlmann-Tynan, 2016). The present study makes a number of unique contributions to the field of mindfulness education in schools. First, it explores the effectiveness of a mindfulness intervention with kindergarten students, a population not yet studied. Second, it assesses implementation integrity and instructor fidelity through treatment integrity checklists and observations. Third, the current study used a mixed methods approach and collected qualitative data through individual interviews with kindergarten teachers and Calmer Choice instructors. The study also used two measures that are school-based, and one from a strengths perspective, and which have lacked intervention research. Finally, the majority of current school-based mindfulness studies have had inadequate power and small sample sizes (Bakosh et al., 2016; Beauchemin et al., 2008; Flook et al., 2010; Flook et al., 2015; Fung et al., 2016; Liehr & Diaz, 2010; Mendelson et al., 2010; Razza et al., 2015; Schonert-Reichl et al., 2015; Sibinga et al., 2013; Thierry et al., 2016; Wisner & Norton, 2013). The present study attempts to make a contribution with adequate power and appropriate sample size of 214 participants. Research questions include: Does implementation of Calmer Choice

result in decreased risk scores for kindergarten students in the intervention group compared to those in the control group? Does the program result in increases in student strengths? Is it feasible to teach kindergarten students mindful awareness? Is the intervention implemented with integrity? Do kindergarten teachers find Calmer Choice to be helpful or beneficial in any way? Do teachers perceive any adverse affects? What are the challenges of teaching mindfulness to kindergarteners, and how can the program improve?

CHAPTER III

METHOD

Participants and Setting

The participants in the current study are kindergarten students and teachers from three suburban public schools in New England, and the Calmer Choice instructors. Three schools were invited to participate in the study. See Appendix A for recruitment materials. Although random assignment to the control group and intervention group is ideal, due to conflicts in scheduling, this was not possible. Two schools asked to receive the Calmer Choice intervention in the winter, and are considered the intervention group. The remaining third elementary school was asked to be the wait-list control group, and received the Calmer Choice program later in the spring. All students in kindergarten at both schools were in inclusion classrooms and have had no previous mindfulness experience in school.

An a-priori power analysis was conducted to determine the optimal sample size and to reduce the chances of Type I and Type II error. Based on a mindfulness literature review of school-based mindfulness interventions, the anticipated effect size, Cohen's d , was .25 (small). Alpha was set at .05 and the desired statistical power level was set at 0.8. These parameters indicated that the desired number of participants was 34 for a two-tailed hypothesis. Participants in the wait-list control at School 3 include 64 kindergarten students and three kindergarten teachers. Participants in the intervention group included 80 students and five teachers at School 1, and 101 students and five teachers at School 2. A total of 245 student participants were invited to participate and increased the statistical

power of the study. The total number of teachers was 13. The total number of Calmer Choice instructors who taught lessons to kindergarten was five.

The study sample is not considered to be representative of the U.S. population in general, however, the goal of this study is not to generalize to the population of school children at large. Rather the purpose is to see if there are positive effects of the mindfulness intervention on students' social, emotional, and academic behavior and strengths. Any effects can be generalized to schools with similar demographics to the school district.

At School 1, approximately 9.9% of students are African-American, 1.4% Asian, 9.6% Hispanic, 0.8% Native American, 8.8% Multi-Race Non-Hispanic, and 69.4% White. Sixty percent of students are considered high needs, 49% are economically disadvantaged.

The second intervention school, School 2, has a student body that is approximately 6.6% African-American, 1.6% Asian, 5.9% Hispanic, 2.8% Native American, and 0.2% Native Hawaiian Pacific Islander, 8% Multi-Race Non-Hispanic and 74.8% White. Additionally, approximately 47.3% of students have high needs, and 37.4% are economically disadvantaged.

The wait-list control school, School 3, has a student population that is 7.5% African-American, 1.6% Asian, 17.6 Hispanic, 4.9% Native American, 59.2% White, 0.3% Native Hawaiian, Pacific Islander, and 8.8% Multi-Race Non Hispanic. The school is 63.7% high needs, and 45% economically disadvantaged. Overall, the school district reports that approximately 70.2% of students are White, 30% are of other races, 53.4% have high needs, 39.6% are economically disadvantaged, 18.4% are students with

disabilities, and 23.9% of students are English Language Learners who may or may not have English as their first language.

Recruitment and Consent

Meetings and conversations to discuss the feasibility of the proposed study occurred with the leaders of Calmer Choice, and administrators from the three schools were recruited to participate. Kindergarten teachers from the schools were then invited to participate in the study, in which they were asked to complete two brief surveys for each student, at two different time points. A letter from the primary researcher informing the teachers and parents of the purposes of the study were shared with both schools along with consent forms, which assured participants that participation was voluntary and that they may withdraw participation at any time (Appendix B). Brief descriptions of the outcome measures were provided and parents had the opportunity to choose that their child's scores not be used in the study. Because the district was already planning to implement the Calmer Choice program in all three schools as part of their social-emotional curriculum, consent to participate in the program was not needed.

Design

A non-randomized, pretest-posttest, non-equivalent control group quasi-experimental design was used in this study. This is a mixed-design, that used at a two-way repeated measures ANOVA, with the between-subjects factor of group, and the within-subjects factor of time. The design can be depicted with the following notational form:

NR	O	X	O
NR	O		O

Where:

NR = the groups were not randomly assigned

O = the pre and post measures

X = the Calmer Choice mindfulness intervention

Non-randomization was chosen because of the inherent issues of randomization in schools. The null hypothesis is that there is no significant difference between the groups. The alternative hypothesis is that there is a significant difference between the groups.

All teachers completed measures at the beginning of the study (pretest) and at the end, one week after the intervention, as the posttest. The design is therefore a two-way repeated measures ANOVA, where the grouping variable is the mindfulness intervention, and the within group factor is time.

Dependent Variables

This study used two dependent variables. The first dependent variable of interest is students' social, academic and emotional behavior risk. To measure this, the Social, Academic, Emotional Behavior Risk Screener (SAEBRS; Kilgus & von der Embse, 2014) was given to teachers in both conditions as a pre-test, one week before the intervention began, and as a post-test, one week after the intervention ended. The SAEBS was chosen to measure potential change in the students' behavior in the intervention group, compared to the control group, by teacher-report. The SAEBS was created as a brief, universal screening measure for mental health-related concerns, and is psychometrically appropriate to assess emotional and behavioral risk. As part of multitiered systems of support, schools can use the SAEBS for feasible mental health screening that includes measuring maladaptive and adaptive behaviors. The three factors

include social behavior, such as the ability to maintain appropriate relationships with peers and prosocial competencies; academic behavior, such as attentional problems, and academic engagement; and emotional behavior, such as attitude and worrying.

The SAEBRS is designed for use in the K-12 setting and is grounded in the theory that a student's success in school is not only related to his or her academic achievement, but also success within multiple behavioral domains, that include social and emotional behavior. This efficient tool asks teachers 19 brief questions related to the three factors of behavior. Teachers indicate how frequently the student in question has displayed each behavior during the previous month, choosing from zero (Never) to three (Almost Always). The responses contribute to a Total Behavior score, which includes three narrow domains, including Social Behavior, Academic Behavior, and Emotional Behavior. Lower scores indicate more risk, and scores below a 36 indicate the student is at-risk. Higher scores are indicative of better student behavior and more appropriate functioning (Kilgus & von der Embse, 2014).

The SAEBRS has strong psychometric properties that include high validity and reliability. Internal consistency estimates (Cronbach's alpha) range from .83 to .94 from a sample of elementary school students. Concurrent validity estimates range from .61 to .93. Diagnostic accuracy estimates range from .73 to .97 (Kilgus, Elund, von der Embse, Taylor, & Sims, 2016).

The second dependent variable is the Devereux Student Strengths Assessment-mini (DESSA-mini; Naglieri et al., 2014). This brief measure is a universal screening and progress-monitoring tool to assess social-emotional competencies and asks raters eight brief questions. Raters can select how often a positive behavior occurred in the past four

weeks, such as do something nice, speak about positive things, or contribute to group efforts, and select a number from 0 (never) to 4 (very frequently). The responses contribute to a Raw Score Total that is then converted to a standardized Social-Emotional Total T-score. Higher scores indicate higher levels of social emotional competence. Scores below 40 indicate the student needs instruction, scores between 41 and 59 indicate the student's score is typical, and scores above 60 indicate the student has social emotional strengths. The DESSA-mini is guided by a strengths based approach, and the belief that promoting social-emotional competencies reduce the occurrence of disorders, and contribute to a child's resilience (Naglieri et al., 2014).

The DESSA-mini has strong psychometric properties, including excellent internal reliability, with Chronbach's alpha coefficient ranging from .92 (Naglieri et al., 2014) to .96 (Shapiro, Kim, Robitaille & LeBuffe, 2016). Inter-rater reliability correlations range from .70-.81 (Naglieri et al., 2014). Naglieri, LeBuffe and Shapiro (2011) also report sufficient specificity, sensitivity, positive and negative predictive power (results range from .80 to .97). However, Shapiro and colleagues (2016) found that when administered independently, the DESSA-mini somewhat lacked sensitivity, or the proportion of students with an actual Need for Instruction from among students who screened as having a Need for Instruction. Interestingly, Shapiro et al. (2016) also found that students who were identified as needing instruction in the fall were 4.5 times more likely to have an administrative record of behavior misconduct by the end of the year, compared to students who were not identified as having a Need for Instruction. Still, the DESSA-mini is considered an efficient, effective, and practical universal screening tool (Naglieri et al., 2011) to assess social emotional strengths.

