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Preservice Teachers and Perceived Stress: A Comparative Study

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PRESERVICE TEACHERS AND PERCEIVED STRESS:
A COMPARATIVE STUDY

by

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ABSTRACT

Teachers are being pushed to the brink of burnout and leaving the profession, placing teachers' health and wellness in jeopardy (Daniels & Strauss, 2009; Maslach & Leiter, 2008; Stephenson, 2012; Vladut & Kallay, 2010; Wilkerson, 2009). Yet, it has become increasingly clear teacher stress may start prior to entering the profession (Brown & Ryan, 2003, Darling-Hammond, 2006). The researcher used a non-experimental design to evaluate the perceived stress among pre-service teachers enrolled in internship, and if the coping style of mindfulness had any correlation on self-reported stress levels. The quantitative study surveyed 332 student interns using the Perceived Stress Survey (Cohen & Williams, 1988) to depict perceived stress levels of pre-service teachers. A demographic questionnaire was also administered. The results indicated an increase in perceived stress, suggesting that stress may vary across the demographic variables of gender. Mindfulness was researched as a potential solution, however, there was no correlation between mindfulness and stress levels. education is necessary in the discussion and implementation of mindfulness as a potential intervention tool for stress. Further research is needed for a deeper understanding of gender, and how mindfulness may be a positive intervention to perceived stress.

Keywords: Pre-Service Teachers, Perceived Stress, Mindfulness, Self-Regulation, Demographics

I dedicate this dissertation to all the teachers in my life--be they familial, experiential, or ideological. Life's teachings have led me here, and will continue to lead me even after the doctorate. I have always had the desire to structure my dissertation around the theory of mindfulness meditation, as mindfulness has proven a positive solution to stress in my personal and academic life. The benefits and transformation I saw in my own personal life and career have continued to build a deep desire to study why and how mindfulness works within the field of education. Understanding my personal background and experience with the practice will add to readers' understanding of my desire to write and research mindfulness.

I was introduced to the practice of mindfulness in 2009 while undergoing rehabilitation for an eating disorder. Meditation was offered as a tool of intervention to facilitate a decrease in depression in anxiety, which is often highly present in people with eating disorders. When initially offered the intervention of mindfulness during my treatment, I was averse to it as I was very uncomfortable with "surrendering" and trying to detach from negative thoughts. However, the more I let myself be in meditation, the easier the practice became. Each week my rehabilitation facility required all patients to attend guided meditation sessions, and each week I began to be more open to the possibilities of a mindfulness practice. After three months in rehabilitation, I had attained a foundational mindfulness practice, a practice that would be used initially for my recovery but would soon grow into something much deeper.

Upon moving further into my recovery, I was able to complete my undergraduate degree, and desired to continue my education via graduate school in the College of Education at the University of Central Florida. Completing my master's degree in Social Science Education, opened my eyes to endless possibilities of the varied ways the intervention of mindfulness could

be implemented in the field of education. This was also reinforced because at the same time, I was pursuing my Master of Arts in Teaching, I became more involved in my mindfulness practice through studying and learning how to instruct yoga. Seeing how two varying philosophies I was studying concurrently could mesh together so well, I was set on understanding more about how the art of mindfulness within education.

My years of teaching social studies were spent teaching varied content and various age groups, from 13-19 years old. Knowing full well most high school students were not enthralled with social studies, I wanted to differentiate my classroom from all the other social studies classes they had experienced in the past.

I desired to create a classroom environment of all my experiences involving the wide spectrum of mindfulness I had experienced and learned since rehabilitation. From the life experiences, to educational studies of character education, and even Yogic philosophy, all were combined as a framework for beliefs in my classroom. Creating a classroom of diverse education beliefs, allowed me to foster better relationships with my students. Students felt safe and open to talk, beyond the scope of the curriculum. Solidifying a strong relationship of trust and love, influenced their overall school performance.

During the past 10 years, my personal practice of mindfulness has created a deeper connection to my yoga practice and my classroom teaching. However, as I continued to grow my mindfulness meditation practice and my classroom teaching, I also experienced a personal transformation in both body and mind, which slowly began to emanate into all aspects of my life.

My mindfulness practice and classroom teaching became endogenous. The more I practiced my mindfulness, the healthier and more balanced I became in my teaching. The more I

focused on growing as a teacher, the more stability and peace I found during my meditations. Being a mindful teacher shifted my whole pedagogy, as my spiritual practice became integrated into my professional life. My pedagogy began to shift to the education of the whole child, which included introducing concepts of character education/moral education. I began to intertwine Socrates, Plato, Kant, Dewey, and Hume through the lens of education rather than their traditionally taught philosophies and contributions. Other authors, such as Noddings, offered a deeper understanding of modern-day character education. Essentially, I found moral and value education to be the "it" factor for how I wanted to mindfully teach. I desired to pursue a more modern version of character education, one that did not let curriculum dictate the whole day but allowed for space and free discussion for children to develop their own thoughts and opinions. Just as my classroom was becoming more unified through the integration of mindfulness, I began to desire to understand more about how and why my mindfulness practices were transforming my teaching. I had already noticed less depression, less anxiety, a desire to be more present in my classroom, a deeper connection to my students, and I was generally a happier and healthier teacher. After such a radical change in my lifestyle and teaching abilities, I left the high school classroom to pursue further study into the topic of mindfulness.

My lived experience dictated the desire to have mindfulness be the lens and instrument that shaped my research agenda. From this new place of contemplative investigation into my lifestyle choice and practice, I embarked on the topics of my dissertation, perceived stress and pre-service teachers.

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I would like to extend my deepest appreciation to a number of people who made this journey possible. Each person added to the experience, supported my efforts, and enriched this part of my life.

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Last, I would like to thank my family, especially my husband and mom. You have both provided me with the endless amount of time and space I needed to see this through. Your patience and support made it possible, and for that I am forever grateful.

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CHAPTER 1
INTRODUCTION

<u>Background of the Study</u>

Currently in the United States, full time professional teachers k-12 were projected at 3.2 million in 2018, representing about 4% of the US population ("Fast Facts"; Ingersoll & Smith, 2003). The number of teachers within the United States has not changed much over the past decade. But this does not mean the teaching profession is not without problems. At the time of the present study, there were attrition and migration issues affecting the teacher population (Ingersoll & Smith, 2003). Although the measurements of turnover rates have been high for the entire teaching population, there have been a higher number of new teachers leaving the profession than others (Lortie, 1975; Murnane, Singer, Willett, Kemple, & Olsen, 1991).

