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Mindful Matters: Addressing Barriers To Classroom-Based Mindfulness

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ABSTRACT

MINDFUL MATTERS: ADDRESSING BARRIERS TO CLASSROOM-BASED MINDFULNESS

A growing body of research suggests that incorporating classroom-based mindfulness interventions in elementary schools is associated with improvements in student behavior, self-regulation, and measures of mental health. However, the adoption of teacher-led mindfulness programs in California's public schools has not been widely embraced. This doctoral project explored the impact of an educational intervention on pre-service teachers' perceptions, attitudes, and intentions to implement mindfulness interventions in their classrooms. A brief educational intervention and website resource were provided to multidisciplinary teaching credential students in a 2-year graduate credential program. Participants completed a pre- and post-intervention survey to evaluate their intentions to implement mindfulness practices, as well as their perceptions about the acceptability, reasonableness, and effectiveness of incorporating mindfulness interventions in the classroom. Participants' pre- to post-intervention scores on measures of attitudes about mindfulness and intentions to implement mindfulness interventions increased significantly. Older participants (ages 25-34) demonstrated greater score increases on the measure of attitudes about mindfulness than younger participants (ages 20-24). Previous mindfulness experience was associated with higher pre-intervention scores on a measure of participants' intentions to implement mindfulness practices; and students with no previous mindfulness experience demonstrated greater pre- to post-intervention increases in scores on this measure. These results indicate that exposure to

mindfulness concepts, practices, and resources may increase willingness of pre-service teachers to adopt these practices in their classrooms.

Keywords: mindfulness, mental health, wellness, elementary, education, teacher-led, social-emotional learning

Kirsten Munk
May 2020

MINDFUL MATTERS: ADDRESSING BARRIERS TO
CLASSROOM-BASED MINDFULNESS

by
Kirsten Munk

A project
submitted in partial
fulfillment of the requirements for the degree of
Doctor of Nursing Practice
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Doctor of Nursing Practice
May 2020

APPROVED

For the California State University, Northern Consortium
Doctor of Nursing Practice:

We, the undersigned, certify that the project of the following student meets the required standards of scholarship, format, and style of the university and the student's graduate degree program for the awarding of the Doctor of Nursing Practice degree.

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Dedication

This project is dedicated to the loving memory of my dad, David Olson, who instilled in me the capacity to recognize both the suffering and the potential in others, the very heart of my nursing practice.

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CHAPTER 1: INTRODUCTION

Unaddressed mental health needs are one of the most concerning issues impacting school-age children. The Centers for Disease Control and Prevention (CDC) estimate that 13% to 20% of children experience a mental health disorder in any given year (Perou et al., 2013). Data from the latest California Healthy Kids survey indicate that a much larger percentage of students experience subclinical or undiagnosed symptoms of depression and anxiety (California Department of Education [CDE], 2018). According to the survey, 24% of seventh graders and 32% of eleventh graders experience chronic sadness/hopelessness (CDE, 2018). This issue has not gone unnoticed by school administrators. More than 75% of California's K-12 school principals recognize social, emotional, and mental health as a moderate or severe problem within their own schools (Kaufman et al., 2016).

Mental health disorders (including anxiety and depression) are associated with substance use, risk-taking behaviors, difficulties in peer relationships, and problems at school and home. Mental illness is also a risk factor for suicide, the second leading cause of death for children ages 12 to 17 years (Perou et al., 2013). Suicide risk has climbed in the pediatric population over the last several years, with emergency room visits for suicidal ideation and suicide attempts doubling between 2007 and 2015 (Burstein, Agostino, & Greenfield, 2019). Despite the high numbers of youth who are likely to experience mental health disorders, nearly 80% of children between the ages of 6 to 18 years with a mental health disorder will not receive treatment (Coles et al., 2016). Unmet mental health needs are even more prevalent in children living in poverty, particularly those engaged

with the child welfare system, who are simultaneously more likely to experience mental health issues and less likely to receive adequate care (Ames, 2007).

Schools have long taken a reactive approach to address student mental health concerns; intervening only after mental health issues are identified as having a significant impact on individual students' disciplinary status, interpersonal relationships, or academic achievement. While more than 80% of California principals report using prevention and early intervention strategies in their schools, these activities tend to be directed at early identification, support, and referral for students identified with social, emotional, and mental health issues (Kaufman et al., 2016). School mental health staff are often overwhelmed by the high volume of student needs, particularly given that a large percentage of their time is devoted to administrative tasks (Green et al., 2013). School counselors (whose responsibilities may also include preparing student schedules, addressing attendance issues, and providing vocational guidance) and school psychologists (who are often responsible for a high volume of special education assessments) are only able to provide limited support, primarily aimed at students with the most significant needs. The result is that many students' mental health and wellness needs are not being met, or even acknowledged, at school. Child and adolescent mental health is a large and complex issue, requiring multiple levels of intervention. Innovative, large-scale primary prevention strategies are critical to a comprehensive approach.

A meta-analysis by Kallapiran, Koo, Kirubakaran, and Hancock (2015) indicated that mindfulness-based therapy strategies are effective in reducing stress, anxiety, and depressive symptoms in children and adolescents in the therapeutic setting. A number of studies have also been conducted to explore the benefits of mindfulness in the classroom setting. There is growing evidence that

incorporating mindfulness practices in the classroom has beneficial effects on students' self-regulation, emotional regulation, classroom behaviors, cognitive function, and academic achievement (Bergen-Cico, Razza, & Timmins, 2015; Harpin, Rossi, Kim, & Swanson, 2016; Waters, Barsky, Ridd, & Allen, 2014), yet few schools have adopted mindfulness strategies as part of their routine. Teacher-identified barriers to social-emotional learning interventions (like mindfulness) include lack of time and inadequate training and knowledge (Enrico, 2017).

Purpose of the Project

Mindfulness education has the potential to provide lifelong mental health benefits for all school-age children. However, implementation of these strategies at the classroom level requires the “buy-in” of teachers. During the course of this project, the researcher provided an educational intervention and web-accessible tools for classroom-based mindfulness interventions to pre-service teachers, to address the identified barriers of lack of time and training in mindfulness-based social-emotional strategies. The purpose of this project was to determine the impact of these interventions on pre-service teachers' perceptions of, and intentions to implement, evidence-based primary prevention mindfulness strategies in the classroom.

Theoretical Underpinnings: Neuman's Systems Model

The Neuman systems model was chosen as a guiding framework for this project because of its focus on the attainment and maintenance of wellness (Whetsell, Gonzalez, & Moreno-Ferguson, 2018). This model provides an ideal context for exploring mindfulness interventions as a means for improving mental health and wellness. The model was introduced by Betty Neuman in 1970

primarily as a basis for nursing education at University of California, Los Angeles, where she served as a faculty member (Neuman, 2011). As its name implies, Neuman's model is rooted in systems theory, which emphasizes a wholistic perspective of the system (client or organization) and the dynamic relationships between its parts within the context of the environment (Neuman, 2011). Since its inception, the model has evolved beyond a tool for nursing education and has been widely used in clinical practice, research, and administration (Whetsell et al., 2018). It has guided administrative initiatives and patient care decisions at hospitals around the world. This model's legitimacy has been well-established through the derivation of multiple middle-range theories (Kolcaba & Kolcaba, 2011).