Procedures

Schools in the district were contacted, and a brief meeting with the researcher, superintendent, and three elementary school principals took place. The purpose of this meeting was to explain the proposed research and possible activities involved, and to recruit two schools to participate. Principals were interested and discussed the possible research with their kindergarten staff, and communicated with the researcher during this recruitment process. See Appendix C for the general timeline of procedures related to the study, in table-form.

This research proposal was reviewed and approved by the Internal Review Board (IRB) of the University of Massachusetts Amherst. After all three schools agreed to participate, and after IRB approval, parents, teachers, and instructors were given consent forms to explain the study and ask for their voluntary participation. Letters of consent included a description of the program, the research study, and any possible effects. All participants were assured confidentiality, and were given the opportunity to decline participation in the study.

First all kindergarten teachers at all three elementary schools were asked to participate and were offered a \$50 gift-card to thank them for their participation at the conclusion of the study. After their permission was obtained through signed consent, the researcher delivered the parent consent forms to the participating classrooms, and all kindergarten students took home passive consent letters for parents to sign and return if they did not want their child's scores included in the study. Any consent forms that were returned indicated that those students would not be considered participants in the study. The researcher then delivered an envelope containing a SAEBRS form and a DESSA-

mini form for each student with a cover letter attached, indicating the name of the student who the teacher would complete the forms for. The actual SAEBRS forms and DESSA-mini forms did not have a name or any identifying information, and instead had a code number. The researcher kept a record of participant names and code numbers in a locked file cabinet, so that data were de-identified and confidential. When teachers completed the SAEBRS and DESSA-mini for each student, as the pretest, the researcher collected the data and destroyed the cover sheets with student names. Teachers completed the pretests for each student during planning time, independently, as suggested by the district at the initial recruitment meeting. Teachers were asked not to discuss their ratings with anyone. After pretest data were collected from all three schools, the Calmer Choice intervention began in the two intervention schools.

The SAEBRS and DESSA-mini were given again after the completion of the 16 Calmer Choice lessons, and teachers completed the posttest during their planning time again. After all posttest data were collected, in the same format as the pretest, the researcher scheduled with the school principal a time to conduct brief individual interviews with kindergarten teachers, to collect social validity data, described below.

Independent Variable

The independent variable is a mindfulness-based intervention, delivered in the classrooms to kindergarten students by the Calmer Choice mindfulness instructor. The intervention was delivered twice a week for eight weeks, with a total of 16 sessions. Due to parent conferences, winter vacation, and snow days, the lessons were taught over 11 weeks. Each lesson was approximately 20 minutes long. The intervention consists of age appropriate exercises and games to promote body awareness, attention regulation and

how to focus, and awareness of one's own thoughts and emotions. Each session begins with a mindful moment to settle-in, and to practice the techniques learned so far. After a quick review, the instructor guides the students in a developmentally appropriate new lesson that includes a game or activity and an opportunity to practice the new skill. Each session ends with sitting still and quiet – a mindful moment that gradually increases in length. See Appendix D for a list of the scope and sequence of the program.

Because the Calmer Choice program was implemented during the school day, nothing changed with the schedule for students in the wait-list control group, and activities continued, “business-as-usual.” Scheduling of lessons for the intervention group was determined in coordination with the school principals and Calmer Choice staff, with an effort to minimize any potential time-of-day influences. Classrooms in the intervention group received Calmer Choice in the mornings in one school, and in the afternoons in the second intervention school. This difference in lesson time was therefore considered a threat to validity.

Interventionists

The interventionists at Calmer Choice are instructors with many years of experience teaching mindfulness to preschool, kindergarten, and early grades in elementary school. They are current, part-time employees of Calmer Choice. In an attempt to increase validity, Calmer Choice was asked to schedule the same instructors to teach at both schools. Although this was not possible, efforts were made to ensure treatment integrity. To minimize any potential differences by instructor, all five instructors met with the researcher before implementing the Calmer Choice program. The purpose of this meeting was to explain the study and to outline procedures that would

take place to assess treatment integrity, including asking instructors to complete checklists at the end of each lesson.

Instructor Background

All five instructors have a personal mindfulness practice and have been formally trained by Calmer Choice. However, their teaching background, years with Calmer Choice, and years having a personal mindfulness practice differ. Instructor 1 has worked with Calmer Choice for about 1.5 years and was trained as a school employee at one of the intervention schools. Instructor 1 teaches Calmer Choice lessons in her school as part of her full-time role as School Adjustment Counselor. She previously was a classroom teacher, and has practiced mindfulness for about two years. Instructor 2 has worked with Calmer Choice for 3 years and has no classroom teaching experience. She has had a personal practice for four years. Instructor 3 has worked with Calmer Choice for 4 years, and does not have formal classroom teaching experience, although she has been a yoga teacher and has done substitute teaching. She has had a personal mindfulness practice for seven years. Instructor 4 has worked with Calmer Choice for 1.5 years after being a classroom teacher for 7 years. She has had a mindfulness practice for the past three years. Instructor 5 has worked for Calmer Choice for the past 2 years and has been a classroom teacher and special education teacher for 22 years. For the past 10 years, Instructor 5 has practiced mindfulness in her personal life.

Treatment Integrity

To ensure that the intervention was implemented with fidelity, a teaching manual for each lesson that includes a suggested script was given to each instructor to follow. Treatment integrity was also evaluated with a checklist for Calmer Choice instructors to

complete after teaching every lesson (Appendix E). Instructor's self-assessed fidelity ranged from 84.4% to 100%. To further verify treatment integrity, 25 to 38% (average 31%) of lessons were observed for each instructor by the researcher, to assess components of the lessons implemented with integrity. The number of lessons that were observed varied by instructor due to absences. The researcher used the exact same checklist that was given to instructors. Point-by-point agreement was calculated to assess inter-observer agreement, by dividing the number of agreements by the agreements added to disagreements. Overall IOA ranged from 80.2% to 100%.

Social Validity

Social validity was assessed with brief individual interviews at the end of the study with kindergarten teachers in the intervention group, to ask questions about their satisfaction with the program and any perceived outcomes, and whether they were of value. Additionally, an informal interview was conducted with each Calmer Choice instructor to better understand the process of teaching a mindfulness-based program to kindergarten students. See Appendix F for a list of questions asked to collect this qualitative data.

Data Analysis Plan

The data-analytic plan for this study was to use a two-way repeated measures Analysis of Variance, (ANOVA) with SPSS. Descriptive statistics are reported, including means, standard deviations, *p* values, and effect sizes (partial eta squared). It was assumed that there is a normal distribution, equal variance, and independence of scores.

Qualitative data collected from individual interviews were transcribed and analyzed with a simple thematic analysis using coding with Dedoose version 6.22.17, a web

application for mixed methods research. The data from the treatment integrity checklists were analyzed by looking at simple descriptive statistics, such as percentage of components followed for each lesson. Observation data of implementation integrity were analyzed with percentage of components fully implemented.

CHAPTER IV

RESULTS

This study sought to explore potential benefits of a mindfulness-based social emotional learning curriculum for kindergarten students, using a quasi-experimental design. Three schools were recruited, with the hope of having one intervention school and one wait-list control school. At recruitment, all three schools were interested and agreed to participate. Of the 245 students recruited, 23 were excluded after parent consent forms were returned, in which parents indicated they did not want their child's scores used in the study. Additionally, eight students moved out of district during the intervention and were removed from the study. There were no other missing data. The final analytic sample consisted of 214 children ($N= 214$, 163 intervention and 51 control).

Overall, there was not a significant difference in behavior or strengths between the wait-list control group and the intervention group. Data suggest that students in both the intervention group and the wait-list control group had improved scores for behavior problems and improved scores for social emotional strengths.

Analytic Approach

Research questions include: Does implementation of Calmer Choice result in decreased risk scores for kindergarten students in the intervention group compared to those in the control group? Does the program result in increases in student strengths? Is it feasible to teach kindergarten students mindful awareness? Is the intervention implemented with integrity? Do kindergarten teachers find Calmer Choice to be helpful or beneficial in any way? Do teachers perceive any adverse affects? What are the challenges of teaching mindfulness to kindergarteners, and how can the program

improve? It was hypothesized that the mindfulness intervention would result in decreased problem behavior and increased strengths. However the null hypothesis was accepted; there were no significant differences between groups.

A two-way repeated measures ANOVA was conducted to compare the effect of the mindfulness intervention on total behavior and strengths between groups over time (before and after the intervention). The repeated-measures ANOVA is used to evaluate the mean differences in a study comparing two or more conditions using the same sample of individuals in each condition (Gravetter & Wallnau, 2009). Because the groups were not randomly assigned we cannot expect the pretest mean for each group to be the same. Because the samples are not random, we must interpret these results with caution, as the sample may or may not accurately reflect the population.