Teachers are being pushed to the brink of burnout and leaving the profession, placing teachers' health and wellness in jeopardy (Daniels & Strauss, 2009; Maslach & Leiter, 2008; Stephenson, 2012; Vladut & Kallay, 2010; Wilkerson, 2009). Psychological distress may contribute to a decrease in a teacher's productivity level and efficacy on the job (Song, 2008). An increase in teacher wellbeing could have a positive effect on their social, emotional, mental, and physical lives (McMullin, 2014). Yet, it has become increasingly clear that teacher stress may start even before students enter the profession, in pre-service teacher programs (Brown & Ryan, 2003, Darling-Hammond, 2006). Thus, the present study was conducted to evaluate stress in pre-service teachers enrolled in an undergraduate education program.

Since 2006, the American Psychological Association has conducted an annual nationwide survey to study the mental health of the United States titled "Stress in America™". This survey examines the perception and feelings of stress in adults 18 and over, and how stress in the United

States has changed over time (American Psychological Association, 2017). Since 2006, overall stress levels have decreased slowly over time; however, Americans have reported more symptoms associated with stress, including anxiety and depression. Although the levels of stress may be shifting over time, there are several trends that have been reported over time that require further investigation. These trends include stress levels examined among gender and age. According to the APA survey, Millennials and Generation X reported higher levels of stress than other age groups. Likewise, since the APA began conducting this survey, women, on average, have continually reported higher stress levels than men (American Psychological Association, 2017). Thus, the present study was conducted to evaluate mental health among pre-service teachers enrolled in an undergraduate education program.

The high prevalence of mental health problems including depression, anxiety, and stress, demonstrates a need for a psychological intervention. One such intervention under study is Mindfulness Meditation [MM] (Baer, 2003). Mindfulness Meditation acts as a coping skill to encourage a calm mind and body. This coping skill of MM is learned through a complete observation of self, without judgement. MM allows a deeper state of consciousness, and leads to a result of a calm, more self-aware state (Grossman, Niemann, Schmidt, & Walach, 2004).

The present study was conducted to understand the effects of demographic variables on pre-service teacher stress. Chapter 1 contains an explanation of the researcher's desire to study pre-service teachers and stress, an overview of the background of the problem, the problem statement, and the purpose statement. The chapter also includes discussion of the significance of the study, the nature of the study, the hypotheses and research questions, the conceptual framework, and definition of terms.

According to varied studies, many teachers report low levels of job satisfaction and higher levels of stress (Boyle, Borg, Falzon, & Baglioni, 1995; Chaplain, 2008; Schwarzer, 2008). Common reactions include negative attitudes, behaviors, and beliefs regarding their occupation and elevated levels of frustration, depression, and tension from varied responsibilities within teaching (Kyriacou, 2001, p. 28; Weiss, Nicholas, & Daus, 1999).

In 2019, the World Health Organization classified burnout as a medical condition, and further defined burnout via three dimensions: physical depletion, negativity towards one's occupation, and reduced efficacy ("Burn-out an 'occupational phenomenon'", 2019). This amount of job stress can have negative repercussions on the teacher and can have negative physiological and psychological effects (Bellingrath, Weigl, & Kudielka, 2008; Tsang, Liu, 2016; von der Embse 2016). Such negative reactions are common within burnout, including low rates of self-efficacy, anxiety, depression, which may be attributed to prolonged periods of stress (Austin, Shah, & Muncer, 2005).

Stress is one of the factors that has led to teacher burnout, and the combination of the two has led to many teachers leaving the profession. In total, it is estimated about 15% of U.S. teachers leave the profession annually (Seidel, 2014). In addition to burnout, the psychological effects of stress and burnout there is also a large amount of teacher demoralization (Clarke & Kissane; 2002). Factors leading to larger amounts of stress, burnout, and demoralization include relationships or encounters with colleagues, principals, parents, and students as well as many other bureaucratic elements that teachers encounter annually (Bird, Chuang, Watson, & Murray, 2012; Kokkinos, 2007; Punch & Tuetteman, 1990; Santoro, 2011; Tsang & Liu, 2016). These

factors shift how teachers respond to their occupations, where small shifts and changes to the school environment affect their psychological well-being (Herath, 2008; McCormick, Ayres, & Beechey, 2006; Song, 2008).

The occupation of teaching shows trends of becoming increasingly stressful, and even prior to entering the workforce, undergraduates have shown similar trends of increased stress levels (Bergmark, Lundström, Manderstedt, & Palo, 2018). There are few studies relating specifically to undergraduate education majors and stress (Conway, Eros, Pellegrino, & West, 2010; Zascavage, Winterman, Buot, Wies, & Lyzinski, 2012). Due to the large amounts of stress college students will experience in their future career, it is important to understand their perceived stress prior to employment (Kitzrow, 2003).

Each year, the American College Health Association collects their most recent National College Health Assessment data. The report describes the overall the state of health, but also describes in detail the state of mental health in college students. The mental health section of the report surveys college students on the number of students' self-reported mental health diagnoses including but not limited to, sleep disorders, anxiety, bulimia, addiction, and depression. A recent report was conducted during the semester of fall 2018 and surveyed 26,181 students at 40 schools. The report depicts the prevalence of anxiety and depression, and is higher amongst college women: 11% of males and 20.1% of females reported a diagnosis of depression, and 11.7% of males and 25.5% of females reported a diagnosis of anxiety (ACHA, 2018). In comparison to fall 2015, the American College Health Association depicted a slight variance in both anxiety and depression: 9% of males and 16.8% of females reported a diagnosis of depression; and 10.3% of males and 20.5% of females reported a diagnosis of anxiety (ACHA,

2015). These numbers are reflective of larger trends of psychological distress in the United States, as the ACHA-NCHA provides and has provided the largest data set on the overall well-being of college students over the past 14 years. In addition to the trends reported by the ACHA, other research has indicated a slight statistical increase in mental disorders among students in higher education (Bayram & Bilgel, 2008; Christian, 2015; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Storrie, Ahern, & Tuckett, 2010).

Conceptual Framework

Teacher response to stress, demoralization, and burnout varies in how or even if teachers use coping tools (Austin et al.,2005, Cano-García et al.,2005, Montgomery & Rupp 2005). The sources of stress experienced by teachers are unique to the individuals and can vary by personality, values, skills and circumstances experienced in and out of the classroom. Thus, there is a desire and need to understand what is happening prior to entering the field of teaching. If there could be a further understanding of what is happening with students' perceived stress during the onset of their teaching career, there may be a higher potential to use coping tools for stress in and out of the classroom.

Purpose Statement

The purpose of this dissertation is to investigate pre-service teacher stress and to examine if there is a statistically significant difference in preservice teachers' perceived stress based on select demographic variables.

In this study, perceived stress and relevant demographic variables have been defined and explained. Literature has been used to discuss ways in which universities may be able to combat issues of stress and anxiety through the coping mechanisms of mindfulness. To be clear, there

are other potential coping tools that could be utilized, but for this research study, mindfulness was investigated as a possible tool to be used in undergraduate education and pre-service teacher health and wellness.