Assumptions of the Theory

Neuman's model is guided by a number of fundamental assumptions about the interrelationships between the client and environment, as well as the nurse's role in promoting health and wellness. Neuman (2011) asserts that each system (individual or group) is unique and functions dynamically as it interacts with the environment. Many *stressors* exist in the environment (e.g., interpersonal conflicts, work stress, infectious diseases) that can impact the client to varying degrees at any given time, depending on the interactions with five basic variables: *physiological, psychological, sociocultural, developmental, and spiritual* (Neuman, 2011). Every individual has developed a baseline level of response to the environment (*normal line of defense*) that can be used to measure changes in their level of wellness (Neuman, 2011). However, when the flexible line of defense cannot protect the client from a particular stressor, the stressor "breaks through," producing a reaction (or potential for reaction) that is dependent on the

previously mentioned five variables (e.g., a child experiencing the death of a family member [stressor] experiences depressive symptoms [reaction]) (Neuman, 2011). Wellness exists on a continuum, dependent on the energy available to maximize stability and the dynamic interplay of the five variables (Neuman, 2011). Every client has inherent *lines of resistance* that allow them to regain their prior state of wellness, or improve upon it, following reaction to a stressor (Neuman, 2011). Nursing interventions aimed at *primary prevention* involve health promotion, to reduce risk factors associated with stressors and prevent reaction (e.g., health education) (Neuman, 2011). *Secondary prevention* involves treatment to reduce the impact following a stress reaction (e.g., medication to treat acute mental health symptoms) (Neuman, 2011). *Tertiary prevention* is concerned with facilitating recovery and moving the client back toward their baseline level of wellness (e.g., ongoing therapy) (Neuman, 2011).

Theory Concepts and Relationships

The Neuman systems model recognizes the interplay between stress and systematic feedback loops; taking into consideration that the client is simultaneously affected by and affecting the environment, and the individual is integrated into family and community groups (Whetsell et al., 2018). Neuman's model emphasizes a wholistic approach to assess the impact of stressors and develop a plan of care that facilitates optimal client wellness (Whetsell et al., 2018).

Neuman's model considers each client as an individual system (see Figure 1). The heart of the system, called the *basic structure* or *central core*, represents the system's energy resources and encompasses the five system variables: physiological, psychological, sociocultural, developmental, and spiritual (Neuman,

2011). These system variables interact with the others and the environment, and each variable must be considered as part of the whole (Neuman, 2011). Also within the core of the system are basic survival factors, homeostatic factors, and common human characteristics (Neuman, 2011).

Figure 1. Neuman Systems Model

Surrounding the central core are *boundary lines* that act as protective barriers and contain factors related to the five system variables. These boundary lines include the *flexible line of defense*. This outer boundary functions to prevent stressors from invading the system (Neuman, 2011). It is a dynamic structure that expands and contracts according to internal and external environmental conditions (e.g., disruptions to sleep patterns, immune function, available nutrition) and the presence of stressors (Neuman, 2011).

The normal line of defense is the next boundary line, located inside the flexible line of defense. It represents the client's typical level of health, adapted over time. It is the baseline for determining deviations in health and wellness

patterns (Neuman, 2011). When the flexible line of defense is compromised, stressors may invade the normal line of defense, eliciting a client reaction (Neuman, 2011). The normal line of defense is a dynamic structure, shaped by the system variables, previous stress responses, and coping strategies; it may adapt to deal with ongoing or repeated stressors over time (Neuman, 2011).

The *lines of resistance* form the innermost boundary line, protecting the central core. They are activated when an environmental stressor has invaded the normal line of defense (Neuman, 2011). Activation of this boundary mobilizes resources to support the central core, in an attempt to return the system to homeostasis (Neuman, 2011). The success of reversing the stress reaction at this level determines whether the system can regenerate or faces energy depletion by the invading stressor (Neuman, 2011). Feedback and interaction take place continuously across all the lines of defense, as the system attempts to respond and stabilize to optimize wellness (Neuman, 2011).

The *environment* encompasses both internal and external factors which influence system integrity and overall wellness. It also includes the *created environment*, a function of the unconscious mind which can mobilize system variables to return the system to a stable state (Neuman, 2011). However, the created environment is subject to distortions, which can decrease available energy stores and leave the system more vulnerable to invasion by stressors (Neuman, 2011). Examples of distortions in the created environment include unfounded fear or anxiety that preoccupy the mind of the client and can lead to exhaustion of mental and physical resources (Neuman, 2011).

Stressors are stimuli within the internal and external environment that have the potential to destabilize the system (Neuman, 2011). Stressors themselves are considered neutral, as their capacity to create a stress response is dependent on the

client's perceptions of, and interaction with, the stressor. Neuman (2011) emphasizes the importance of considering the whole system and all stressor interactions at any given time since the presence of multiple stressors can impact the client's resistance to those stressors (Neuman, 2011).

The Impact of Mindfulness on the Individual

According to Neuman (2011), "the major goal for nursing is to reduce stressor impact (whether actual or potential) and to increase client resistance (p. 29)." Therefore, significant emphasis is placed on primary prevention approaches, including health education, to strengthen and expand the flexible line of defense. Incorporating mindfulness strategies in the classroom setting represents a primary prevention approach. The goal of this intervention is to reduce the impact of stressors and the associated potential for reactivity and system destabilization for all students. Mindfulness has the potential to reduce stress and reactivity on multiple levels for the individual, primarily through changes in the physiological, psychological, and spiritual variables, as well as the created environment, as described by Neuman (2011).

The physiological and psychological impact of mindfulness is evident in the result of neuroimaging research showing changes in both the structure and function of the brain. Singleton et al. (2014) found increases in gray matter in areas of the brain associated with neurotransmitter modulation in adults receiving mindfulness-based instruction; with greater physiologic changes in gray matter resulting in more significant improvements in psychological well-being. A meta-analysis by Fox et al. (2014) revealed that meditation was consistently associated with structural changes in the brain in areas involving executive function, including those associated with meta-awareness, introspection, body awareness,

memory, processing, self-regulation, and emotional regulation. Multiple studies exploring brain changes associated with MBSR have demonstrated changes in activation, neural activity, and increases in gray matter in the prefrontal cortex and other areas of the brain associated with attention, emotion regulation, perspective-taking, and self-referential processing (relating external information to the self) (Gotink, Meijboom, Vernooij, Smits, & Hunink, 2016).

One area of emerging study in neuroscience is the impact of, and mitigating factors for, adverse childhood experiences (ACES). ACES, including abuse, neglect, exposure to violence or mental illness, economic hardship, and parental absence are linked with psychological symptoms as well as physiological changes in the brain and body in response to toxic stress (Ortiz & Sibinga, 2017). These types of experiences are far too common, with 69% of respondents to a CDC survey reporting at least one ACE and 9% reporting up to five of these experiences (Ortiz & Sibinga, 2017). Greater numbers of ACES are associated with significant health risks, including mental health disorders, heart disease, cancer, and autoimmune and inflammatory disease; as well as health behaviors associated with poorer health outcomes, such as smoking, substance use, and engaging in risky sexual behaviors (Ortiz & Sibinga, 2017)

Bethell et al. (2016) examined data from the 2011 National Center for Health Statistics, the 2007 National Health Interview Survey (NHIS), the NHIS Child Complementary and Alternative Medicine (CAM) Supplement, and the 2008 Medical Expenditure Panel Survey to explore the relationship between ACES and emotional, mental, or behavioral (EMB) conditions in children ages 2 to 17. Prevalence of EMB conditions was higher for children with ACES, and the effect of this association was stronger with higher ACE scores, younger age, and those living in poverty (Bethell et al., 2016). Children who lacked resiliency and

experienced multiple ACES were 6.6 times more likely to have EMB conditions. Children with two or more ACES were also more likely to be disengaged from school or have frequent absences (Bethell et al., 2016).

By promoting self-regulation, improved coping, and resiliency, mindfulness can reduce the lifelong impacts of trauma, and is considered to be a key evidence-based intervention for mitigating the impact of ACES (Ortiz & Sibinga, 2017). While mindfulness is particularly suited as a trauma-informed practice, Ortiz and Sibinga (2017) assert that the benefits are apparent in the general population, regardless of trauma exposure. Mindfulness may be particularly valuable as an intervention for children, serving as a buffer to the negative impact of stress and trauma into adulthood (Ortiz & Sibinga, 2017).