Independent *t* tests were conducted to explore any potential baseline differences. *T* tests are most commonly used to compare the means for two groups and to determine if there are statistical differences. Using SPSS statistical software, an Independent Samples Test was conducted to compare the SAEBRS pretest scores in the intervention group and the wait-list control group. The Levene's Test indicated that the variances across the two groups were equal ($p = .20$). As a result, equal variances were assumed. There was not a significant difference in SAEBRS pretest scores for the intervention ($M = 42.13$, $SD = 10.54$) and the control ($M = 40.71$, $SD = 11.57$) groups; $t(212) = .825$, $p = .41$. These results suggest that there were no significant differences between the two groups (based on SAEBRS pretest scores) before the intervention began. Therefore, any significant differences found at posttest could be contributed to an effect by the intervention. The same procedure was used for the DESSA-mini pretest scores, and the Levene's test

suggested that equal variances should not be assumed. There was not a significant difference in DESSA-mini pretest scores for the intervention ($M=51.12$, $SD=9.62$) and control ($M=50.80$, $SD=11.75$) groups; $t(212)=-.17$, $p=.86$. These results suggest that there were no baseline score differences, and a repeated measures ANOVA could be conducted next.

Repeated Measures ANOVA

To answer the first research question, is there a difference in students' total scores following a mindfulness intervention, a two-way repeated measures analysis of variance (ANOVA) was conducted. ANOVA was chosen to determine if the differences found between groups are significantly greater than would be expected if there were no treatment effect (Gravetter & Wallnau, 2009). One of the strengths of using a repeated-measures design is that it eliminates the variance caused by individual differences (Gravetter & Wallnau, 2009) because it looks at the main effect of group and time, as well as any interaction effect. The test statistic is an F -ratio, in which the numerator measures the differences between treatments and the denominator measures the differences due to error, or chance.

First, assumptions of ANOVA were tested and met, and it was assumed that the observations within each treatment condition were independent. The distributions for both groups were also checked for normality. It is difficult to interpret these results with the limitation of non-randomization. The results may not be valid and we cannot draw conclusions.

SAEBRS

For the analysis, group (intervention or control) served as the between-subjects factor, and time (pre and posttest) served as the within-subjects factor. For the intervention group, kindergarten students' average Total SAEBRS pretest score was 42.13 and the posttest score was 44.71. The average DESSA-mini SET score was 51.12 at pretest and 53.70 at posttest. Students in the wait-list control group had an average DESSA-mini SET score of 50.80 at pre, and 56.71 at post. The SAEBRS pre score was 40.71 and post score was 43.88.

Table 1 shows the means and standard deviations for the SAEBRS for both the intervention and control group, at pretest and posttest. A repeated-measures ANOVA indicated a statistically significant effect for time, $F(1, 212) = 37.57, p < .05$. With a p value of less than .05, the result suggests a change in scores across the two different time points (pre and posttest). Partial Eta Squared was .15 and Cohen's effect size d was 0.98. According to effect size guidelines proposed by Cohen (1988), this result suggests a large effect, for the variable of time. The repeated-measures ANOVA indicated non-significant differences for treatment, in total behavior across the two groups, $F(1, 212) = .41, p = .52$. Because these results suggest no significant difference between the groups, no other follow-up analysis was completed.

Table 1:

Means and Standard Deviations of SAEBRS at Pretest and Posttest

Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Intervention	42.13	10.54	44.71	10.19
Control	40.71	11.57	43.88	11.21

DESSA-Mini

A second repeated-measures ANOVA was conducted for the DESSA-mini, and group (intervention or control) served as the between-subjects factor, and time (pre and posttest) served as the within-subjects factor. Table 2 shows the means and standard deviations for the DESSA-mini for both the intervention and control group, at pretest and posttest. A repeated-measures ANOVA indicated a statistically significant effect for time, $F(1, 212) = 44.32, p < .05$. With a p value of less than .05, the result suggests a change in scores across the two different time points (pre and posttest). Partial Eta Squared was .17 and Cohen's d was 1.07. To assess differences between groups, the repeated-measures ANOVA indicated significant differences in strengths among the two groups, $F(1, 212) = 6.78, p = .01$, with Partial Eta Squared = .03 and Cohen's $d = 0.42$. However, the significant differences were found in the control group, and not the intervention group. In summary, the null hypothesis was accepted, and differences were not found as a result of the intervention.

Table 2:

Means and Standard Deviations of DESSA-mini at Pretest and Posttest

Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Intervention	51.12	9.62	53.70	11.04
Control	50.80	11.75	56.71	11.52

Treatment Integrity

An important research question for this study was whether the intervention was implemented with integrity. Instructors had access to the same Calmer Choice curriculum and trainings. In addition to observations of some of the lessons, treatment integrity data were collected by asking each instructor to complete an eight-item checklist after each lesson, to self-assess the percentage of lesson components completed. Instructor's self-assessed fidelity ranged from 84.4% to 100% (Table 3).

Table 3:

Self-Assessed Fidelity by Instructor

Instructor	# K Lessons Taught	Average % Components Completed
1	16 (1 classroom)	100%
2	15* (1 classroom)	84.40%
3	48 (3 classrooms)	93.9%
4	32 (2 classrooms)	98.80%
5	48 (3 classrooms)	94.05%

* This instructor was absent once and was not able to make-up the lesson.

Instructors' self-assessment of fidelity varied by lesson, and ranged from 86.3% to 100% (Table 4). Overall self-assessed fidelity was high, and also varied by school, reported in Table 5.

Table 4:

Self-Assessed Fidelity by Lesson

Lesson #	Average % Components Completed Across Instructors
1	100%
2	100%
3	98.7%*
4	95.2%
5	94.7%*
6	91.4%
7	91.5%
8	88.9%*
9	90.3%
10	93.9%
11	95.2%
12	96.4%*
13	86.3%
14	94.7%
15	97.6%
16	98.8%

*Some instructors had incomplete data on checklists for these lessons that were excluded in the fidelity calculation.

Table 5:

Self-Assessed Fidelity by School

School	Average % Fidelity
1	96.43%
2	93%

Inter-Observer Agreement

To assess inter-observer agreement, 25 to 38% (average 31%) of lessons (between four and six) were observed for each of the five instructors. The number of lessons that were observed varied by instructor due to absences. The researcher used the exact same checklist that was given to instructors while observing the lessons. Point-by-point agreement was calculated to assess inter-observer agreement, by dividing the number of agreements by the agreements added to disagreements, when comparing the researcher's checklist and the instructor's checklist, for each lesson. Overall IOA ranged from 80.2% to 100% (Table 6).

Table 6:

Inter-Observer Agreement (IOA)

Instructor	Average IOA
1	100%
2	80.2%
3	83.4%
4	97.6%
5	93.8%

According to the researcher's observations of lessons, each instructor had a different average percentage of components completed/ fidelity, which ranged from 87.8% to 100% (Table 7).

Table 7:

Observation Fidelity by Instructor

Instructor	# Of Lessons Observed	Average Observation Fidelity
1	4	100%
2	5	87.8%
3	6	89.7%
4	6	97.6%
5	5	100%

Social Validity

Social validity data, through interviews with teachers and instructors, were collected to answer the following overall research questions: Do kindergarten teachers find Calmer Choice to be helpful or beneficial in any way? Is it feasible to teach kindergarteners mindfulness? Do teachers and instructors perceive any adverse affects? What are the challenges of teaching mindfulness to kindergarteners, and how can the program improve? The qualitative analytic approach included transcribing interviews and using a simple thematic analysis through coding with Dedoose online software. Coding was used to identify themes within the separate groups of teachers and instructors, and across teachers and instructors.

Instructor Interviews

Similar to Peohlmann-Tynan and colleagues (2016), interviews were conducted with instructors individually to learn about the perceived benefits and adverse affects, feasibility, and challenges of the Calmer Choice program. Following transcription and coding using the qualitative analysis software Dedoose, a number of themes emerged across the five instructors, which are described next.

Benefits

Instructors mentioned several different benefits, and themes included children's *ability to retain* what they learn in Calmer Choice and the *advantage of early exposure* to mindfulness, and *teacher benefit*. Instructors commented on how much easier it is to teach the first graders who have already had Calmer Choice, and suggested that children are remembering some of the material from kindergarten. Several instructors commented on how the program teaches both children and teachers tools for handling emotions and challenging situations suggesting the benefits may extend beyond the students. Instructors also agreed in enjoying teaching this age group. One instructor commented, "It's such a joy to see such little tiny people learning how to sit and pay attention on purpose because it seems like a new idea to them. They're like 'oh, I can do this!'"

Adverse Effects

All five instructors said that they did not perceive any adverse effects.

Challenges

Themes related to challenges of teaching mindfulness to kindergarteners included *lesson length*, *keeping student attention*, *abstract lessons*, and *eye closing*. Several instructors commented on the 20-minute lesson being too long and reported that the lesson frequently went over the 20 minutes. Two instructors and also one teacher

suggested that to keep lessons developmentally appropriate, instructors should keep the lesson length to 15 minutes at maximum. Instructors also mentioned the challenge of keeping students' attention – they reported how energetic and wiggly young students can be.

Instructors also felt that some lessons were abstract and challenging to teach students. For example, Lesson 8, on thought awareness, was challenging. A few instructors also mentioned that it was challenging for students to keep their eyes closed. The lessons invite students to close their eyes, or look down, while practicing mindful awareness, with the instructor keeping her eyes open, to ensure safety. Instructors said it was common for most students to keep their eyes open and watch other students and teachers, but that over time the number of students who closed their eyes increased. One instructor suggested that mindfulness instructors not be concerned with kindergarten students keeping their eyes open, as this seems new or “scary” to students of five years of age. Overall, all five instructors agreed that it was feasible to teach mindfulness in kindergarten and that there were no perceived adverse effects.

Teacher Interviews

Teachers were also interviewed individually. Some of the themes found through instructor interviews overlapped with teacher interviews.