<div align="center">Significance of the Study</div>

The current study is significant for several reasons. In examining the literature, most research has been limited in showing that teachers' stress, workloads, demographic backgrounds, and emotional states are contributing factors to burnout (Maslach & Leiter, 2008; Mukundan & Khandehroo, 2010; Ozan, 2009) and how mindfulness contributes to these variables (Abenavoli, Harris, Katz, Jennings, Greenberg, 2014; Beshai, McAlpine, Weare, & Kuyken, 2016; Emerson et al., 2017; Flook, Goldberg, Pinger, Bonus, & Davidson, 2013; Gerstenschlager & Tassell, 2017; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Jennings et al., 2017; Jennings, Schussler, Jennings, Sharp, & Frank, 2016; Kasson & Wilson, 2016; Sarah, Minh Tam, Stefan, & Joachim, 2016). The findings of researchers have not suggested how the variables could be potentially interrelated and endogenous, or how mindfulness could be used as an effective coping tool to implement change.

More importantly, little research has been conducted on the perceived stress of pre-service teachers. Several articles have been written discussing holistic suggestions regarding undergraduate pre-service teachers and stress, and how to authentically address the looming problem of retention (Bergmark et al., 2018; McMullin, 2014). Universities and teacher preparation programs may use the findings from the current study to better understand the relationships between teacher stress, burnout, and self-efficacy and how to help teachers develop

effective coping strategies, which may reduce burnout and stress and increase retention

(Mukundan & Khandehroo, 2010).

<div align="center">Research Question</div>

<div align="center">Main Research Question</div>

Is there a statistically significant difference in preservice teachers' perceived stress based on select demographic variables?

<div align="center">Sub Research Questions</div>

1. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on their program?

2. Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

3. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on gender?

4. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. Is there a statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

Main Null

There is no statistically significant difference in preservice teachers' perceived stress based on select demographic variables?

Sub Null

1. There is no statistically significant difference in pre-service teachers' perceived stress levels based on their program

2. There is no statistically significant difference in pre-service teachers' perceived stress levels based on their track

3. There is no statistically significant difference in pre-service teachers' perceived stress levels based on gender.

4. There is no statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. There is no statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

Definitions of Terms

The following terms have been defined to provide clarification in the current research study.

Anxiety: Anxiety is a state of uneasiness in the mind, where the brain tends to overanalyze the present or the future, and causes feelings of nervousness and worry (Akhter,

Kanwal, Fatima, & Mahmood, 201). Anyone can experience anxiety, but for this study, it will be discussed in relation to pre-service teachers.

Depression: Depression can be defined as prolonged feelings of sadness or despondency (Bandura, 1997). Anyone can experience anxiety, but for this study, it will be discussed in relation to pre-service teachers.

Mindfulness Meditation (MM)- MM acts as a coping skill to encourage a calm mind and body, learned through a complete observation of self. (Grossman et al., 2004; Langer; 1989). Mindfulness has a wide array of definitions dependent on the methodology studied (Chiesa & Malinowski, 2011), but for this research mindfulness is defined as 'paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally'' (Kabat-Zinn, 1994).

Perceived Stress: Magill's Medical Guide defines stress as a "psychophysiological response to real or perceived pressures in the environment, including danger; prolonged stress contributes to hormonal imbalances, lowered immune system function, and increased susceptibility to disease, cancer, and death (Piotrowski & Hollar, 2017)". Anyone can experience stress, but for this study, it is discussed in relation to pre-service teachers. Perceived stress is the amount of stress an individual feels at a given point in time (Horiuchi, Tsuda, Yoneda, & Aoki, 2018).

CHAPTER 2
LITERATURE REVIEW

Introduction

In this chapter, the researcher reviews and critiques the research and scholarship on the

practice of mindfulness used among the population of pre-service teachers. Although studies in

mindfulness have been conducted to examine teacher stress and mindfulness programs, only one

study was found that utilized mindfulness and stress among pre-service teachers. As such, this

literature review provides additional insight into how mindfulness may be useful for stressed

students enrolled in an undergraduate teacher program. The analytic focus on mindfulness and

stress provides insight into the health and wellness of pre-service teachers.

Mindfulness: A Theoretical Framework

The high prevalence of mental health problems including stress demonstrates a need for a

psychological intervention. One such intervention is mindfulness (Baer, 2003). In brief,

mindfulness acts as a coping skill to encourage a calm mind and body, learned through a

complete observation of self. Within the observation of self, there is cognitive processing of the

situational context without judgement. Having a more open and sensitive metacognitive state

allows for a deeper level of consciousness, and fosters a calm, more self-aware being (Grossman

et al, 2004; Goleman, Langer, David, & Congleton, 2017). Mindfulness has a wide array of

definitions dependent on the methodology studied (Chiesa et al, 2011), but for this research

mindfulness was defined as 'paying attention in a particular way, on purpose, in the present

moment, and nonjudgmentally'' (Kabat-Zinn, 1994, p. 4).

For the purpose of this dissertation, mindfulness and meditation were differentiated. The

dissertation concentrates on the modern practice of mindfulness, as defined by Kabat-Zinn. For

this study, the commonly accepted definition of "mindfulness" was used from the theory of Mindfulness Based Stress Reduction (MBSR) (Kabat-Zinn, 1994). Zinn's modern definition of mindfulness (MBSR), is an acquired skill developed for the practice of daily presence. Meditation differs in that it is seen as a more formal practice utilized to develop the skill of mindfulness (Thompson & Waltz, 2007).Mindfulness can further be defined as self-regulation. Self-regulation is based on stabilization of cognitions or behaviors in accordance with intention (Karoly, 1993; Shapiro & Schwartz, 2000).

The MBSR definition was developed by Kabat Zinn in 1979 at the University of Massachusetts Medical School, with ideas stemming from Buddhist meditation techniques. It was his goal to make meditation more accessible for people without a current meditation practice. MBSR was created for this reason as well as to remove any religious dogma associated with the methodology. This method can be utilized by anyone, but participants must go through an eight-week training program, where they learn the methods purported by Zinn to access ease and peace of mind. The training includes a curriculum as well as activities for deepening the understanding of mindfulness tools. Throughout the sessions, different forms of mindfulness meditation take place including mindful eating, yoga, and mindfulness in relationships (Grossman et al., 2004). It is hypothesized that mindfulness may allow students to more appropriately deal with stress within an academic environment.

The high prevalence of mental health problems including stress demonstrates a need for a psychological intervention. One such intervention is mindfulness (Baer, 2003). In brief, mindfulness acts as a coping skill to encourage a calm mind and body, learned through a complete observation of self. Within the observation of self, there is cognitive processing of the

situational context without judgement. Having a more open and sensitive metacognitive state allows for a deeper level of consciousness, and fosters a calm, more self-aware being (Grossman et al., 2004; Langer, 1989). Mindfulness has a wide array of definitions dependent on the methodology studied (Chiesa et al, 2011), with the most commonly accepted definition, "paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally''(Kabat-Zinn, 1994, p. 4).