Additional psychological benefits associated with classroom-based mindfulness practices include greater empathy, perspective-taking, optimism, emotional control, school self-concept, and mindfulness (Schonert-Reichl et al., 2015); as well as significantly decreased depressive symptoms, stress, and anxiety (Kallapiran et al., 2015). Neuman's conceptualization of spirituality is broad and encompasses how an individual ascribes meaning to their life (with or without religion), their sense of self, and relationships to others and the world around them (Neuman, 2011). Classroom-based mindfulness can bolster the spiritual variable through increased self-awareness and self-acceptance, as well as greater awareness of the self in relation to others (Cheek, Abrams, Lipschitz, Vago, & Nakamura, 2017). Through enhancement of the physiological, psychological, and spiritual variables, classroom-based mindfulness strengthens the individual's flexible line of defense; mitigating perceptions of (and response to) the many stressors inherent in the school and home environments, securing greater system integrity, and improving overall mental health and wellness.

Additionally, the impact of mindfulness extends to the created environment. Mindfulness, as described by Kabat-Zinn (2003), “entails the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment (p. 145).” Mindfulness is, fundamentally, a self-reflective process that builds self-awareness. Becoming more self-reflective, self-aware, and self-accepting allows the individual to recognize and address distortions in the created environment, including unfounded anxiety, negative self-perceptions, and self-defeating behaviors that deplete energy resources and impede overall wellness.

The Interaction Between Student and School Environment

The CDC (2018) asserts that “schools play a critical role in promoting the health and safety of young people and helping them establish lifelong healthy behaviors.” One aspect of the CDC’s vision for improving student health and wellness is through the implementation of comprehensive health education, including programs to promote mental and emotional health and wellness (CDC, 2015). Many other nursing theories could be used to frame the educational or health behavior adoption aspects of a classroom-based mindfulness intervention program. However, Neuman's wellness-based systems model is uniquely suited to the relational complexities inherent in the school setting. The model provides an ideal lens for exploring the relationship between the mental health and wellness of individual students and the overall school climate; through a study of the interactions between the individual system (student) and the environment.

The focus of this DNP project was addressing pre-service teachers’ perceived barriers to teaching mindfulness strategies in the classroom. Therefore, it is important to consider the role teachers play as mediators of student stress

within the school setting. Martinez and Zhao (2018) found a significant decrease in office discipline referrals for middle school students participating in a school-based mindfulness intervention. Based on the reciprocal nature of the client (student) relationship to the environment (school system), inferences can be made about the impact of this intervention on student/teacher interactions and overall school climate. Students who benefit from mindfulness interventions provided at school, (with increased self-regulation skills and/or decreased mental health symptoms) display improved behavioral control and prosocial skills, requiring less disciplinary intervention and overall staff resources. Student behavioral issues and discipline are significant sources of stress for teachers (Collie, Shapka, & Perry, 2012). Therefore, a decrease in student behavioral issues is likely to be associated with an overall decrease in teacher and staff stress. Collie et al. (2012) found that teachers' perceptions about better student behavior and motivational levels not only had a negative correlation with teacher stress but were also associated with improved teaching efficacy and job satisfaction. Perceived efficacy correlates not only to teachers' effectiveness and well-being but also to students' success (Collie et al., 2012). Collie et al.'s (2012) research demonstrates the interrelationship between students and their school environment. Interactions and perceptions of teachers and students create a feedback loop that impacts the stress response for both groups. Interventions that decrease student stress may also result in decreased staff stress and improved overall school climate.

CHAPTER 2: LITERATURE REVIEW

Randomized Controlled Trials

Mindfulness and meditation have gained increasing attention as effective strategies for stress reduction and mental health treatment. In recent years, multiple randomized controlled trials (RCTs) have examined the impact of school-based mindfulness interventions on indicators of student mental health and wellness. A recent small RCT ($n = 52$) explored the impact of an 8-week mindfulness-based yoga instruction program on quality of life for third graders identified with symptoms of anxiety (Bazzano, Anderson, Hylton, & Gustat, 2018). Results from two self-report measures indicated that intervention and control groups improved over time, but students in the intervention group had significantly greater improvements in psychosocial and emotional quality of life scores over controls (Bazzano et al., 2018).

Fung et al. (2019) explored the effects of mindfulness training on mental health and emotional regulation in ninth graders ($n = 145$) with mild to moderate depression scores from three Los Angeles high schools. Students, who were predominantly Latino (41.6%), Asian (51.7%), and low-income were randomly assigned to a 12-week mindfulness intervention or waitlist (delayed treatment) control group (Fung et al., 2019). Data analyses of multiple self-assessment measures revealed significant reductions in internalizing problems and perceived stress in the immediate intervention group over waitlisted control (Fung et al., 2019). Both groups demonstrated significant decreases pre- to post-intervention in internalizing behaviors, externalizing behaviors, attention issues, and perceived stress; as well as improved emotion regulation over time (Fung et al., 2019). These improvements were maintained at 3-month followup (Fung et al., 2019).

Sibinga, Webb, Ghazarian, and Ellen (2016) conducted an RCT with all fifth to eighth graders ($n = 300$) at two Baltimore schools, with a student population that was predominantly African American and low-income, to determine the effect of mindfulness-based stress reduction (MBSR) on psychological functioning. Students were placed in MBSR (intervention) or a health topics course (active control) for the 12-week program, with data collected using multiple self-report surveys at baseline and post-intervention (Sibinga et al., 2016). Students in the intervention group self-reported significant improvements in symptoms of depression, self-hostility, somatization, negative affect, negative coping, rumination, and posttraumatic stress symptoms over those in the control group (Sibinga et al., 2016).

Few studies have explored the impact of classroom teacher-led mindfulness interventions. However, Bergen-Cico, Razza, and Timmins (2015) performed a small pilot RCT ($n = 144$) to examine changes in self-regulation of sixth graders with the introduction of integrated yoga and mindfulness instruction by a trained classroom teacher versus active control. This study was also unique, in that the time spent on intervention was minimal, approximately 12 minutes total per week (Bergen-Cico et al., 2015). The brief intervention yielded statistically significant improvements in self-reported long-term self-regulation measures over time in the intervention group, with decreases in self-regulation noted in the control group (Bergen-Cico et al., 2015).

In addition to mental health and wellness measures, some studies have explored the impact of mindfulness on measures of cognitive function and academic achievement. Schonert-Reichl et al. (2015) randomly assigned fourth and fifth graders ($n = 99$) to a general social responsibility program (control) or a social-emotional learning program with integrated mindfulness activities and

compared results for multiple measures of stress, executive function (EF), academic performance, and well-being and social functioning. While stress physiology cortisol findings (as measured by salivary cortisol) in this study were ambiguous, the intervention group showed significant improvements in a number EF, well-being, and prosocial measures; meanwhile, controls showed significant decreases in all social emotional & well-being measures (Schonert-Reichl et al., 2015). Although it was not statistically significant ($p = 0.07$), it is also worth noting that the math grades for students in the mindfulness intervention trended higher at the end of the year than those for the control group (Schonert-Reichl et al., 2015).

In another small RCT ($n = 218$), preschool students considered “at risk” for school failure from two schools serving primarily low-income, ethnically diverse families in Washington DC and Houston were randomly assigned to a 6-week mindfulness intervention, literacy intervention (active control), or a “business-as-usual” control group (Zelazo, Forston, Masten, & Carlson, 2018). While measures of theory of mind, teacher-rated behavior, and academic achievement did not differ significantly between groups, the mindfulness group showed significant improvement on measures of executive function over the business-as-usual group at post-intervention followup (Zelazo et al., 2018). A particularly notable finding of this study was the difference in between-groups rank order from pre-and post-intervention, with student rankings in executive function for the mindfulness group moving to the top of the class over time, the business as usual group moving to the lowest ranking, and the literacy group remaining steady (Zelazo et al., 2018).