Satisfaction

Teachers were first asked about their satisfaction related to the Calmer Choice program, and themes that emerged included *enjoyment*, *challenging home experiences*, *emotion knowledge*, *students independent coping*, and *schedules*. Out of the 10 teachers, nine teachers enjoyed the lessons, were very satisfied, and reported that their students

enjoyed the lessons as well. For example, one teacher reported that students “were always excited to come back from recess when we had Calmer Choice and excited to enter into the classroom and sit down and focus...” The tenth teacher reported that she was overall satisfied, and she and her students sometimes enjoyed the lessons. This teacher was quite vocal in sharing ways the program can improve.

Eight of the 10 teachers mentioned the challenging home experiences and that students are exposed to trauma, poverty, over-use of technology, and lack of social emotional learning at home; these teachers reported their satisfaction in the program’s way of addressing these challenges. Teachers gave several examples of students using the Calmer Choice mindfulness strategies to focus and calm down in the classroom setting. Several teachers also mentioned that parents report that their child uses strategies at home and teaches parents and siblings tools, such as “five-finger breathing,” and vocabulary about the brain, for example the “wise one,” or pre-frontal cortex. Teachers also identified emotion knowledge and self-awareness of emotions as important skills from Calmer Choice lessons that students can now use to cope with the challenges from home. By teaching students developmentally appropriate tools, teachers believe that they are giving students “some control” that they otherwise may not feel. One teacher said, “Instead of everything is happening to them, they can control how they can react to whatever is going on around them.” Many commented on their high satisfaction with the children’s literature that Calmer Choice used in the lessons, which students enjoyed.

During the interviews, the theme of schedules emerged, and teachers differed in opinions of the best time to have Calmer Choice in the kindergarten classrooms. Most seemed to agree that it was better to have the program start in the second half of the year,

as it is now, and teachers either preferred to have it early in the morning, or in the afternoon after recess. Five teachers mentioned wanting it integrated throughout the year. Some teachers wanted it to be more than twice a week, or longer than eight weeks, and three teachers specifically mentioned the need for teachers to integrate it daily in their classrooms.

Adverse Effects

All 10 teachers said they did not think there were any adverse effects. One teacher said she thought the curriculum could be improved – see suggestions for improvement below.

Benefits

Themes that emerged regarding benefits included *teacher personal benefits*, *professional development*, *developmental growth*, *social-emotional improvement*, and *emotion knowledge*. Teachers shared their own frustrations in being given many demands and responsibilities with multiple initiatives, assessments, and lesson planning, but that they experienced benefits in having Calmer Choice come to their classroom. Three teachers reported the benefits of participating themselves in both the Calmer Choice lessons in their classroom, and in a mindfulness course designed specifically for classroom teachers. Some teachers shared how they wish all teachers could participate in a teacher training. The teacher course, offered by Calmer Choice as self-selective professional development last year, helped one teacher who said, “It really prepared me and helped me know the background and the philosophy behind it and all that, so I felt more prepared coming in and doing it with kindergarteners because I had had the background as a teacher.” Another teacher recommended that future professional

development be dedicated to using mindfulness to help students who need social, emotional, and behavioral help.

When teachers were asked if they perceived any improvements in students' social, academic, or emotional behavior, the general response was that it was hard to tell if there were benefits after an only eight-week program. Teachers shared that all students make progress in these areas during spring months, and always make developmental gains. Similar to responses from instructors, teachers agreed that it seems that students are "taking in" the lessons, even if some students sometimes appear to not be listening. It seemed that teachers commented the most on social and emotional improvement. Teachers valued that students learned strategies that help them when they get angry or need to solve problems with friends. Some teachers shared that children benefit when the teacher asks them to pay attention to their senses and be aware of what's around them, and what they feel inside. When students are upset, several teachers said they will often remind or prompt students of the Calmer Choice tools, and students are able to choose one and calm themselves down, independently. One teacher shared that,

One of my students who is particularly a little unstable emotionally and who can have outbursts and explosions, she really took to the five-finger breathing. I still see her having these episodes so I do have to remind her to use those techniques to calm herself down but once she's reminded she can usually calm herself down.

Another teacher said she has seen improvements in the students who "get frustrated or shut down – they use a strategy to persevere and push through it...the ability to just sort of stop in that moment" has benefited not only the student, but the teacher as well.

Emotion knowledge emerged as another theme. Teachers explained how many times students are upset or anxious, but they don't always know that they are feeling these emotions. Through teaching mindfulness, Calmer Choice has taught them to stop

and recognize what they are feeling, label it, and then think of a strategy to use to feel better if needed. One teacher commented that kindergarten students may not immediately be able to do this high-level executive functioning, but over time, with repetition, they are benefiting from the lessons and practice.

Feasibility

Both teachers and instructors were asked if they thought it was feasible to teach mindful awareness to kindergarten students and themes included *student availability*, and *developmentally appropriate*. In general, teachers and instructors agreed it is feasible to teach mindful awareness to students in kindergarten. While some teachers and instructors had ideas of small ways the program could improve, such as making the lesson slightly shorter or allowing students to “turn and talk” to their neighbor, for the most part teachers and instructors were glad the program is implemented at such a young age. One instructor said, “it’s actually become one of my favorite classes to be in because they are wide-eyed and ready, they’re just ready to learn -- they’re available.” Another instructor mentioned liking that she had been able to teach five and six-year-olds how to focus on their breathing, pay attention, focus on listening, and notice what is happening in their bodies. Several teachers and instructors referred to the students as “little sponges” and how teaching mindful awareness in early childhood felt like “planting little seeds” that develop and grow further in older grades. Several teachers said that the Calmer Choice program does an excellent job at making lessons developmentally appropriate and very feasible to teach, and shared some ways that the program could continue to improve.

Ways to Improve

Both teachers and instructors were asked what they would change or improve in regard to the lessons and program. Interestingly, many teachers extended their answers to describe ways that teaching mindfulness in general can be enhanced. Three major themes emerged for both teachers and instructors; *classroom management*, *role of the teacher* and *making the curriculum more developmentally appropriate*. Samples of specific suggestions are included in Table 8.

Instructors and teachers discussed the importance of effective classroom management. Multiple teachers and instructors described effective management strategies in kindergarten, including: being flexible, having back-up plans, being aware of situations (such as an indoor recess), being able to “read the room” and modify the lesson when students are fidgety, commitment to having the students focus and listen (clear expectations, gentle reminders, kindness, etc.), having a loud enough voice, ignoring minor misbehavior, and getting kids excited about the lesson by being engaging. One teacher mentioned that it’s very important that instructors have experience working with whatever age group they are teaching – as a teacher or perhaps as a parent. Another teacher suggested that instructors be trained with the use of videotaping, and have a model video of a teacher teaching students with challenging behaviors. This teacher also referred to a previous year when a Calmer Choice instructor did not have experience teaching: “Without those classroom management skills that (instructor)...doesn’t have the full attention of those kids and (the curriculum) just isn’t as powerful.”

Both teachers and instructors commented on the importance that classroom teachers are present in the circle and participate during the lesson. It not only set a good model for children, as one instructor commented, but gave the teacher the opportunity to

learn mindful awareness skills. Teachers can also reinforce and remind students of skills learned, outside of the lessons. One teacher commented, “When it’s only for 20 minutes... two times a week and you get a vacation... I think kids forget so I think that it is important for us as teachers to follow through on and revisit all the strategies in order to kind of keep that instilled in them as they move ahead toward the end of the year.”

Teachers reported that buy-in from teachers is critical, and some felt that not all teachers believed in it and had buy-in, which is not as effective as teachers who see the value and potential of mindfulness. A teacher who had buy-in shared how frustrating teaching kindergarten can be, and suggested that instead of using strategies like, “I’m just going to wait,” or “I’m noticing...” teachers should model “I’m going to take a deep breath and be mindful for a minute,” or “I’m going to use five-finger breaths.” One teacher believed that a consistent, yearly mindfulness program with classroom teacher training would result in “a shift in academic performance but also social emotional behavior data.”

Developmental appropriateness was another theme that emerged from the interviews. Overall it seemed that teachers and instructors agreed that lessons should include more movement, be shortened, have more activities and stories, and simplify some vocabulary. With these changes, the curriculum would be even more developmentally appropriate and easier for kindergarten students to access.

Table 8:

Summary of Suggestions for Improvement

Theme	Suggestion
Classroom management	Be flexible and creative as an instructor and be ready to change your plan depending on what the kids bring to the lesson.
	Instructors need to “read the room” and know how to get kindergarteners’ attention, help avoid going off topic.
	Be engaging and use a loud enough voice.
Role of teacher	Classroom teacher should participate and needs to have “buy-in.”
	More benefit if the teacher has a personal mindfulness practice.
	With more mindfulness training, teachers can implement mindful awareness throughout the day and year.
Developmental appropriateness	More movement.
	Less talking and more stories, more visuals, more activities.
	Adjust vocabulary so it is consistently developmentally appropriate.
	Have lessons be a focused 15 minutes (instead of 20) with opportunities to move throughout.

CHAPTER V

DISCUSSION

Summary of Findings

The present study explored the effectiveness and feasibility of a mindfulness-based SEL program, Calmer Choice, in regards to kindergarten students' behavior and social-emotional strengths. This is one of the first studies to assess the effectiveness of Calmer Choice, a relatively new intervention, and is also the first study to focus on a mindfulness intervention with kindergarten students (a population understudied). The purpose was to determine if students who received the mindfulness intervention demonstrated behavior changes compared to students in a control group, and to gain more information about the feasibility and perceived benefits and adverse effects, through interviews. Using a quasi-experimental design and appropriate sample size ($N=214$), data collected pre and post-intervention assessed the level of risk due to social, academic and emotional behavior problems, as well as student social-emotional strengths. This discussion includes a summary and interpretation of the main findings, including findings regarding treatment integrity and social validity. Limitations of the study and implications for future research are also discussed.