The commonly accepted definition from Kabat Zinn (1994) offers a generic view and one of convenience. Mindfulness is a term that can often be confused and not fully understood by the western world (Albrecht, Albrecht, & Cohen, 2012; Van Dam, Earleywine, & Danoff-Burg, 2009), and can be quite difficult to define. According to Van Dam et al. (2018), Kabat Zinn provided a definition that can be understood by western society, yet one that may be problematic in research. A review of books and articles on mindfulness has revealed a wide variety of definitions as well as several commonalities or facets of mindfulness. Mindfulness has been difficult to define because it is a complex concept that has evolved over the past thousand years. Dependent on the context of origin, the meaning of mindfulness may differ. Yet, the conceptual change over time remains relatively the same. Building on his initial description, Kabat-Zinn (2003) described mindfulness as

> an innate set of empirically testable rules that govern and describe the generation of the inward, first-person experiences of suffering and happiness in human beings…and is a coherent phenomenological description of the nature of mind, emotion, and suffering and its potential release, based on highly refined practices aimed at systematically training

and cultivating various aspects of mind and heart via the faculty of mindful attention. (p.

145)

Other definitions of mindfulness are conceptual references to this phenomenological description, including the commonly accepted definition by Baer (2003), "the nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise" (p. 125). Yet, there is an underlying commonality of focus and awareness (Brown & Ryan, 2003; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008).

Variance in description is partly due to the subjection of the author's own personal understanding and definition of mindfulness. Grossman, Niemann, Schmidt, & Walach (2004) explained that definitions may not fully line up with research as it may be subjective from author to author. Investigating the origins of mindfulness will further ground the definition via multidisciplinary literature from a spiritual, philosophical, physiological, and psychological perspectives. Utilizing this approach to break down the construct of mindfulness offers the opportunity for the reader to develop his or her own understanding of the concept.

Spirituality of Mindfulness

Mindfulness is a practice rooted in spirituality (Trammel, 2017). Due to the adaptability of mindfulness, it has been and is practiced in many different formats across cultures and time. The practice of mindfulness integrates varied elements that are foundational to many religious practices such as Buddhism and Christianity. Awareness is integral for mindfulness, and is consistent in religious applications of breath, reverence, and solitude to create a deeper relationship to a higher power (Lutz, Jha, Dunne, & Saron, 2015; Trammel, 2017).

Mindfulness, as a practice, has its roots in the spiritual practice of Buddhism and has

been called "the heart" of Buddhism as it is one of the core teachings of the belief system

(Gunarantana, 1992; Hanh, 1999; Thera, 1962). Yet as mindfulness has been introduced into

western culture, there has been a secularization and generalization that has been attempted to

take spirituality out of the practice of mindfulness (Lomas et al., 2017). Spirituality examined in

the context of Buddhism is to be practiced about Siddhartha Gautama's teachings, such as

selflessness and suffering. Using the Satipatthana Sutta as a guide, the Buddha recommended

that followers use mindfulness for all aspects of their lives including the living body, spiritual

body, emotional body, and higher states of consciousness. Within the Satipatthana Sutta, the

Buddha described the foundations of mindfulness and the importance of mind-body connection.

In Buddhist belief, mindfulness meditation is used to bring more awareness to the current state of

being and is a means to free oneself from the idea of suffering (Keng, Smoski, & Robins, 2011).

It is important to note that this idea exists throughout all the different sects of Buddhism (Lomas

et al., 2017).

The Theravada tradition of Buddhism is said to have facilitated the development of

mindfulness (Goldstein, 1993). Within Theravada, exists the idea of insight or vipassana

meditation (Grossman et al., 2004), involving concentrative practices involving breathing,

observation of the body, and nonjudgmental practice of the mind and has been labeled as

classical Buddhism (Husgafvel, 2016).

In addition to sects of Buddhism integrating mindfulness, other eastern spiritual practices

such as Hinduism incorporated varied forms of mindfulness meditation into their religious

principles yet differs greatly in comparison to Buddhist mindfulness. In comparison, Hinduism is

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affiliated with transcendental meditation (Cahn & Polich, 2006). Transcendental meditation is

mantra based, where participants close their eyes and continually repeat their chosen word or

phrase. The practice is quite different from other forms of classical meditation where a person

must concentrate or focus on their bodies or an object, and not a mantra. Each eastern religion

advocates for a variance within mindfulness, and changes upon religious sect (Goswamee &

Dey, 2017). The same can be said for western spiritual practices in Kabbala/Judaism and

Christianity. Within Christianity, Judaism, and Muslim religions, prayer is considered a

contemplative practice quite like mindfulness and meditation to benefit a higher state of

consciousness (de Castro, 2015). The desire for transcendence is evident in both eastern and

western traditions, as practitioners desire to reach a deeper understanding of divinity (Trammel,

2017). In sum, this may suggest that mindfulness is not ascribed to any religious tradition, and

can be understood from a more secular point of view (Siegel, 2007).

<center>Philosophy of Mindfulness</center>

Mindfulness stems from the ancient philosophy of Buddhism, and according to the

eastern tradition, primarily focuses on nurturing a healthy mind. There are many philosophies of

mindfulness, with varied eastern and western contributors, but many of these beliefs have

evolved from the ideas proposed in Buddhist texts (Sanivarapu, 2016). Although many attribute

Buddhist principles to the foundations of mindfulness, a practitioner of mindfulness does not

have to be Buddhist. In fact, during the creation of a more modern form of mindfulness, Kabat-

Zinn (2003) desired to integrate Hindu and Buddhist philosophy into something more concrete

for a western participant (Rapgay & Bystrisky, 2017). Kabat-Zinn (2003) described this and the

historical roots of mindfulness as a theory not attached to a systematic belief, and is best

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described as a way of being (Hyland, 2016). Instead, the philosophy of mindfulness inherently rests on the foundation of examination of self in its entire state of being (Kabat-Zinn, 1994).

Consciousness is the foundation for life, according to Broomfield (1997). To be in an awakened consciousness means being philosophically aware of mind, body, and a deeper state of consciousness. Emerson and Thoreau referenced asleep versus awake to understand the reality of humanity's conventional habits, yet this idea was borrowed from the Buddhist principle of the Two Truths Doctrine which discussed an awakened reality versus a reality driven by the ego (Shusterman, 2008). Simply put, higher consciousness is being fully alive (Ergas, 2014). There is a continual attempt at understanding a being's true state of consciousness and the requirement of self-discipline (Shusterman, 2012). This is nothing new, as philosophers throughout time: Epictetus, Socrates, Emerson, Thoreau, Taoism, Buddhism, Dewey, and James, all stressed the importance of training oneself to live well and in a higher state of consciousness (Ergas, 2014; Kabat-Zinn,1994).