Quach, Mano, and Alexander (2016) conducted an RCT to explore the relationship of mindfulness to working memory capacity (WMC). Participants (n

= 198) were primarily low-income, minority, female Hispanic adolescents at a large public middle school in Southern California. Students were placed in mindful meditation (intervention), hatha yoga (intervention), or regular physical education (control) over a four-week period. WMC was measured using a computerized test. Self-report scales were used to measure perceived stress, anxiety, and mindfulness at pre- and post-intervention. Mixed design analysis of variance revealed significant improvement in WMC from pre- to post-intervention in the mindfulness intervention group; with no significant difference in the other groups (Quach et al., 2016). Interestingly, while all groups showed decreases in anxiety and perceived stress over time, no significant between-groups differences were noted in these factors (Quach et al., 2016).

Mixed Methods Studies

Several mixed methods studies have contributed both to the mounting wealth of quantitative data supporting the use of mindfulness in schools, as well as providing rich contextual information about how students perceive their experiences with mindfulness and apply it to their daily lives. One mixed methods study incorporated a nonrandomized trial using a wait-listed control group to determine the impact of mindfulness training on domains of emotional well-being and meta-cognition in children ages 7-9 years old ($n = 71$) at three schools in the United Kingdom (Vickery & Edorjee, 2016). While the results of metacognition measures were somewhat ambiguous, due to disagreement between teacher and parent ratings, student self-measures indicated a large effect size for decreases in negative affect (a measure of well-being) for students participating in the intervention (Vickery & Edorjee, 2016). This study was somewhat unique, in that it used a classroom-based, teacher-led intervention by teachers trained in the use

of an evidence-based curriculum. Qualitative surveys completed by the children in the study indicated a high degree of acceptability of the intervention (Vickery & Edorjee, 2016).

Another mixed methods study included an RCT comparing self-assessment scores of mental health and affect for 6th grade students ($n = 101$) at an independent Quaker school for students placed in a classroom-based, teacher-implemented, mindfulness meditation intervention to those in an active control group (Britton et al., 2014). While there were significant improvements for both groups in all measures over time, significant between groups differences were not found, except in the areas of self-harm and suicidal ideation, which were significantly lower in the intervention group (Britton et al., 2014). Qualitative measures included in this study indicated that both teachers and students found the intervention feasible and acceptable; and ratings of engagement and perceived benefits were high (Britton et al., 2014).

Harpin, Rossi, Kim, and Swanson (2016) performed a mixed methods nonrandomized controlled pilot study examining the impact of mindfulness instruction (provided by a mindfulness teacher) on prosocial behaviors, emotional regulation, academic performance, and mindfulness in fourth graders ($n = 30$) who were primarily ethnic minorities (largely Hispanic) from low-income families. Although significant between group differences were not observed on self-report mindfulness measures, there were statistically significant within-group increases in the intervention group for prosocial behavior, emotional regulation, and teacher-reported academic achievement, with no significant changes reported in the control group (Harpin et al., 2016). Qualitative survey responses from teachers and students revealed positive experiences by students, and the teacher and

students reported using the techniques learned outside of class (Harpin et al., 2016).

Additional Quantitative Studies

A field trial intervention study by Black and Fernando (2014) explored the impact of mindfulness meditation on classroom behaviors of students ($n = 409$) in a public urban elementary (K-6) school (Black & Fernando, 2014). The students at the school were largely from low income families, with 83% qualifying for the free lunch program, and 95.7% classified as ethnic minorities. The mindfulness intervention was taught by mindfulness meditation teachers, with classroom teachers participating in the sessions along with their students. Significant improvements, per teacher ratings over time, were noted for behavior outcomes related to paying attention, self-control, participation, demonstrating respect for others, and overall behavioral scores; and these effects were maintained at 7-week followup (Black & Fernando, 2014). No significant differences were noted with increased sessions, with the exception of paying attention, which continued to improve (Black & Fernando, 2014).

Qualitative Studies

Butzer et al. (2017) examined 7th grade students' experience of a school-based yoga program and perceptions of the potential effects of the program on psychosocial well-being, using semi-structured one-on-one interviews with 16 randomly selected students. Students reported using acquired yoga skills in multiple different contexts (before bed, before a test, outside of class) (Butzer et al., 2017). They had positive opinions about yoga helping with stress, sleep, and relaxation; and expressed improvements in a number of social-emotional learning

skills, including self-management, self-awareness, and relationship skills (Butzer et al., 2017).

Another qualitative study by Dariotis et al. (2016), explored fifth and sixth grade students' (n = 22) experiences of stress and perceived changes in coping after participation in a 16-week school-based yoga mindfulness program at three schools in underserved urban areas. Data were collected in focus groups, via semi-structured interviews (Dariotis et al., 2016). Students reported applying strategies, including emotional regulation and prosocial stress response skills, learned in the mindfulness yoga program to managing stressors in the moment (Dariotis et al., 2016).

Strengths and Limitations

Multiple strengths have been identified in this body of research, including the fact that many of the current studies have utilized an RCT design and several have included active controls (Sibinga et al., 2016; Schonert-Reichl et al., 2015; Britton et al., 2014; Bergen-Cico et al., 2015). The interventions included in these studies have relied on the use of evidence-based curricula and validated measures (in many cases multiple measures) have been used for evaluation of outcomes (Quach et al., 2016; Sibinga et al., 2016; Schonert-Reichl et al., 2015). Another strength is the fact that, despite relative homogeneity of individual study populations, many recent studies have been conducted with minority and low-income populations, and students perceived as “at-risk” (Dariotis et al., 2016; Fung et al., 2019; Quach et al., 2016). Qualitative data support that interventions were typically well-received by students and teachers in terms of feasibility, acceptability, and utility (Britton et al., 2014; Dariotis et al., 2016; Harpin et al., 2016; Bergen-Cico et al., 2015).

A number of limitations were identified in terms of generalizability of results for the studies reviewed, including the fact that many studies rely exclusively on the results of self-report measures (Fung et al., 2019; Britton et al., 2014; Bergen-Cico et al., 2015). In studies that included evaluation by teachers or parents, evaluators were not generally blinded to intervention versus control groups and, in some instances, evaluators provided the intervention (Black & Fernando, 2014; Vickery & Edojree, 2017; Harpin et al., 2016). Additionally, most studies consisted of small and homogeneous student samples (Britton et al., 2014; Dariotis et al., 2016; Harpin et al., 2016; Bergen-Cico, 2015). Studies did not generally include discussion on how, or whether, fidelity was ascertained in regard to following the particular curriculum or intervention (Zelazo et al.; Bergen-Cico et al., 2015; Harpin et al., 2016). These limitations are consistent with previous findings from systematic reviews (Waters, Barsky, Ridd, & Allen, 2015; Zenner, Herrnleben-Kurz, & Walach, 2014).

Systematic Reviews and Meta-analyses

Klingbeil et al. (2017) conducted a meta-analysis of quantitative studies focusing on direct provision of mindfulness-based interventions (MBIs) to youth (in both clinical and non-clinical samples; school and non-school settings) ($n = 76$). The focus of this analysis was determining average effect sizes for a number of study domains, including mindfulness, attention, emotional and behavioral regulation, meta-cognition, and cognitive flexibility, academic achievement and school functioning, externalizing and internalizing behaviors, negative emotion and subjective distress, positive emotion and self-appraisal, physical health, social competence and prosocial behaviors (Klingbeil et al., 2017). The authors also sought to determine whether setting or dosage of the intervention had an impact on

effect size (Klingbeil et al., 2017). Overall, small positive treatment effects were observed across all study domains; with the single exception of mindfulness, which demonstrated moderate effect size increases (Klingbeil et al., 2017). Interestingly, slightly larger effects were noted at followup, for those studies that included a followup period (Klingbeil et al., 2017). Intervention setting and dosage were not found to have a significant impact on effect size (Klingbeil et al., 2017).