Quantitative Results

A two-way repeated measures ANOVA was conducted to compare the effect of the mindfulness intervention on total behavior over time (before and after the intervention) for both the SAEBRS and DESSA-mini.

SAEBRS

Quantitative data from the SAEBRS suggested no significant difference between the intervention and wait-list control groups. Both the intervention group and the control group had improved scores after nine weeks.

DESSA-Mini

Quantitative data from the DESSA-mini found a significant difference in student competencies between the intervention and wait-list control groups, with reports of higher competencies in the control group. Due to this unexpected finding, conversations took place with one of the teachers in the control group. The teacher shared her style of teaching and classroom activities, which is discussed in the limitations section of this discussion. It appears that at least one control group classroom had their own intervention that limited the internal validity of the study.

Summary of Implementation

One of the main purposes of this study was to assess the level of implementation and feasibility of a popular program, and to understand ways that school professionals can implement a mindfulness-based social emotional learning program in early childhood grades. Implementation integrity refers to the degree to which an intervention occurs as planned, and is an important component of the internal validity of the intervention (Gresham, 1989). Implementation integrity of the Calmer Choice program was assessed through checklists and observations. Overall, results indicated high levels of instructors' self-assessed fidelity, and high levels of implementation integrity through observations.

Self-Assessed Fidelity

Instructors were asked to complete a brief treatment integrity checklist after teaching each kindergarten lesson. Overall, the five instructors self-rated high levels of

fidelity. Fidelity data were also organized by lesson, which suggested that some lessons were more difficult to teach with fidelity. For example, Lesson 8 (thought awareness) and Lesson 13 (second lesson on emotion awareness) had lowest levels of fidelity. In communication with instructors after observations, they reported it being difficult to teach the concept of “thoughts” to five-year-olds. Instructors also felt that having one lesson on emotion awareness, instead of two, would have been more feasible.

Although all instructors received a brief, individual training on how to use the checklists, it was noted at the end of the study that some instructors might have been confused with certain components of the checklist. It’s possible that the checklist lacked objectivity and instructors were uncertain of whether to check “yes” or “no.” For example, one of the checklist components that may have been confusing to one instructor was “practice mindfulness during lesson” which would have included practicing mindful awareness at the end of the lesson before leaving. She frequently did not check this off, however, during observations, she consistently began and ended lessons with a mindfulness practice.

Another component asked if the lesson was “delivered as planned,” which was somewhat subjective due to the curriculum having choices within each lesson. Overall it is possible that the checklist may not reflect the core components of the Calmer Choice program, and could not always capture the reality of the lesson. Additional data were available after some instructors wrote notes on the checklists. For example, one of the components assessed if students were engaged in the lesson. Some instructors did not check off this component but included a note that helped explain the circumstance, such as a substitute teacher present instead of the classroom teacher, or a fifth indoor recess

preceded the lesson and students were extra wiggly. Overall, the levels of self-assessed fidelity were encouraging. The checklists provided a sample of data on how instructors taught the lessons, and whether the intervention was implemented as planned.

Observed Fidelity of Implementation

Approximately one-third of Calmer Choice lessons were observed and suggested overall high levels of treatment integrity. It was observed that each instructor had a slightly different style and different strengths, for example, one instructor talked about curiosity in most lessons, and another instructor integrated mindful movement into most lessons. The Calmer Choice curriculum offers instructors some choices of activities, for example, choices between two books to read, or the choice to read a story or play a game, which makes the lessons across classrooms somewhat diverse. However, each lesson plan within the curriculum includes a summary with lesson goals, objectives, and intentions.

When observed, instructors 1, 4 and 5 taught the lessons as planned, according to the Calmer Choice curriculum, although instructor 1 frequently went over the time limit. Instructors 2 and 3 sometimes did not teach lessons as planned, and either left out certain components, or added something of their own. The observation fidelity results indicated that these two instructors had lower percentages of fidelity (87.8% and 89.7% of components) according to observations in comparison to the other three instructors. When the instructor checklists were compared to the observer's checklists and Inter-Observer-Agreement (IOA) was calculated, these two instructors also had a lower IOA percentage (80.2% and 83.4%), suggesting there was less agreement between the observer and instructor.

One instructor with high fidelity, instructor 1, seemed to have developed a very positive relationship with her students and classroom teacher. During observations, it was noted that students were very excited to see the instructor, smiled, and made comments such as, “Yay! It’s time for Calmer Choice! We missed you!” On the day of the last lesson several students shared their sad thoughts about Calmer Choice ending.

Summary of Social Validity

At the time of this study, very few previously published studies in the field of mindfulness in education include qualitative data. Collecting qualitative data helps understand the benefits and challenges of an intervention that may not otherwise be known by quantitative data only, and allows more insight to be gained through combining the two methodologies (Creswell, 2009). Previous research has recommended that future studies conduct interviews (Flook et al., 2010) or other qualitative data to illuminate processes of change related to mindfulness (Greenberg & Harris, 2011). This study filled an important gap in the literature by conducting interviews with the 10 teachers in the intervention group who received the Calmer Choice program in their classrooms, as well as with the five instructors who taught the lessons. As suggested by Greenberg & Harris (2011), the qualitative results of this study help identify developmentally appropriate practices for teaching mindfulness in kindergarten classrooms.

Instructor Interviews

Results from instructor interviews suggest that instructors enjoyed teaching mindfulness to kindergarteners, and believed that teaching mindfulness at an early age makes teaching mindfulness to older students easier. Students seem to have an ability to retain what they learn. Other benefits include the advantage of early exposure to

mindfulness, and teacher benefit. Although instructors did not perceive any adverse effects of the program, they did mention several challenges to teaching the program in kindergarten. Challenges included feeling that the lessons were too long and occasionally included abstract concepts, such as thoughts, and they suggested the lessons be shortened for kindergarten. Instructors also mentioned how it was challenging for students to close their eyes, and recommended that educators not expect students in early childhood to close their eyes.

Instructors and teachers mentioned the challenge in keeping students' attention during lessons, and the high level of energy that students bring to lessons. This behavior is expected at this age, and it may require instructors to learn new skills such as keeping a quick pace and making the lessons exciting through creative use of voice, movement, etc. These examples of effective teaching strategies relate to the theme of classroom management that instructors and teachers made reference to, and which is discussed later.

Teacher Interviews

Results from interviews with classroom teachers revealed that teachers were overall satisfied with the program and enjoyed the mindfulness lessons. Themes related to satisfaction also included referencing students' challenging home experiences, developing emotion knowledge, and students' independent coping. When asked about perceived benefits, teachers not only discussed benefits for children, such as teaching them strategies that help them when they are upset, or when they need to focus, but also discussed personal benefits for teachers themselves. Similar results were found in previous studies (Bergen-Cico et al., 2015; Crowley et al., in prep). Some of the teachers in the present study had volunteered in a previous year to receive a Calmer Choice

teacher training. These teachers advocated that all teachers be encouraged to attend the course, which helped them have the background knowledge to fully participate in the lessons, and extend lesson activities and goals after the Calmer Choice program ended. Some teachers felt that the program would be more successful if all teachers had “buy-in,” as well as a personal practice.

Ways to Improve

Both teachers and instructors agreed that it is feasible to teach mindful awareness to kindergarten students, and that the Calmer Choice lessons are for the most part developmentally appropriate. When asked for ways to improve, participants suggested other ways to make the lessons more developmentally appropriate (consistent with results from Poehlmann-Tynan et al., 2016 and Zelazo & Lyons, 2012), and gave suggestions for improved classroom management and the importance of teacher involvement. Effective classroom management was a challenge for some instructors who did not have prior classroom teaching experience. Interestingly, the two instructors (2 and 3) who had lower percentages of fidelity and IOA are the two instructors who do not have classroom teaching experience. This suggests that instructors with formal teaching experience may be in a position to better implement the Calmer Choice program as intended. It is recommended that schools and programs that wish to implement a mindfulness-based SEL program use instructors who have classroom teaching experience, or who have been highly trained in effective classroom management. The Calmer Choice program trains its instructors in teaching mindfulness and the Calmer Choice curriculum, but does not currently train instructors in classroom management.

Limitations

Design

This study used a quasi-experimental design in which students were not randomly assigned to intervention or control condition. Students in the intervention group and control group were from different classrooms and schools, which means it is possible that students in the two groups had differences that were not measured which may have contributed to the findings. Students were also nested within classrooms but were analyzed at the individual level. Although this study contributes to the field of mindfulness research by using a large sample size with adequate power, another limitation is the unequal sample sizes. Because the control group was smaller (one third the size of the intervention group) there is more likely to be error in the results of the control group (Gravetter & Wallanau, 2008).