The modern philosophy of mindfulness centers on Mindfulness Based Stress Reduction (MBSR), developed by Kabat-Zinn in 1979 at the University of Massachusetts Medical School, and has increased the popularity of mindfulness in western academic and clinical settings. Initially, Kabat-Zinn's (1979) ideas stemmed from Buddhist meditation techniques, but it was his goal to make meditation more accessible for people without a current meditation practice. MBSR was created for this reason, as well as to remove any religious dogma associated with the methodology. This method can be utilized by anyone, and emphasize mindfulness meditation in all facets of life, including but not limited to mindful eating, exercise, and mindfulness in relationships (Grossman, 2004). It is important to note the commonly accepted interpretation of

mindfulness in 1994, has since been modified by Zinn to allow for a broader concepts and interpretations to be included (Van Dam et al., 2018).

Mindfulness is the art of not doing and not achieving. By not doing, the practitioner will achieve peace as a byproduct. Kabat-Zinn (2013) states to practice mindfulness, the practitioner simply reminds himself/herself to be mindful, to let go without force. Kabat Zinn (2013) wrote,

It can be a way of stopping the headlong momentum of all the doing and giving yourself some time to dwell in a state of deep relaxation and well-being and to remember who you are. The formal practice can give you the strength and self-knowledge to go back to the doing and do it from out of your being. (p. 60)

Self- awareness and self-cultivation are imbedded in the philosophy of being (Shusterman, 2008). This idea of not doing is transformational beyond the philosophy of mindfulness.

MBSR initially was used in the University of Massachusetts Medical School, predominately as a form of integrative therapy. Since 1979, MBSR has continued to spread beyond the medical field and into workplaces, militaries, and prisons (Auty, Cope, & Liebling, 2017).

Although mindfulness, specifically MBSR, may have begun within the medical community for treatment of clinical populations, research has since expanded into exploring the benefits outside of the medical community, including K-12 education, as mindfulness can be adapted to any populace (Fischer, 2011). Within the non-clinical setting of school, MM allows students to be more cognitively aware of themselves as individuals and as students, and reduces

their levels of stress, depression, and anxiety (Deckro et al., 2002; Shapiro, Oman, Thoresen,

Plante, & Flinders, 2008).

Psychological/Physiological of Mindfulness

There are many effects on people living within the industrialized and technological US

society, which includes attention, overstimulation, and stress. Shusterman (2008) wrote,

> The more information and sensory stimulation our new technologies provide us, the
>
> greater the need for cultivating a somaesthetic sensitivity to detect and deal with threats
>
> of stress and overload. We cannot simply rely on further technological instruments to do
>
> our somatic monitoring for us, because we need our own body sensitivity to monitor the
>
> performance of those devices whose functioning and fit are always fallible. (p. 13)

In the 20th and 21st centuries, mindfulness has shifted into a predominant coping tool in

both clinical and non-clinical populations. It has been shown to decrease stress, anxiety, and

depression while enhancing positive psychological traits (Eberth & Sedlmeier, 2012; Goldstein,

2002). Magill's Medical Guide defined stress as a "psychophysiological response to real or

perceived pressures in the environment, including danger; prolonged stress contributes to

hormonal imbalances, lowered immune system function, and increased susceptibility to disease,

cancer, and death" (Piotrowski & Hollar, 2017, p. 1). Stress is a foundation for anxiety, and

serves as a human emotion to alert a person of a stressful situation (Dyson & Renk, 2006; Kang,

Choi, & Ryu, 2009). Similar to stress, there are various levels of anxiety. Some anxiety may

serve to the benefit of a human being.; however, if not addressed, elevated levels of anxiety may

affect student health, academic life, and social life by contributing to overall performance in both

brain and body (Beddoe & Murphy, 2004; Chen & Baram, 2016; Kang et al., 2009).

Stress is the body's natural fight or flight response (Perry, Pollard, Blakley, Baker & Vigilante, 1995). As previously stated, however, if not appropriately addressed, children can become trapped in their own thoughts that create further stress in the body and mind; such mind traps include negative self-talk and self-criticizing (Brantley, 2007). If these stressors were examined at a biological level, there would be more understanding of how stress contributes to unproductivity in the classroom.

Fight or flight within the brain responds to periods of stress via the amygdala within the limbic system. Thus, telling an anxious child to relax is not efficient, as it does not address what is occurring in the brain (Goldberg, 2017). Properly addressing a child's stress and anxiety, would also directly affect the amygdala (Pittman & Karle, 2015). The amygdala response of fight or flight is a reminder that students must first feel safe and fearless in their surroundings before they can begin to fulfill social and emotional needs (Maslow, 1987).

Becoming aware of both mind and body through mindfulness has been shown to directly affect the limbic system by lowering the activation in the amygdala, and increasing activation in the hippocampus. Mindfulness as an intervention not only can lessen the reaction of the fight or flight response, but also stimulates the area of the brain that activates learning and memory, i.e. the hippocampus (Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, & Lazar, 2011; Pittman &Karle, 2015).

Positive reactions to the mind include facilitation of critical thinking skills, an important higher-order cognitive process that involves analyzing and evaluating information. When used, the prefrontal cortex is engaged and activates executive functioning, getting rid of past stories and updating it with additional information (Noone, Bunting, & Hogan, 2016). However, when

there is an abundance of stress the prefrontal cortex shuts down (Smith et. al, 2018). This negative reaction to a necessary biological function can be addressed via mindful practices. Mindfulness stimulates the area of the brain that activates learning and memory, the hippocampus (Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, & Lazar, 2011; Pittman and Karle, 2015). This allows the prefrontal cortex to function properly (Noone, Bunting, & Hogan, 2016; Smith et al, 2018). Thus, incorporating mindfulness into academia would greatly facilitate critical thinking skills (Noone, Bunting, & Hogan, 2016).

The study of the body during the 20th and 21st centuries has revealed many fascinating results on the intervention of mindfulness. The concept of neuroplasticity is a recent finding that has shifted the way the brain is understood and can be defined as a fundamental mechanism within the brain that allows for sensory adaptation. Essentially the brain is a changing muscle able to adapt if there is continued re-direction. Yet, due to the malleability of the brain, it is important to understand how its inherent structure can be disrupted by outside factors such as stress. Mindfulness may be able to facilitate the reduction of stress and the rewiring of the brain (Pittenger & Duman, 2008).

Another key component of brain health recently understood is grey matter, a major component of the central nervous system, present in the brain, brainstem, cerebellum, and in the spinal cord. Grey matter means there are more active neuronal cell bodies controlling sensory perception such as sight, hearing, memory, emotions, speech, decision making, and self-control. The more one meditates, the more is the neuro plasticity strengthened, making the brain stronger over time. Kilpatrick (2011) suggested thinking of it as weight lifting and the building of the muscle.