A recent systematic review by Kallapiran, Koo, Kirubakaran, and Hancock (2015) evaluated the quality and effectiveness of RCTs ($n = 15$) that employed MBIs in treatment of mental health problems in both clinical and nonclinical settings for children and adolescents, using standardized outcome measures for mental health symptoms of stress, anxiety, and/or depression. The quality of most studies included was determined to be medium to high according to Cochrane collaboration criteria (Kallapiran et al., 2015). However, one third were rated as poor quality and the presence of publication bias was identified (Kallapiran et al., 2015). Mindfulness-based stress reduction and mindfulness-based cognitive therapy interventions were found to be overall more effective in reducing stress, anxiety, and depression than other types of MBIs (Kallapiran et al., 2015). However, other mindfulness-based interventions demonstrated significant effectiveness over nonactive controls in reducing stress & anxiety in nonclinical populations (Kallapiran et al., 2015).

Another systematic review by Waters, Barsky, Ridd, and Allen (2015) examined the benefits and effectiveness of meditation in non-clinical school-based settings (Waters, Barsky, Ridd, & Allen, 2015). The included studies ($n = 15$) were school-based, published in a peer-reviewed journal, and used reliable, validated measures (Waters et al., 2015). Within these studies, the authors

identified 76 effects related to three outcome areas of interest: well-being, social competence, and academic achievement (Waters et al., 2015). In terms of improvement on measures of well-being, meditation generally resulted in small effect sizes (determined by Cohen's *d*), with transcendental meditation proving more effective (significant effect in 83% of studies) over mindfulness or other types of meditation (significant effects in 44% and 42% of studies, respectively) (Waters et al., 2015). Improved significance was associated with programs of longer duration (ie. greater than 24 weeks) and those that included more frequent practice; with multiple practice sessions per day resulting in significance in 67% of studies versus 40% for daily practice and 50% for weekly practice (Waters et al., 2015). Programs administered by the classroom teachers were also shown to be more consistently effective (75% significance) than those led by other instructors (30%) (Waters et al., 2015). Small effects were consistently shown for measures of social competence (Waters et al., 2015). Waters et al. (2015) concluded that evidence in the available studies was insufficient to determine the impact of classroom meditation on academic outcomes.

An exploratory meta-analytic review by Zenner, Herrnleben-Kurz, and Walach (2014) examined quantitative studies ($n = 24$) exploring the psychological impact of mindfulness-based interventions (MBIs) in the school-setting with students in first through twelfth grades. Zenner et al. (2014) provided comparative analyses based on types of mindfulness intervention, measures for data collection, and intervention feasibility and acceptability, as well as quantitative synthesis for effect sizes and heterogeneity in order to evaluate the quality of existing research and provide recommendations for future areas of study. Zenner et al. (2014) noted that MBIs have primarily been provided in the school setting by professional trainers, and most trainers were also involved as study authors. Few interventions

were actually provided by the classroom teacher, and not all teachers had previous mindfulness experience or training (Zenner et al., 2014). The overall weighted mean effect size for included studies was small to medium (Hedge's $g = 0.41$), and within-group heterogeneity was high (Zenner et al., 2014). Although Zenner et al. (2014) noted that the effect size may have been biased by the small sample sizes, further analysis of only studies with adequate sample size still showed a small effect ($g = 0.31$). Perceived acceptability of interventions was generally high. Based on these findings, Zenner et al. (2014) acknowledged that MBIs are a promising intervention in need of further study, including randomized control trials with larger sample sizes and mixed methods studies, using validated measures specific to the study population. Zenner et al. (2014) further posited that training teachers to deliver interventions in their classrooms would provide the most appropriate means for schoolwide adoption of these practices.

In a related systematic review, Fenwick-Smith, Dahlberg, and Thompson (2018) explored the implementation criteria and fundamental elements that lead to improved adherence and student engagement for universal school-based mental health interventions. The 11 studies included in the review focused on mental health promotion programs primarily geared toward building resiliency and protective factors that were implemented at the classroom, grade, or school level to children ages five to 12, and included a program evaluation (Fenwick-Smith et al., 2018). The importance of teacher involvement in interventions and the teachers' ability to adapt content according to the needs of the class emerged as keys to maintaining fidelity and student engagement (Fenwick-Smith et al., 2018).

Teacher-focused Studies

In addition to the many studies exploring the impact of mindfulness-based programs on school-aged children, multiple studies have also been aimed at examining mindfulness benefits for teachers. Klingbeil and Renshaw (2018) conducted a meta-analysis of case-control studies ($n = 29$) related to the provision of MBIs to pre-K through 12th grade teachers to determine overall treatment effect sizes and possible moderators of treatment effects. The average overall treatment effect for the 347 effect sizes included in the analysis was medium ($g = 0.601$, 95% CI) (Klingbeil & Renshaw, 2018). For measures of the therapeutic effect of mindfulness, a medium overall treatment effect was also found ($g = 0.444$) (Klingbeil & Renshaw, 2018). Effect sizes were also calculated for primary teacher outcomes, including: psychological well-being (small-to-medium effect; $g = 0.431$, 95% CI) and psychological distress ($g = 0.551$, 95% CI), which were statistically significant; and physiological indicators, classroom climate, and teacher practices, which were not statistically significant (Klingbeil & Renshaw, 2018). These results must be interpreted with some caution, as the study also determined likely publication bias (Klingbeil & Renshaw, 2018). Moderator findings were nonsignificant (Klingbeil & Renshaw, 2018).

Another systematic review of studies related to MBI interventions for teachers included both quantitative ($n = 10$) and qualitative ($n = 6$) studies (Hwang, Bartlett, Greben, & Hand, 2017). Quantitative results indicated significant improvements in teacher well-being, including reductions in stress and burnout, decreased cortisol levels, improvements in sleep quality, depression, and psychological distress (Hwang et al., 2017). Improvements were also noted in measures of teacher performance and student behavior (Hwang et al., 2017). Qualitative studies revealed several overarching themes, including the use of

mindfulness as a coping strategy in difficult situations, mindfulness as a means of changing one's relationship to experiences (including examining thoughts and perceptions prior to reacting), improving relationships (including those with students), and changing teaching practices (Hwang et al., 2017).

Emerson et al. (2017) provided a systematic review of studies involving teachers of children ages five to 18, which examined the effectiveness of MBIs in reducing teachers' stress and improving emotion regulation, self-efficacy, mindfulness, and self-compassion. Although included studies varied in terms of study quality measures, significant improvements in reported stress were reported in 60% of studies that examined this outcome, with small to large effect sizes (Emerson et al., 2017). Significant improvements in emotion regulation were reported in 63% of included studies, with a wide variance in effect sizes (Emerson et al., 2017). Effect sizes for self-efficacy and mindfulness also varied widely, with significant benefits found in 29% and 39% of study results, respectively (Emerson et al., 2017). Qualitative measures indicated improvements in mindfulness (particularly as a strategy for coping with stress), increased emotional awareness, decreased reactivity, and greater capacity for coping with negative emotions (Emerson et al., 2017).

Beers Dewhirst and Goldman (2018) conducted a mixed-methods pilot study examining the use of mindfulness practices by pre-service teachers. Participants (n = 20) received mindfulness training as part of a social emotional learning course in their Early Childhood Education program (Beers Dewhirst & Goldman, 2018). Quantitative measures did not demonstrate significant pre- or post-intervention changes in preservice teachers' self-rated wellbeing (Beers Dewhirst & Goldman, 2018). However, 90% of participants reported using the techniques outside of classtime, including when they were upset or dealing with

stressful situations, or when trying to fall asleep (Beers Dewhirst & Goldman, 2018). Sixty-five percent of participants also reported using mindfulness techniques with their students (Beers Dewhirst & Goldman, 2018).