Threats to Internal Validity

Despite the collection of valuable treatment integrity data, there were several threats to the internal validity of this study. First, kindergarten students have rather rapid developmental growth during the ages of five and six (Pressley & McCormick, 2007). This naturally occurring growth may be confounded with the intervention, resulting in a maturation threat (Kline, 2009). Results of this study suggest that students in both the intervention and control groups improved over time in social, academic, and emotional behaviors. Additionally, there was a history threat due to one teacher in the control group implementing her own intervention. The researcher noticed that this teacher's posttest data showed great improvements for all students in all areas. In a follow-up conversation, it was revealed that this teacher takes social-emotional learning very seriously, and does "peace work" with students throughout the year. Her efforts include peace greetings and

songs each morning, peace rocks, and conversations throughout the day about feelings, thoughts, and positive behavior. This unexpected intervention in the control group threatened the internal validity of the present study.

Independent Variable

There were several limitations related to the independent variable, the Calmer Choice program. First, the program is currently modifying the curriculum, and lesson plans at the time of this study had recently changed. This may have affected instructor's comfort teaching the lessons since some components were new, and some of the language had been changed. Also, it is important to note that the Calmer Choice program is an added-on intervention to the schools' existing prevention efforts. All elementary schools in the district use the social-emotional curriculum Second Step (Frey et al., 2005), Tools of the Mind (Leong & Bodrova, 1996), and Positive Behavior and Intervention Supports (PBIS). It is possible that these programs promoted significant positive social, academic and emotional behaviors and student strengths in both the intervention and control group, limiting the unique effectiveness of the mindfulness-based Calmer Choice program.

Another limitation is that the program is only eight weeks long. This may not have been a long enough time interval to see changes. A similar study assessing mindfulness-based SEL curricula that found significant results collected data over 16 weeks (Schonert-Reichl et al., 2015). A longer time period between data collection points might allow time for student change. The study is also limited in not having follow-up data. School administrators were not interested in having a third round of data collection, in the attempt of collecting follow-up data after the intervention. This had to do with the timing of the school year and other events (i.e. state testing and end of the school year).

Another limitation is that the independent variable was not consistent across classrooms. For example, besides there being five different instructors with different levels of experience, the lessons were also taught at different times of the day. Additionally, one instructor missed a lesson and was not able to make-up the lesson. As a result, one classroom had only 15 lessons while the others had the complete 16 lessons.

Measures and Testing

This study is limited in using report from teachers only for quantitative data. Future studies should consider direct assessment and parent-report. Anecdotally, several teachers and instructors mentioned examples of students or parents reporting that their family was learning mindfulness together, or that the child was teaching mindfulness to siblings. It is possible that children in the intervention group exhibited improved behavior and social-emotional competencies at home more than at school. The teacher report is limited because teachers were not blind to their condition, and their report may lack objectivity (Kline, 2009). Ratings of students' behaviors may have been influenced by knowledge of participating in the Calmer Choice program and may have resulted in potential rater bias. However, teachers in this study did not implement the intervention, unlike some studies (Bergen-Cico et al., 2015; Razza et al., 2015; Schonert-Reichl & Lawlor, 2010; Schonert-Reichl et al., 2015; Thierry et al., 2016), and may have been less biased than if they were implementing the program and rating student behavior. It is also important to note that one of the teachers was on maternity leave during the pretest data collection. A long-term substitute teacher who had known the children for six weeks completed the pretest, and the regular classroom teacher completed the posttest. Finally, although this study contributed to the field in including a positive, strengths-based

measure, compared to measuring symptoms of disorders (Mendelson et al., 2010), it is possible that the measures were not sensitive to change. The DESSA-mini in particular lacked sensitivity in prior studies (Shapiro et al., 2016).

Future Research

This study addressed several gaps in the field, including having an adequately powered study with a large sample size ($N=214$), use of mixed methods with qualitative data gathered through individually administered interviews, and focus on an understudied population (kindergarten). This study also used two school-based measures which have lacked intervention research, including one that used a strengths perspective. Although there were not significant differences in students' behaviors, data on treatment integrity and social validity provide valuable information for the Calmer Choice program and for other programs and schools that integrate mindfulness lessons in early childhood. The study also provides insights into future directions for research, discussed below.

Future research will benefit from including indirect measures from other informants, such as parent report on student behavior, as well as direct measurement of behavior, such as frequency of disruptive behavior. Direct measurement of behavior could also include a frequency count of prosocial behaviors, such as the skills that students are taught. Data should also include student participation or attendance. Anecdotally, some teachers mentioned that some students were frequently absent or were pulled-out for academic interventions during the Calmer Choice lessons. It is recommended that future researchers collect data on student attendance with the intervention to keep record of dosage. Additional efforts in the future should explore changes with students considered at-risk for behavior problems after participation in a

selected small-group intervention. It is possible that students at-risk, for example students with internalizing or externalizing diagnoses, will show more change and benefit if they receive mindfulness training in a more intensive group, such as a Tier 2 intervention.

Further, replication with a larger sample and balanced sample sizes, along with follow-up data collection, or data collection at multiple time points, would help generalize the findings of the present study. A longitudinal study would ultimately allow potential effects to be observed over time. By following students throughout more than one grade level, researchers can compare students who participate in a mindfulness intervention, to those who do not, with data collected multiple times. This might allow for any potential effects to be observed that would not otherwise be observed in a limited eight-week study. Interviews suggested that students were in fact benefiting from the intervention, but that it was difficult to see results after eight-weeks at a developmental period of rapid growth. The current study used kindergarten students to address the gap in knowledge of mindfulness implementation with kindergarten students, but also because students in older grades had previously learned Calmer Choice in earlier grades. A longitudinal study with Calmer Choice would require recruiting schools off of Cape Cod, with students who do not have access to Calmer Choice lessons. Although we may not see immediate results after students' first exposure to mindfulness in kindergarten, early intervention may provide the building blocks for future social emotional learning. Furthermore, qualitative results suggest that repeated exposure may help children learn mindfulness more quickly and easily, allowing them to develop self-awareness and self-management at a young age. All 10 teachers and five instructors agreed that there were no adverse effects in teaching mindfulness to students in kindergarten. Considering the

positive effects that prior research has found with adults and children, and the lack of evidence of harm, it is recommended that future research continues to study this young population.

It would also be helpful for future researchers to collect data related to classroom teachers. For example, data on teachers' background and classroom practices, such as their level of "buy-in" of the intervention, whether or not they have their own personal mindfulness practice, and whether or not they integrate mindfulness practices with their teaching, are all valuable components that relate to the validity and success of the intervention. Although the present study did not find significant results with students who received the intervention, interviews suggest that teachers may have benefited more immediately than the students. It would be interesting to explore changes in teachers as a result of participating in the Calmer Choice program. Similar to Schonert-Reichl et al. (2015) it is recommended that future research assess changes in teachers as a result of participating in or implementing a mindfulness-based SEL program. With half of teachers leaving the profession within the first five years of teaching (DeAngelis & Presley, 2011), and the high number of teachers who experience burnout (Farber & Weschler, 1991), mindfulness training may be one way to help teachers cope with the challenges of teaching.

The importance of teacher involvement was a clear theme of this study. To assist future teachers in integrating mindful awareness skills in their teaching, it is recommended that future research include consultation and training for teachers. Potential benefits, found by previous studies, could be maximized if teachers believe in

the usefulness and benefits of mindfulness and are supported in ways of using mindfulness throughout the school day with their students.

Recommendations based on qualitative feedback from teachers and instructors give Calmer Choice valuable insight into improving their program. Curriculum changes should address teachers' and instructors' concerns of what was challenging, and what could be improved. Adjusting the length, language, and level of movement, are some examples of ways lessons can be adapted to better teach kindergarten. Additionally, it is recommended that consultation be provided to instructors, so that instructors are competent at classroom management.

In conclusion, this study adds to the literature on teaching mindfulness in schools by addressing several gaps and providing insights into the feasibility and social validity of teaching mindfulness to very young students. Overall, kindergarten is a unique age to study, as children are transitioning from childcare or preschool to school. During this time of rapid developmental growth, SEL programs teach basic foundational skills such as self-awareness and social-awareness, which support later social-emotional development. Mindfulness can be used as a tool to not only help students access SEL curricula, but to also help support teachers in developing their own well-being and resilience as they face the highly demanding profession of teaching.

APPENDIX A

RECRUITMENT MATERIALS



UNIVERSITY OF MASSACHUSETTS AMHERST

School Psychology Program
College of Education
University of Massachusetts
Amherst, MA 01003

Proposed Study Overview

The proposed study will examine the effectiveness of a preventive, universal social-emotional learning intervention, *Calmer Choice*, aimed to increase students' emotional resilience. The framework that guides *Calmer Choice* lessons is grounded in current academic and scientific knowledge regarding the benefits of social emotional learning with mindful awareness training for cognitive, emotional, physical and social well-being and health. Many recent studies have found mindfulness-based programs to benefit children with outcomes that range from lower stress and anxiety, to increased self-regulation. Interestingly, very few studies look at potential benefits in the early childhood years. We are interested in kindergarten students and whether the *Calmer Choice* program affects social, academic, and emotional behavior.

A research design has been proposed that involves giving kindergarten teachers from two schools a brief screening tool that asks 19 simple questions for each student. Teachers will be given a copy of the Social, Academic, Emotional, Behavior Risk Screener (SAEBRS) to complete for each student, with it taking approximately 5 minutes to complete for each student. Teachers will be asked to complete this measure at two time points. Teachers will receive a gift-card to thank them for their time and participation. Data will be compared between an intervention group and a wait-list control group. This data (confidential and de-identified) will also be shared with the school, and may be used as part of prevention efforts that look for students who may be at-risk for academic, emotional or behavioral problems. Teachers will also be asked to participate in a brief interview that should last approximately 15 minutes.