The literature examined in this chapter provides additional insight into mindfulness. The analytic focus on the definition of mindfulness provides insight into the varied definitions of mindfulness dependent on spiritual, philosophical, and psychological description. The varied explanations of mindfulness throughout time pose a challenge in fully understanding mindfulness, and have diminished the definition of modern mindfulness into a politically correct understanding of the original intention. Thus, in this study, mindfulness was explored as a secular intervention tool for stress, taking into account the foundations of mindfulness as a practice typically associated with religion and/or spirituality.

The Problem: Stress, Anxiety, and Depression in Pre-Service Teachers

The purpose of this literature review was to explore the existing empirical literature of mindfulness, stress, and teaching. The researcher's goal was to answer the following question: Is there a statistically significant difference in preservice teachers' perceived stress based on selected demographic variables? Conducting a thorough review of the literature required examination of stress, anxiety, and depression in undergraduate students, teachers, and pre-service teachers as there was little research conducted on stress, anxiety, and depression among education interns.

Stress, Anxiety, and Depression among Undergraduates

Magill's Medical Guide defined stress as a "psychophysiological response to real or perceived pressures in the environment, including danger; prolonged stress contributes to hormonal imbalances, lowered immune system function, and increased susceptibility to disease, cancer, and death" (Piotrowski & Hollar, 2017, p. 1). Though anyone can experience stress, for the purpose of this study, it was discussed as it relates to college students.

As students shift from secondary to post-secondary schooling, life changes occur that can lead to additional stress. With stress stemming from the balance of study, work, and life, students can be affected if they do not know stress reduction techniques (Ryan, Shochet, & Stallman, 2010). However, levels of both low and high stress can influence the academic, social, and health of college students (Andrews & Wilding, 2004; Hojat, Gonnella, Erdmann, & Vogel, 2003; Kang, Choi, & Ryu, 2009).

Stress levels can vary from low to high but will never be eliminated, as lower levels of stress are necessary for living (Piotrowski & Hollar, 2017). However, above average levels of stress can influence greater mental illness, as seen in 21st century college students (Eisenberg et al., 2007; Stallman, 2010). According to the fall 2016 report of the American College Health Association, 55.9% of college students reported their stress was above average or chronic. The same students surveyed also reported feelings of hopelessness, exhaustion, loneliness, sadness, anxiety, anger, and the consideration of suicide and self-harm (ACHA, 2016). Of those surveyed, more than 50% reported struggling with some type of mental health issue, including stress.

Similar to stress, there are different levels of anxiety, and stress may be a foundation for anxiety in some instances (Dyson & Renk, 2006; Kang et al., 2009). Some anxiety may occasionally serve to benefit a human being; however, if not addressed, high levels of anxiety may affect student health, academic life, and social life by contributing to overall performance in both brain and body (Beddoe & Murphy, 2004; Chen & Baram, 2016; Kang et al., 2009).

The variety of anxiety present in society differs not only in levels, but also in type. According to the Fall 2018 AHCA report, 11.7% of males and 25.5% of females reported a diagnosis of anxiety. This report did not specify type of anxiety students suffered from, merely

self-reported. Although students may report experiencing some level of clinical anxiety, other varied types of anxiety include academic anxiety and social anxiety (Przybylski, Murayama, DeHaan, & Gladwell, 2013).

Barbui reported in 2006 that depression was the most common and costly mental health disorder in the United States. According to the Fall 2018 AHCA report, 11% of males and 20.1% of females reported a diagnosis of depression. These results were self-reported by the students, and did not clinically describe the type of depression. These results were self-reported by the students and did not clinically describe the type of depression.

Students diagnosed with depression in college claim to be both academically and socially affected. Not only can depression affect academic performance but also has the potential to lead to greater substance abuse as an alternative coping tool (National Institute of Mental Health, 2014). Depression is also a major contributor for suicide. In the Fall 2018 ACHA–NCHA survey, about 12.1 percent of college students reported seriously considering suicide in the last 12 months, and about 1.7 percent reported attempting suicide in the previous year (ACHA, 2018).

It is important to note, undergraduate psychological distress may be onset due to changes in a student's sense of identity, security, and self (Samuolis, Layburn, & Schiaffino, 2001). This is inclusive of changes in lifestyle and belief systems. Research suggests that financial burden and socioeconomic status are strong indicators for stress and anxiety among undergraduates (Adams, Meyers, & Beidas, 2016; Belle & Doucet, 2003).

Beliefs may also shift over the course of an undergraduate experience. According to Higher Education Research Institute (HERI) at UCLA, student spirituality shows trends of

increasing while religious activity shows a large decrease (Bryant, 2011). Due to such emerging

trends, there has been further study examining the association between religion/spirituality (R/S),

and mental health (Sharma, Marin, Koenig, Feder, Iacoviello, Southwick, & Pietrzak, 2017).

Studies have revealed differing results, with some advocating spirituality and religion for mental

wellness while other studies have revealed it could become a stressor (Dalton & Crosby, 2010).

<div align="center">Stress, Anxiety, and Depression among Teachers</div>

Magill's Medical Guide defined stress as a "psychophysiological response to real or

perceived pressures in the environment, including danger; prolonged stress contributes to

hormonal imbalances, lowered immune system function, and increased susceptibility to disease,

cancer, and death" (Piotrowski & Hollar, 2017). Anyone can experience stress, but for the

purpose of this study, it was discussed as it relates to pre- service teachers.

In 2013, MetLife surveyed 1,000 U.S. K–12 public school teachers and found that 59%

of teachers reported chronic stress, and 39% reported job satisfaction. In comparison to when

MetLife began the survey in 1984, there was a dramatic change over time, shifting from 35% of

teachers reporting stress and 62% reporting their satisfaction with their jobs (Metropolitan Life

Insurance & Harris Interactive, 2013). The higher numbers of stressed teachers has become a

problem which does not allow for an attractive job market in teaching. Instead, for the 2017-

2018 school year, Gallup (2018) showed that almost half of teachers (48%) in the U.S. indicated

they were actively looking for a different job or watching for opportunities. Stress is not the only

factor leading to increased problems in teacher retention.

Similar to stress, there are different levels of anxiety, and stress may be a foundation for

anxiety in some instances (Dyson, 2006; Fulchini & Dieker, 2018; Kang et al., 2009). Some

anxiety may serve to the benefit of a human being.; however, if not addressed, high levels of

anxiety may affect a person's health and wellness by contributing to overall performance in both

brain and body (Beddoe & Murphy, 2004; Chen & Baram, 2016; Kang et al., 2009). Anxiety is a

generic term that can reference fear, panic, worry, concern, nervousness, distress (Bouras &

Holt, 2007). Similar to stress, anxiety can be used positively to fuel work and critical thinking

skills. However, when anxiety becomes chronic, a shift between beneficial anxiety and anxiety

disorder can negatively impact psychological well-being (Myers, 2004).