Addressing the Research Gap

Multiple studies have explored the benefits of school-based mindfulness programs. Mindfulness interventions have demonstrated effectiveness in improving psychosocial and emotional outcomes (Bazzano et al., 2018; Sibinga et al., 2016; Schonert-Reichl et al., 2015; Vickery & Edojje, 2016; Britton et al., 2014; Harpin et al., 2016), perceived stress and coping (Fung et al., 2019; Dariotis et al., 2016; Butzer et al., 2017), classroom behavior (Black & Fernando, 2014), and working memory and executive function (Quach et al., 2016; Schonert-Reichl et al., 2015; Zelazo et al., 2015). However, all these studies examine the effects of short-term interventions over a relatively short follow-up period. Studies indicate that the benefits of intervention are maintained, at least in the short term, following a brief mindfulness intervention (Fung et al., 2019), but that there are potential benefits of continuing programs (Black & Fernando, 2014; Waters et al., 2015). Most of the interventions studied have been provided by outside experts, rather than the classroom teacher, limiting their scope and duration. While there is an abundance of evidence highlighting the positive impact of school-based mindfulness programs, no identified studies have explored benefits and barriers to adopting integrated, long-term, teacher-led, classroom-based mindfulness interventions. This gap in the literature is the focus of this DNP project.

CHAPTER 3: METHODOLOGY

Hypothesis

The hypothesis of this study was that there would be a difference in pre-service teachers' self-reported measures of perceived value and/or intentions to incorporate mindfulness strategies in the classroom following an educational intervention and introduction of implementation tools.

Sample

The participants in the study were comprised of a convenience sample of multidisciplinary teaching credential students at California State University, Sacramento (CSUS) in their first semester of the 2-year credential program. Students in the program are either bachelor's prepared or completing their final year in the bachelor's degree program while concurrently enrolled in the teaching credential program. The program includes lecture-based theory courses and student teaching practicum in the elementary school setting (CSUS, n.d.). Currently there are 383 students enrolled in the overall credential program, with women ($n = 278$) far outnumbering men ($n = 105$) (CSU, 2018c). The university as a whole is ethnically diverse, with 25% of the student population identifying as Mexican-American, 15.4% Asian, 5.8% African American, and 26.9% White (CSU, 2018b). The median age of graduate students at the university is 27, with a mean age of 29.8 (CSU, 2018a).

The total pool of potential second semester participants projected to be enrolled in the program at the time of the intervention was approximately 120 students. However, only four of the five cohorts were present for the intervention, with total attendance of 85 students. The educational intervention itself was incorporated into regularly scheduled class time as a special lecture topic, but

students chose whether to participate in the study and complete the pre- post-intervention survey. The sample was, therefore, limited to those students who consented to participate and complete the surveys. The criteria for inclusion were the participant's status as a first semester credential program candidate and their consent to participate.

Teacher demographics are not typically included in research related to school-based mindfulness programs. However, it was anticipated that the demographics of the study population would differ, particularly in age, from those of the general population of teachers. The median age of graduate students at the university is 27 (CSU, 2018a), while the average age of teachers across the state is 44.5 and nearly a third are at least 50 years old (Legislative Analyst's Office, 2016). California's teachers reflect the CSUS credential population in terms of gender (75% female) (Legislative Analyst's Office, 2016). The overall population of California's teachers is primarily White (about 66%) or Hispanic (20%) (Legislative Analyst's Office, 2016). In general, teachers entering the profession acknowledge doing so based on altruistic motivations, such as the desire to have a positive impact on children and their communities (Young, 1995). Given their age, enthusiasm at embarking on a new career, and motivation to have a positive impact on their students, it was anticipated that the credential students would be open and receptive to innovative strategies for student success. Professionals who are in the process of completing their education and stepping into their new roles tend to be more open to adopting new interventions based on evidence-based practices (EBP) (Enrico, 2017).

Recent research related to social-emotional learning programs indicates that the majority of teachers recognize the value of social-emotional learning to improve student knowledge and skills in the areas of self-awareness, self-

management, social awareness, relationship skills, and responsible decision-making (Civic Enterprises, Bridgeland, Bruce, & Hariharan, 2013). Teachers would like to see these types of skills integrated into state standards and school-wide initiatives (Civic Enterprises et al., 2013). However, only about half of teachers have received any training in social-emotional teaching strategies (Civic Enterprises et al., 2013). Teachers' attitudes about implementing social-emotional EBPs are influenced by a number of factors, including competing priorities in terms of how much time and effort is required to cover core academic subjects (Enrico, 2017). Lack of time and inadequate training and knowledge have been identified as significant barriers to adoption of social-emotional EBP practices (Enrico, 2017).

Methods

This project was a pilot study, implemented using a quasi-experimental quantitative design. A pre- and post-intervention survey was used to measure changes in the study variables of perceived value of mindfulness strategies and intention to implement mindfulness strategies. Subjects were recruited just prior to the intervention (during the lecture period), when the researcher provided a brief explanation of the study and directed participants to review the on-line consent form. Students who indicated they were willing to participate marked "Yes, I consent" on the consent page and were immediately directed to the pre-survey. All aspects of the intervention and data collection took place within the single allotted lecture session.

Intervention

The intervention consisted of a brief (approximately 50-minute) multimedia educational presentation, provided by the researcher, that included

current youth mental health trends, a description of mindfulness, research highlights about the benefits of mindfulness, classroom implementation tips, and the introduction of a webpage containing general information and mindfulness resources. Opportunities for practicing selected mindfulness exercises were included. Participants were led through a breathing and movement exercise (intended for primary grades), a guided visualization exercise (appropriate for upper primary students and adults), an app-based guided meditation (for children ages 5-6), and a mindful eating exercise that could be adapted for all ages.

Participants were given ongoing access to the website resource presented in the intervention, regardless of study participation. The website includes general information, definitions, and links to informational resources about mindfulness and social emotional learning strategies. There are separate pages dedicated to mindfulness resources for teachers, parents, and children; with links to apps, websites, videos, and other media, as well as information about further training opportunities and available curricula. Another page of the site contains dedicated links to a variety of classroom-friendly mindfulness resources, including apps, websites, and instructional materials to be used with students. The website (mindful-matters.org) was developed by the researcher and was reviewed by two classroom teachers and two school nurses using a pre-established list of criteria, for usability, ease of navigation, and appropriateness of resources (for grade level). It was also reviewed by a mindfulness educator for ease of use and appropriateness, in keeping with mindfulness principles.

Data Collection

Data were collected using two validated survey tools. A modified version of the Intentions to Use Scale was used to assess teachers' intentions for

implementing mindfulness strategies in the classroom (Appendix A). The original survey was developed by Kortteisto, Kaila, Komulainen, Mantyranta, and Rissanen (2010) to explore health practitioners' intentions to follow EBP clinical practices. Cook et al. (2017) modified the tool in 2017 to measure teachers' intentions for implementing wellness-based EBPs. This study utilized a version of the tool similarly modified by the researcher, containing four items using 7-point Likert-type ratings, as well as several background questions. The Intervention Rating Profile (IRP-15), which was developed by Martens, Witt, Elliott and Darveaux (1985) to evaluate teachers' perceptions of the acceptability, reasonableness, and effectiveness of a classroom-based behavioral intervention, is a 15-item survey using 6-point Likert-type ratings. The language of this tool was modified to reflect its use for general mindfulness classroom-based interventions versus specific, individualized behavioral interventions (Appendix B). The researcher secured permission to use modified versions of these surveys from their originators.

Survey results were collected via Qualtrics, an on-line data collection platform. Participants were provided with a link and (if they consented to be part of the study) were instructed to complete the pre-survey in the classroom immediately prior to the educational intervention and the post-survey immediately following the intervention. No confidential or personal identifying information (including subject names) were collected. An individual code was generated for each participant upon completion of the pre-survey. Participants entered this code prior to completing the post-survey to allow comparison of pre- post-survey results. The "anonymize response" option was activated during survey development, so that no contact personal data or embedded identifying information, such as location or IP information, were associated with completed

surveys. Some additional demographic questions, including gender, age, district, and previous experience with mindfulness were included. There were also open-ended questions about other perceived barriers to implementing mindfulness interventions, to provide insight into areas for future intervention and study.