The following table shows a proposed **general timeline** assuming 2 schools participate. It is **flexible** and can be adjusted to work with the school's schedule.

Expected Date	Activity	Approximate Duration
November	Molly submits IRB proposal	4 weeks to hear back
January	Researcher gives teachers letters of consent to participate	1-2 weeks to return consent
January	Teachers complete Pretests (Researcher gives and collects all data)	Approximately 5 minutes per student
January - March	<i>Calmer Choice</i> intervention at School 1, led by <i>Calmer Choice</i> instructor	8 weeks (20 minutes 2x/week; 16 sessions total)
March	Teachers given Posttests	1 -2 weeks to complete (again about 5 minutes per student)
March- May	<i>Calmer Choice</i> intervention begins at second school	8 weeks (20 minutes 2x/week; 16 sessions total)
May - June	Researcher conducts individual interviews with teachers; shares de-identified data with schools	Interviews will be approximately 10-15 minutes long

APPENDIX B

CONSENT MATERIALS

University of Massachusetts Amherst **PARENT CONSENT**

Exploring the Effectiveness of a Mindfulness-Based Social-Emotional Learning Program on Kindergarten Students' Risk for Social, Academic, and Emotional Problems

Molly Alvin and Sara Whitcomb, Ph.D., from the College of Education at the University of Massachusetts Amherst are conducting a research study with kindergarten classrooms in the Dennis-Yarmouth Regional School District that will receive the *Calmer Choice* program this school year. Your child's teacher will be completing a brief survey, described below, and we are asking permission to use the survey scores for research. We would like to analyze that data to learn more about the effectiveness of the program. **If you want your child's score to be included in the study, you do not have to do anything further – thank you for your help.**

The following is more information about the study.

Why is this study being done?

The purpose of this study is to explore the effectiveness of the *Calmer Choice* program. Specifically, this study is examining if there are any differences between teacher's ratings of students' social, academic, and emotional behavior after participating in the program, compared to students who have not yet participated in the program. This study serves to gather data to inform future use of social-emotional learning programs.

What will happen in this research study?

Your child will not be asked to do anything. Teachers will answer 19 brief questions about each student. Questions will be about students' social, academic, and emotional behavior. Teachers will complete these brief surveys for each student at two time points. This information will help us better understand if the program had a broader impact on your child's wellbeing from the teacher's perspective. De-identified demographic information such as student gender will also be collected. To assess the fidelity of the *Calmer Choice* program, some of the lessons will be observed, with the researcher visiting each classroom to observe the instructor and which *Calmer Choice* lesson components were addressed during the session. Students will not be directly observed.

How long will the research take place?

This research study will begin in January 2017 and end in June 2017.

Are there any potential risks from participating in this study?

There are no perceived risks, however it is possible that your child may be uncomfortable with an unfamiliar adult visiting some of the lessons. The observer will arrive before the lesson begins so that students can become familiar with their presence in the room. Students and teachers will be assured that the observation is of the *Calmer Choice* lessons, and not to “grade” students. There is minimal risk for breach of confidentiality. We have outlined steps to document and minimize any potential risk in our permission forms, and in our data collection procedures.

Are there any potential benefits?

Your child may not directly benefit from their score being used in this study. However, all data will be shared with your child’s teacher and they may use them to make instructional changes to meet your child’s needs and improve instruction.

Will my child receive compensation for participating?

There is no compensation for participating in this study.

How will information about my child’s participation be kept confidential?

Any information that is obtained in connection with this study and that can identify your child will remain confidential. It will be disclosed only with your permission or as required by law. The following procedures will be used to protect the confidentiality of your child’s study records (assessment scores): The researchers will keep all study records, including any codes to your data, in a secure location at the University of Massachusetts Amherst. Research records will be labeled with a code. A master key that links names and codes will be maintained in a separate and secure location. The master key will be destroyed after the close of the study. All electronic files containing identifiable information will be password protected through a HIPPA/FERPA compliant online storage system. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and participants will not be identified in any way in any publications or presentations.

What are my and my child’s rights if I choose not to take part in this study?

- Whatever decision you make, there will be no penalty to you or your child, and no loss of benefits to which you or your child were otherwise entitled.
- Your child’s grade will not be affected if they do or do not participate in this study.

Who can I contact if I have questions about this study?

- **The research team:**

If you have any questions, comments or concerns about the research, you can talk to the one of the researchers. Please contact: Molly Alvin, malvin@educ.umass.edu or Dr. Sara Whitcomb, swhitcomb@educ.umass.edu, 413-545-6904.

- **UMass Amherst Human Research Protection Office (HRPO):** If you have questions about your child's rights while taking part in this study, or you have concerns or suggestions and you want to talk to someone other than the researchers about the study, please call the HRPO at (413) 545-3428 or email humansubjects@ora.umass.edu

You can keep this information for your records.

If you want your child's score to be included: no further action is necessary on your part. We appreciate your help with this study.

If you DO NOT want your child's score to be included: please sign and return the following form to the school to let them know you do not want your child's score included in the study.

Thank you for your consideration of this study.

If you want your child's score to be included: no further action is necessary on your part. We appreciate your help with this study.

If you DO NOT want your child's score to be included: please sign below and return this to the school to let them know you do not want your child's score included in the study.

I _____ DO NOT want the score for my child
Parent/Guardian Name (printed)

_____ to be included in the UMass study.
Child's Name (printed)

I understand there is no penalty of any kind for choosing that my child's score not be included.

Parent Signature

Date

Child's Teacher's Name

Child's School Name

University of Massachusetts Amherst
TEACHER PERMISSION TO PARTICIPATE IN RESEARCH

Exploring the Effectiveness of a Mindfulness-Based Social-Emotional Learning Program on Kindergarten Students' Risk for Social, Academic, and Emotional Problems

Molly Alvin and Sara Whitcomb, Ph.D., from the Student Development Department in the College of Education at the University of Massachusetts Amherst (UMass Amherst) are conducting a research study. You were selected as a possible participant in this study because all kindergarten classroom teachers in your district will receive the *Calmer Choice* program later this school year, and are eligible to participate. Your participation in this research study is voluntary.

Why is this study being done?

The purpose of this study is to determine any potential benefits for students who participate in the *Calmer Choice* program. Specifically, this study is examining if there are any differences between teacher's ratings of students' social, academic, and emotional behavior after participating in the program, compared to students who have not yet participated in the program. This study serves to gather data to inform future use social-emotional learning programs that include mindfulness with kindergarten students.

What will happen if I agree to take part in this research study?

If you agree to participate in this study, you will be asked to complete a brief screening form about each student's behavior. You will be asked to answer 19 brief questions about each student who participates. Questions will be about students' social behavior, academic behavior, and emotional behavior. These forms will take about 5 minutes per student to complete, and you will be asked to complete the brief survey for each student participant at two time points. This form will help us better understand if the *Calmer Choice* lessons had a broader impact on your students' wellbeing.

To assess the fidelity of the *Calmer Choice* program, some of the sessions will be observed, with the researcher visiting each classroom to observe which *Calmer Choice* lesson components were addressed during the session.

We would also like to ask you to participate in a brief follow-up interview with the research staff at the end of the study, to ask about the program and what went well and what could be improved. This should take approximately 15 minutes and with your permission, the interview will be audio-recorded. Audio files will be uploaded and saved to a HIPPA secure database, and then deleted from the recorders. Once the data is transcribed, audio files will be deleted.

How long will I be in the research study?

This research study will begin in January 2017 and end by June 2017.

Are there any potential risks or discomforts that might result from participating in this study?

There are no anticipated risks or discomforts from participation in this study. It is possible you or your students may experience some discomfort in having an unknown adult present to observe some *Calmer Choice* lessons. No data will be used to evaluate your performance as a teacher. There is minimal risk for breach of confidentiality. We have outlined steps to document and minimize any potential risk in our permission forms, and in our data collection procedures.

Are there any potential benefits if I choose to participate?

You may not directly benefit from being in this study. Your students may benefit from learning social-emotional skills and mindful awareness through the *Calmer Choice* program. Your participation may help improve instruction to meet your child's needs, as well as help improve the instruction of other children in future years.

What other choices do I have if I do not participate?

You will not face any negative consequences for declining to participate in this study. Alternatives can be discussed with your principal.

Will I receive compensation for participating?

Teachers will receive a \$50 gift-card to thank you for your time and participation. You will also receive a summary of the data based on the measures you complete after the *Calmer Choice* program takes place.

How will my information and my students' information be kept confidential?

Any information that is obtained in connection with this study and that can identify you or your student will remain confidential. It will be disclosed only with your permission or as required by law. The following procedures will be used to protect the confidentiality of you and your students' records (assessment scores):

The researchers will keep all study records, including any codes to your data, in a secure location at the University of Massachusetts Amherst. Research records will be labeled with a code. A master key that links names and codes will be maintained in a separate and secure location. The master key will be destroyed after the close of the study. All electronic files, including spreadsheets and database information containing identifiable information will be password protected through a HIPPA/FERPA compliant online storage system. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and participants will not be identified in any way in any publications or presentations.

What are my rights if I take part in this study?

- You can choose whether or not you want to participate in this study, and you may withdraw your permission at any time.
- Whatever decision you make, there will be no penalty to you or your students, and no loss of benefits to which you or your students were otherwise entitled.
- You may refuse to answer any questions that you do not wish to answer and still remain in the study.

Who can I contact if I have questions about this study?