For teachers, anxiety can manifest in varied forms, and can be caused by forces inside

and outside the classroom. In the classroom, anxiety may occur from lesson planning, classroom

management, and administration (Akhter et al., 2016). Outside the classroom, teacher's personal

lives may give rise to a higher rate of anxiety. If left untreated, anxiety and/or stress can lead to

burnout.

Burnout occurs when individuals lose their optimism and sense of purpose due to high

amounts of stress and/or anxiety (Maslach, Jackson, & Leiter, 1996; Rholetter, 2013). Anyone

can experience burnout, but in this study, it was reviewed as it related to elementary teachers.

Teaching is a stressful occupation, which leads to higher rates of burnout. With burnout,

effects can impact teachers' occupation and health (Capri & Guler, 2018). Burnout may cause an

increased likelihood of apathy, absence from work, or quitting their jobs all together (Belcastro

& Gold, 1983) as well as irritability and efficacy (Huberman, Grounauer, & Marti, 1993). A

common conceptualization of burnout includes three components that are related to

implementation of classroom practices: These include emotional exhaustion, depersonalization,

and sense of personal accomplishment from the job (Maslach et al., 1996).

Researchers have shown that teachers' stress, workloads, demographic backgrounds, and emotional states are factors that lead to burnout (Maslach & Leiter, 2008; Mukundan & Khandehroo, 2010; Ozan, 2009). Researchers have not suggest how the variables could be potentially interrelated and endogenous, or how mindfulness could be used as an effective coping tool to implement change. It was hypothesized in the present study that there may be a statistically significant difference in preservice teachers' perceived stress based on select demographic variables, including prior experience with mindfulness.

<center>Stress, Anxiety, and Depression among Pre-Service Teachers</center>

Stress is not isolated to teachers within the field. According to prior researchers, pre-service teachers experience stress prior to entering the occupation (Balakrishnan, Bahari, & Paul, 2017; Geng, Midford, & Buckworth,2016; Horgan, Howard, & Gardiner-Hyland, 2018; Kara & Yilmaz Gungor, 2015; Türkoglu & Cansoy, 2017). Researchers have shown varied sources of stress, including professional and personal demands on pre-service teachers (Maguire, 2001; Sumsion and Thomas, 1995; Zimmermann et al., 2008). More research is still needed, as little research has been conducted investigating preservice teachers' stress (Gardner 2010). Among the studies examined were self-reported perceptions of stress during school-placement experiences (Sumsion & Thomas 1995).

For the purpose of this dissertation, literature was examined to determine the effects of varied demographic variables on pre-service teacher stress. Several studies, described in the following paragraphs, depict further demographic analysis of pre-service teacher stress.

When examining a pre-service teacher's program of study, there was some disagreement among the researchers. According to Danner (2014), pre-service teachers were found to be

stressed regardless of program. Stress was found to be a generic problem affecting many pre-service teachers due to cognitive and emotional demands experienced in their education preparation programs. However, Kara & Yilmaz Güngör (2015) did not agree with Danner. They found that pre-service teachers did differ in stress levels based on their enrolled programs. Pre-service teachers studying in elementary education, social studies education, and mathematics education experienced more anxiety than did pre-service teachers in other programs.

Similar to program, gender was another demographic considered among pre-service teachers. According to Danner (2014), pre-service teachers were found to be stressed regardless of gender. Furthermore, Türkoglu and Cansoy (2017) investigated whether the demographic variable of gender influenced pre-service teacher burnout and anxiety, utilizing the Maslach Burnout Inventory-Student Form, Faculty Life Quality Scale, and Occupational Anxiety Scale for Pre-Service Teachers. Descriptive statistics and t-tests were utilized to understand the impact gender on burnout and anxiety. It was determined pre-service teachers were moderately burnt out and anxious, yet still had a moderate satisfaction with school life. In their research, Türkoglu and Cansoy also concluded gender did impact burnout and anxiety, with females more anxious and burnout out than their male peers. However, it was also determined the satisfaction with school life was higher in female pre-service teachers than in male pre-service teachers.

Within the other studies examined (Balakrishnan et al., 2017; Geng et al., 2016; Horgan et al., 2018), there were no specific references to the impact of demographic variables. Kara & Yilmaz Güngör (2015) and Türkoglu and Cansoy (2017) were used as foundational references for the construction of demographic survey questions pertinent to this dissertation.

<u>Possible Solution: Mindfulness in Pre-Service Teachers</u>

Over the past several decades, the research of mindfulness-based interventions has shown a dramatic increase (Goldberg et al., 2017). According to the American Mindfulness Research Association, the past 30 years have shown a steady climb in mindfulness publications as depicted in Figure 1.
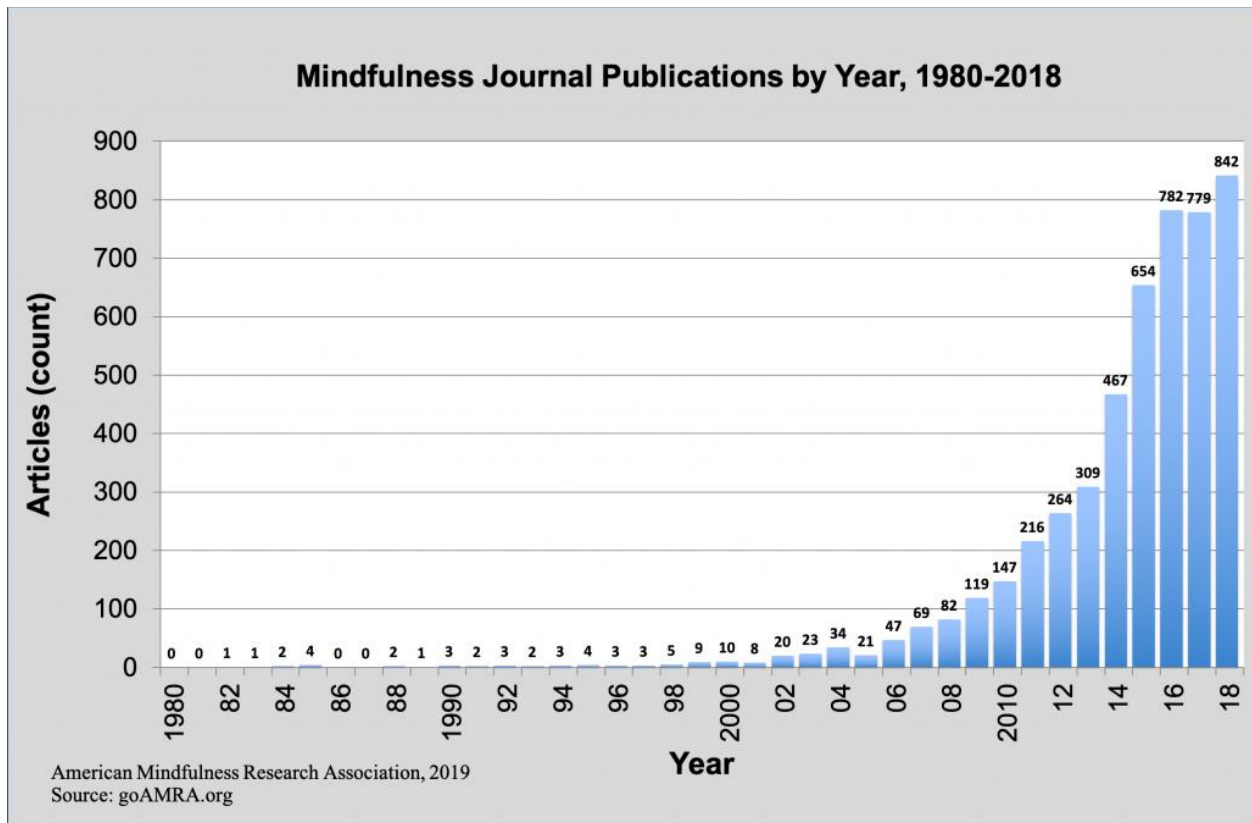
Figure 1. Mindfulness journal publications by year, 1980-2018.
Source. goAMRA.org