Data Analysis

Survey data were analyzed using two-tailed paired *t*-tests for each of the survey measures. Results with a *p*-value < 0.05 were considered significant. In cases where the assumption of normal variance was not met, degrees of freedom were adjusted and Welch's approximation was reported. Demographic data were also analyzed using independent *t*-tests to determine any correlations between specific demographic variables (e.g., age, gender, previous mindfulness experience) and survey scale scores.

CHAPTER 4: RESULTS

All students attending the regularly scheduled lecture for their English language development method course in the multidisciplinary teaching credential program on November 15, 2019 were invited to participate in the study. A total of 85 students were present for the educational intervention, with 51 providing consent to participate in the study. Surveys with missing and/or irregular data (e.g., multiple answers to questions, missing or incomplete survey codes, failure to complete the post-survey, other missing data) were excluded from data analysis. Of the 51 participants who consented to participate and completed pre-intervention surveys, 5 were excluded due to being incomplete or having missing data. Of the 41 students who completed post-intervention surveys, 4 were excluded for missing data, 4 were excluded for multiple answers to questions, and an additional 7 were dropped due to lack of a survey code or incorrect survey codes. Data analysis was performed using the remaining participants' responses ($n = 26$). Descriptive statistics were used to analyze demographic data provided by participants.

Demographic Data Analysis

Demographic data collected from participants included self-reported age, gender, previous experience with formal mindfulness or meditation practice, and current mindfulness practice (see Table 1). The majority of participants (96.2%) were women. The students who completed the surveys were also largely based in Title I schools (80.8%). This reflects the priority given by the credential program to Title I school placements, to provide students with the experience of working with economically disadvantaged students in low income communities. Nearly half of the participants (46.2%) were 20 to 24 years of age, and the remainder (53.8%) were 25 to 34 years old. Over a third of participants (38.5%) reported

having experience with formal mindfulness practices and 46% indicated that they currently engage in mindfulness practices. Mindfulness practices reported by students included yoga, mindful/focused breathing, meditation, relaxation and grounding exercises, prayer, and controlled breathing.

Table 1

Sample Demographics

Characteristic	Total	Percentage
Gender		
Male	1	3.8%
Female	25	96.2%
Age		
20-24	12	46.2%
25-34	14	53.8%
Work in a Title I School		
Yes	21	80.8%
No	5	19.2%
Formal Mindfulness Experience		
Yes	10	38.5%
No	16	61.5%
Current Mindfulness Practice		
Yes	12	46.2%
No	14	53.8%

Pre- and Post-Survey Data Analysis

Participants were asked to complete a pre-survey prior to the intervention and a post-survey following the intervention. The same tools were used to

measure perceived value of mindfulness strategies and intention to implement mindfulness strategies for the pre- and post-surveys, as discussed in Chapter 3: Methodology.

Cronbach's alpha was calculated for each of the survey measures, to determine the internal consistency of these measures within the study group. Alpha for the Intervention Rating Profile (IRP) 15 and Intentions to Use Scale were 0.87 and 0.81, respectively, indicating satisfactory reliability for both survey measures.

IRP 15

Pre- and post-intervention mean scores for the IRP 15 were compared using two-tailed paired *t*-tests to determine changes in participants' perceptions of the acceptability, reasonableness, and effectiveness of mindfulness as a behavioral intervention. Results with a *p*-value < 0.05 were considered significant. There was a significant increase in IRP 15 scores from pre-intervention ($M = 70.69$, $SD = 8.16$) to post-intervention ($M = 78.54$, $SD = 8.46$; $t(25) = 5.979$, $p < 0.001$, $d = 1.196$) (see Figure 2).

Intentions to Use

Mean scores for the Intentions to Use Scale were compared to measure changes in participants' intentions for implementing mindfulness-based interventions. Two-tailed paired *t*-tests for the Intentions to Use Scale demonstrated a statistically significant increase from pre-intervention ($M = 56.50$, $SD = 10.28$) to post-intervention ($M = 64.88$, $SD = 10.91$; $t(25) = 4.785$, $p < 0.001$, $d = 0.94$) (see Figure 2).

Figure 2. Survey scores for Intentions to Use and IRP 15. Results from paired *t*-tests indicate statistically significant differences in survey scores for the Intentions to Use scale and the IRP 15 before and after the educational intervention ($p < .05$). Error bars indicate standard deviation.

Relationship Between Demographic Variables and Survey Scores

Independent samples *t*-tests were performed to determine whether the variables of age, Title I status, and previous mindfulness experience were associated with differences in survey scores. Gender was not included as a variable in *t*-test analyses, due to the small number of male respondents ($n = 1$). Older participants (ages 25-34) demonstrated significantly greater increases in IRP 15 scores ($M = 10.5$, $SD = 7.42$) than younger participants (ages 20-24) ($M = 4.75$, $SD = 4.16$; $t(21) = -2.48$, $p = 0.022$, $d = 0.956$). Levene's test for equality of variances was found to be violated ($F = 12.536$, $p = 0.002$), so degrees of freedom were adjusted from 24 to 21 (see Figure 3).

Figure 3. Change in mean score on IRP 15.

Results from independent samples *t*-test indicate statistically significant ($p < .05$) change in mean scores by age for IRP 15. Error bars indicate standard deviation.

Although increases in scores on the Intentions to Use scale were also greater in older students ($M = 11.45$, $SD = 9.47$), than younger participants ($M = 4.75$, $SD = 6.98$; $t(24) = -2.038$, $p = .053$, $d = 0.811$), they did not achieve statistical significance. No significant differences were found in mean survey scores based on whether participants were working in Title I schools.

Pre-intervention scores on the Intentions to Use Scale were significantly higher for students who reported previous mindfulness experience ($M = 62.4$, $SD = 9.62$), than those who did not ($M = 52.81$, $SD = 9.12$; $t(24) = 2.557$, $p = .017$, $d = 1.024$), with the principles for Levene's test (assumption of equal variance) being met ($F = .205$, $p = .655$) (see Figure 4). There was also a significant increase in pre- to post-intervention Intentions to Use scores in the group that reported no previous mindfulness experience ($M = 11.43$, $SD = 9.63$), over those with previous mindfulness experience ($M = 3.50$, $SD = 4.90$; $t(23.33) = -2.771$, $p = 0.011$, $d = 1.038$) (See Figure 5). Levene's test indicated unequal variances ($F = 4.464$, $p = 0.045$), so degrees of freedom were adjusted from 24 to 23.33. No significant differences were found between pre- and post-intervention scores on the IRP 15 based on previous mindfulness experience.

Figure 4. Intentions to Use pre-intervention scores. Results from independent samples *t*-test indicate statistically significant ($p < .05$) differences in pre-intervention scores for Intentions to Use scale, based on previous mindfulness experience. Error bars indicate standard deviation.

Figure 5. Intentions to Use change in mean score. Results from independent samples *t*-test indicate statistically significant ($p < .05$) change in mean score for Intentions to Use scale, based on mindfulness experience. Error bars indicate standard deviation.

In response to an additional question on the survey, in which students were asked to describe any perceived barriers to implementing mindfulness strategies in the classroom, many students noted that time was a significant concern. Additional considerations included resistance from parents and administrators, concerns that students might be resistant and/or unwilling to focus on the activities and take them seriously, lack of formal training, cost and resources, and cultural or religious opposition from parents or families.

CHAPTER 5: DISCUSSION

Discussion

This study examined the impact of an educational intervention, accompanied by web-accessible tools, on pre-service teachers' attitudes and intentions to implement mindfulness strategies in the classroom. Data analysis suggests that the intervention positively impacted pre-service teachers' perceptions of the acceptability, reasonableness, and effectiveness of mindfulness-based behavioral interventions, and their intentions to implement these strategies in the classroom. Participants' age was associated with differences in pre- to post-intervention scores on the measure of attitudes about mindfulness, with older participants (ages 25 to 34) demonstrating greater score increases than their younger counterparts (ages 20 to 24). This difference may reflect that older students had less exposure to the mindfulness-based interventions prior to the intervention. Previous mindfulness experience was associated with higher pre-intervention scores related to intentions to implement mindfulness, while the scores for students reporting no previous mindfulness experience demonstrated greater increases as a result of participating in the intervention. This indicates that mindfulness exposure may increase willingness of teachers to adopt these practices in their classroom.