- **The research team:** If you have any questions, comments or concerns about the research, you can talk to the one of the researchers. Please contact: Molly Alvin, malvin@educ.umass.edu, 508-237-2965; or Dr. Sara Whitcomb, swhitcomb@educ.umass.edu, 413-545-6904.
- **UMass Amherst Human Research Protection Office (HRPO):** If you have questions about your child’s rights while taking part in this study, or you have concerns or suggestions and you want to talk to someone other than the researchers about the study, please call the HRPO at (413) 545-3428 or email humansubjects@ora.umass.edu

You will be given a copy of this information to keep for your records.

Permission for Participation

Please select a box:

YES, I give permission to be included in this study.

I do not give permission to participate.

Permission for Audio-Recording

YES, I give permission for my interview to be audio-recorded.

I do not give permission to be audio-recorded.

SIGNATURE OF PARTICIPANT

Name of Participant

Signature of Participant

Date

University of Massachusetts Amherst

**CALMER CHOICE INSTRUCTOR
PERMISSION TO PARTICIPATE IN RESEARCH**

Exploring the Effectiveness of a Mindfulness-Based Social-Emotional Learning Program on Kindergarten Students' Risk for Social, Academic, and Emotional Problems

Molly Alvin and Sara Whitcomb, Ph.D., from the Student Development Department in the College of Education at the University of Massachusetts Amherst (UMass Amherst) are conducting a research study. You were selected as a possible participant in this study because you will be teaching *Calmer Choice* lessons to kindergarten classrooms in the Dennis-Yarmouth Regional School District. Your participation in this research study is voluntary.

Why is this study being done?

The purpose of this study is to determine any potential benefits for students who participate in the *Calmer Choice* program. Specifically, this study is examining if there are any differences between teacher's ratings of students' social, academic, and emotional behavior after participating in the program, compared to students who have not yet participated in the program. This study serves to gather data to inform future use social-emotional learning programs that include mindfulness with kindergarten students.

What will happen if I agree to take part in this research study?

If you agree to participate in this study, you will be asked to complete a brief check-list after teaching each lesson. The questions will only take approximately 2 minutes, and will ask whether or not certain components of the lesson were implemented.

To assess the fidelity of the *Calmer Choice* program, some of the sessions will be observed, with the researcher visiting each classroom to observe which *Calmer Choice* lesson components were addressed during the session.

We would also like to ask you to participate in a brief follow-up interview with the research staff at the end of the study, to ask about the program and what went well and what could be improved. This should take approximately 15 minutes, and with your permission, the interview will be audio-recorded. Audio files will be uploaded and saved to a HIPPA secure database, and then deleted from the recorders. Once the data is transcribed, audio files will be deleted.

How long will I be in the research study?

This research study will begin in January 2017 and end by June 2017.

Are there any potential risks or discomforts that might result from participating in this study?

There are no anticipated risks or discomforts from participation in this study. It is possible you may experience some discomfort in having an unknown adult present to

observe some *Calmer Choice* lessons. No data will be used to evaluate your performance as an instructor. There is minimal risk for breach of confidentiality. We have outlined steps to document and minimize any potential risk in our permission forms, and in our data collection procedures.

Are there any potential benefits if I choose to participate?

You may not directly benefit from being in this study. Your participation may help improve implementation of *Calmer Choice*.

What other choices do I have if I do not participate?

You will not face any negative consequences for declining to participate in this study.

Will I receive compensation for participating?

There is no compensation for participating.

How will my information be kept confidential?

Any information that is obtained in connection with this study and that can identify you or the students you teach will remain confidential. It will be disclosed only with your permission or as required by law. The following procedures will be used to protect the confidentiality of you and the students' records (assessment scores):

The researchers will keep all study records, including any codes to your data, in a secure location at the University of Massachusetts Amherst. Research records will be labeled with a code. A master key that links names and codes will be maintained in a separate and secure location. The master key will be destroyed after the close of the study. All electronic files, including spreadsheets and database information containing identifiable information will be password protected through a HIPPA/FERPA compliant online storage system. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and participants will not be identified in any way in any publications or presentations.

What are my rights if I take part in this study?

- You can choose whether or not you want to participate in this study, and you may withdraw your permission at any time.
- Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled.
- You may refuse to answer any questions that you do not wish to answer and still remain in the study.
- You may still participate in the interview if you chose not to be audio-recorded.

Who can I contact if I have questions about this study?

• **The research team:**

If you have any questions, comments or concerns about the research, you can talk to the one of the researchers. Please contact:

Molly Alvin, malvin@educ.umass.edu, 508-237-2965; or Dr. Sara Whitcomb, swhitcomb@educ.umass.edu, 413-545-6904.

- **UMass Amherst Human Research Protection Office (HRPO):** If you have questions about your child's rights while taking part in this study, or you have concerns or suggestions and you want to talk to someone other than the researchers about the study, please call the HRPO at (413) 545-3428 or email humansubjects@ora.umass.edu

You will be given a copy of this information to keep for your records.

Permission for Participation

Please select a box:

YES, I give permission to be included in this study.

I do not give permission to participate.

Permission for Audio-Recording

YES, I give permission for my interview to be audio-recorded.

I do not give permission to be audio-recorded.

SIGNATURE OF PARTICIPANT

Name of Participant

Signature of Participant

Date

APPENDIX C
PROPOSED TIMELINE

Expected Date	Activity	Approximate Duration
November 2016	Dissertation Committee Reviews Proposal and Meets	2-3 weeks
September - October	Dennis-Yarmouth schools contacted and invited	(will offer to come talk to teachers to explain study – 30 minutes)
November	Submit IRB proposal	Up to 4-6 weeks to be approved
January	Parents, teachers and instructors given letters of consent; meeting with instructor(s)	1-2 weeks to return consent
January	Teachers complete Pre-tests at both/all schools	(approximately 5 minutes per student)
January - March	<i>Calmer Choice</i> intervention at School 1 and 2; 5 observations of treatment integrity; instructors complete fidelity checklists	8 weeks (20 minutes 2x/ week; 16 sessions total)

March	Teachers complete Post-tests	1 -2 weeks
March- May	<i>Calmer Choice</i> intervention begins at School 3	8 weeks (20 minutes 2x/week; 16 sessions total)
May - June	Individual interviews with teachers and with <i>Calmer Choice</i> Instructors	Approximately 15 minutes for each interview

APPENDIX D

SCOPE AND SEQUENCE OF CALMER CHOICE LESSONS

- Lesson 1 *A Very Good Place to Start...* (Introduction to mindful awareness)
- Lesson 2 *Every Breath You Take: Finding an Anchor* (Introduction to mindful breathing)
- Lesson 3 *Oh, Gotta Love That Brain!* (Introduction to our brain)
- Lesson 4 *Noticing, Noticing, Noticing!* (Paying attention on purpose.)
- Lesson 5 *Mindful Eating*
- Lesson 6 *Can I have your Attention, Please.... Focus*
- Lesson 7 *Gratitude - What Makes Us Really Happy*
- Lesson 8 *Hey, I Was Just Thinking...* (Thought awareness)
- Lesson 9 *It's All About Perspective* (Perspective taking)
- Lesson 10 *Is That Glass Half Empty or Half Full?* (Power of optimism and positive thinking)
- Lesson 11 *Emotion—Surf's Up* (Introduction to awareness of emotions)
- Lesson 12 *E-motions.... Energy in motion...Riding the Wave...* (Emotions are transitory and awareness gives us choice)
- Lesson 13 *Finding Courage... Finding Calm* (Awareness of stress)
- Lesson 14 *Bodies in Motion* (Mindful movement)
- Lesson 15 *Mindfully Meeting "Prickly Mind"* (Noticing challenging emotions)
- Lesson 16 *Putting It All Together* (Review of lessons)

APPENDIX E

TREATMENT INTEGRITY

For Calmer Choice Instructors, teaching students in grade K, to complete after each lesson:

Question	Yes	No
Did you deliver the lesson as it was planned?		
Did you begin the lesson with a mindful moment?		
Did you engage students in an activity?		
Did you practice mindful awareness sometime during the lesson?		
Did you try to include all students and engage them in the lesson?		
Did you connect the activities to neuroscience?		
Do you feel that the students were interested and engaged for most of the lesson?		
Do you feel that the lesson went well overall, and that you were connected to students?		

APPENDIX F
SOCIAL VALIDITY

Questions for interviews with **kindergarten teachers**:

- Were you satisfied with the Calmer Choice program?
- Do you think it is feasible/ possible to teach Calmer Choice to kindergarten students?
- Did you enjoy the Calmer Choice lessons?
- Do you think your students enjoyed the lessons?
- Do you think there are any benefits to having this program implemented in kindergarten? If yes, in what ways?
- Do you perceive any improvements in children's academic, emotional, or social behavior?
- How do you think Calmer Choice is of value, if at all?
- Do you perceive any adverse effects?
- Do you have any recommendations for Calmer Choice?
- Is there anything else you would like to say about teaching mindfulness at your school?

Questions for interview with **instructors**:

- Do you think it is feasible/ possible to teach Calmer Choice to kindergarten students?
- What was challenging? (Can you speak about the process of teaching?)
- Did you learn anything about teaching mindfulness to kindergarten?
- Do you perceive any benefits to teaching mindfulness in kindergarten?
- Do you perceive any adverse effects?
- What suggestions do you have for future lessons or research related to mindfulness in kindergarten?
- Is there anything else you would like to say?

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