Limitations

This study is limited by a number of factors, including its pilot study status and small sample size. The use of convenience sampling represents a potential threat to internal validity, as those who consented to be part of the study may have been more interested and open to the application of mindfulness strategies than those who elected not to participate. The high number of surveys that were

excluded from data analysis because of incomplete information could also impact internal validity, if they differed significantly from the completed surveys that were included. The study sample was not representative of the population of CSUS credential students in terms of gender, with only 3.8% of study participants being male compared to an overall male population of 27%. Because study participants were asked to indicate age within a range, their median age could not be determined. Since participants were roughly split between the ages of 20-24 and 25-34, this indicates that they were likely representative of the graduate student population, in which the median age is 27. Representativeness of the sample in regard to race and ethnicity could not be ascertained, as these were not included in the demographic section of the survey. Data on the relationships between demographic variables and survey scores must be interpreted with caution, due to high variability of between groups responses. Generalizability of this study would have been improved by the inclusion of a control group, inclusion of racial and ethnic demographics in the survey, and by increasing the sample size.

Implications

There is mounting evidence that school-based mindfulness interventions positively impact emotional regulation, self-regulation, behavior, and cognition (Bergen-Cico, Razza, & Timmins, 2015; Harpin, Rossi, Kim, & Swanson, 2016; Waters, Barsky, Ridd, & Allen, 2014). Incorporating these types of interventions has the potential to improve both health and academic outcomes for school-aged children. However, multiple barriers to implementing evidence-based mental health interventions in schools have been identified, including lack of staff engagement, funding issues, and lack of trained personnel (Fazel et al., 2014).

Data show that half of teachers will get no formalized training in social emotional learning (SEL) strategies, like mindfulness (Civic Enterprises et al., 2013).

The results of the current study suggest that a focused educational intervention and introduction of web-based implementation tools may positively impact pre-service teachers' attitudes and intentions to include mindfulness-based interventions in their classrooms. Empowering pre-service teachers with tools and resources for building a classroom-based mindfulness practice is a cost-effective strategy that addresses teacher-identified barriers of lack of time and knowledge deficits (Enrico, 2017), and may increase their level of engagement and interest in these evidence-based strategies. Additionally, these tools can be used as an adjunct to any existing SEL interventions and tailored to the needs and goals of the specific classroom. Integration of mindfulness and SEL concepts into credential program curricula may be an effective strategy for increasing the adoption of these practices. Professionals who are in the process of completing their education and stepping into their new roles tend to be more open to adopting new interventions based on evidence-based practices (Enrico, 2017). The current movement in school leadership culture toward more democratic decision-making processes, staff-driven initiatives, and collaborative learning communities will be an asset to teachers' efforts in implementing mindfulness in their classrooms and sharing these practices with their fellow teachers (Drago-Severson, 2012). Additionally, other teachers in the schools may view evidence-based practice information provided by colleagues working in the same environment more favorably than changes that are mandated by administrators or come from research articles (Enrico, 2017). Facilitating the adoption of mindfulness strategies by new teachers by including this type of instruction as part of the credential curriculum could significantly improve the lives of the next generation of students.

Conclusion

Mindfulness in education is still a relatively new area of study and further research is needed to examine the overall impact of school-based programs, as well as effective strategies for facilitating the adoption of mindfulness practices by teachers. Follow-up studies examining rates of implementation of mindfulness strategies following an educational presentation will help inform whether this type of intervention leads to actual changes in practice. More research looking at factors that support adoption of mindfulness and SEL practices by school staff is also indicated. Longitudinal studies exploring long-term academic, social, and health outcomes for students participating in school-based mindfulness are still needed.

Schools have an unparalleled opportunity to act as a central player in supporting children's mental health. Classroom-based mindfulness offers a promising primary prevention approach to improving mental wellness and readiness to learn. Empowering teachers to implement these types of strategies in the classroom has the potential to impact not only the lives of individual students, it could also have a profoundly positive effect on the school community as a whole.

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APPENDICES

APPENDIX A: MODIFIED INTENTIONS TO USE SCALE
(INCLUDING BACKGROUND QUESTIONS)

Questions on evidence-based interventions and respondent's background

1. I intend to use evidence-based mindfulness interventions in my classroom in the next three months.

Definitely not 1 2 3 4 5 6 7 Definitely yes

2. To what extent do you agree or disagree with the following propositions?

By using evidence-based mindfulness strategies ...

I	I
totally	fully
disagree	agree

a. I can offer my students

higher-quality interventions	1	2	3	4	5	6	7
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b. I can ensure that all of my

students obtain the same level of

basic interventions	1	2	3	4	5	6	7
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c. I am able to contribute to

controlling the costs of

education	1	2	3	4	5	6	7
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3. How do the following people regard the fact that you use evidence-based interventions in the classroom?

	Definitely should not use				Definitely should use			
a. Students	1	2	3	4	5	6	7	
b. My supervisor	1	2	3	4	5	6	7	
c. My colleagues (other teachers)	1	2	3	4	5	6	7	

4. To what extent do the following factors prevent or facilitate your use of evidence-based mindfulness interventions in the classroom?

	Prevents to a great extent	Markedly Prevents	Slightly Prevents	Has no Effect	Slightly Facilitates	Markedly Facilitates	Facilitates to a Great Extent
a. Lack of time	1	2	3	4	5	6	7
b. Clarity and understandability of the interventions	1	2	3	4	5	6	7
c. Inflexibility of the interventions	1	2	3	4	5	6	7

(ie. they may not
take into account
the needs of
individual
students)

d. The
interventions

being easily	1	2	3	4	5	6	7
accessible by the							
students							

e. The
interventions

being based on	1	2	3	4	5	6	7
scientific							
evidence							

Background questions

1. Gender

1 male 2 female

2. Age _____
years

3. District in which you currently teach:

4. Do you currently teach in a Title I school?

1 yes 2 no

5. Do you have any previous experience with formal mindfulness and/or meditation practice?
- a. 1 yes 2 no
- b. If yes, please describe, including how many years you have engaged in the practice:
6. Do you currently regularly practice mindfulness and/or meditation
- a. 1 yes 2 no
- b. If yes, please describe your current practice (ie. meditation, yoga, walking mindfulness, etc), including how many minutes per week you practice:
7. Please describe any barriers or concerns that would prevent you from implementing mindfulness strategies in your classroom?

APPENDIX B: MODIFIED INTERVENTION RATING PROFILE

Q1. Mindfulness would be an acceptable intervention for a child's problem behavior.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q2. Most teachers would find mindfulness interventions appropriate for behavior problems.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q3. Mindfulness should prove effective in changing children's problem behavior.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q4. I would suggest the use of mindfulness to other teachers.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q5. Children's problem behavior warrants use of mindfulness.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q6 Most teachers would find mindfulness suitable for behavior problems.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q7. I would be willing to use mindfulness in the classroom setting

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q8. Mindfulness would not result in negative side effects for the child.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q9. Mindfulness would be appropriate for a variety of children.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree

- 6 strongly agree

Q10. Mindfulness interventions are consistent with those I have used in classroom settings.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q11. Mindfulness is a fair way to handle children's problem behavior.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q12. Mindfulness is reasonable for behavior problems.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q13. I like the procedures used in mindfulness.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q14. Mindfulness is a good way to handle children's behavior problems.

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree

Q15. Overall, mindfulness would be beneficial for children

- 1 strongly disagree
- 2 disagree
- 3 slightly disagree
- 4 slightly agree
- 5 agree
- 6 strongly agree