Included in the growing mindfulness research, is the study of mindfulness in the field of education. Research has centered around the varied institutional levels of education and is inclusive of K-12 institutions and higher education.

Mindfulness in Undergraduates

In higher education, a transition toward holistic teaching and learning practices has occurred, in order to counteract the rise of mental health concerns (Shapiro, Brown, & Astin, 2011). Considering the number of students claiming varied forms of mental illness, there are many articles that suggest mindfulness could act as an intervention to psychological distress. The researcher critically examined the literature to understand the state of mindfulness meditation research and where gaps exist, as well as understand the aforementioned variables. Past literature reviews were utilized as a guide for search (Bamber, 2016; Praissman, 2008). Relevant peer-reviewed literature was researched across several databases from 2013-2018, including but not limited to, ERIC, PsychInfo, and EBSCOHOST, returning poignant articles related to the area under study. Search terms included "mindful meditation" and "United States College or University students or Undergraduates" and "stress or anxiety or depression." Limiters and search terms placed upon the search yielded 23 articles. Five articles were excluded from the review, as the studies which were being reported did not occur in the United States; and two additional articles were excluded as they did not take place at a college or university. The articles returned during the search, did not fit all criteria for the desired search items, and there was an apparent gap within research between mindfulness and the stated dependent variables.

Within these studies, varied forms of mindfulness interventions were used including trait mindfulness, mindful breathing exercise, loving kindness meditation, body scan meditation, and mindfulness based stress reduction. These interventions utilized varied measures to collect data. Dependent on the study design, the type of measure used shifted. Several studies were focused on the physiological reactions of students, where bio-feedback was required for data collection.

Such measures of biofeedback included electrocardiograms and skin conductance responses (Burg, Wolf, & Michalak, 2012; Kadziolka, DiPierdomenico, & Miller, 2016; May et al., 2016). In addition to bio-feedback, surveys were utilized to understand both individual and group feedback, this included the Mindful Attention Awareness Scale (MAAS) and the Five Facets Mindfulness Questionnaire (FFMQ) (Kadziolka, 2016; Schwind, 2017). Despite the varied measures used, the procedures used throughout the studies examined utilized a similar 8-12 week mindfulness program (Burrows, 2016; Duarte & Pinto-Gouveia, 2015; Koszycki et al., 2016; Schwind et al., 2017; Van Gordon, Shonin, Sumich, Sundin, & Griffiths, 2014).

In the 16 studies examined, 13 reported improvement in mental health. Others showed no significant results (Bellinger, DeCaro, & Ralston, 2015; Burrows, 2016; Hindman, Glass, Arnkoff, & Maron, 2015). All reported limitations, with small and homogenous sample being the most common. In addition, all encouraged further research to examine mindfulness and its interactions on decreasing stress, anxiety, or depression within undergraduate students.

Mindfulness in Teachers

Empirical literature on mindfulness and teaching were identified and excluded other reviews of literature, editorials, and meta-analysis. A previous review of literature on mindfulness and teaching was used as a guide during my search for relevant articles. Emerson et al.'s (2017) literature review and search, described in "Teaching Mindfulness to Teachers: a Systematic Review and Narrative Synthesis," was replicated for the purpose of finding relevant articles and adding to the literature review already produced.

A literature search was conducted in March 2018, using EBSCO as the predominant database to search information on mindful teachers. Search terms were combined ('AND'): (a)

mindfulness intervention and (b) teachers (Emerson et al., 2017). Upon return of the literature, relevant papers from 2010 to 2018, were further analyzed utilizing only K-12 education level in all developed countries, and limited to abstracts in English. A range of secondary data sources served as the key bibliographic tools for identifying relevant work for review, such as bibliographies and literature reviews. Through the analysis of this research, a large sample of information was collected describing both mindfulness and teachers. To reduce the sample size further, other limiters were placed, and only peer-reviewed articles were reviewed. Information from papers was extracted and coded within the following categories: citation, purpose, design/sample, intervention, and outcomes.

The results were narrowed further upon reading the studies and determining the relevancy of the quantitative/qualitative data. In total, 16 studies were analyzed for this literature review. The literature review results are displayed in two appendices: Literature Review: Stress, Anxiety or Depression in Undergraduates (Appendix A) and Literature Review: Mindfulness in Teachers (Appendix B).

The researcher analyzed the 16 articles returned in the literature search to understand the theory of mindfulness and how it has been applied with k-12 teachers. There was not a large amount of literature returned on mindful teachers, and the researcher addressed this issue by demonstrating the gap present, as seen in Appendix B.

According to the literature returned, there are strong indications that the teaching profession is associated with considerable health risks, including both physical and physiological (Abenavoli et al., 2014; Benn, Akiva, Arel, & Roeser, 2012; Dariotis, Mirabal-Beltran, Cluxton-Keller, Gould, Greenberg, Mendelson, 2017; Flook et al., 2013; Frank, Reibel, Broderick,

Cantrell, & Metz, 2015; Gold et al., 2010; Jennings et al., 2016; Jennings et al., 2017; Jennings, et al., 2013; Kasson, & Wilson, 2016; Roeser, Schonert-Reichl, Jha, Cullen, Wallace, Wilensky, Oberle, & Thomson, 2013; Sarah et al., 2016; Schussler, Jennings, Sharp, & Frank, 2016; Taylor et al., 2016). Health risks can vary dependent on the individual teacher, but for many stress is a large contributor to teacher health and wellness (Flook et al, 2013; Frank et al., 2015; Gold et al.; 2010; Roeser et al., 2013; Taylor et al., 2016). This stress can come in many forms, and include, but is not limited to workload, isolation within the classroom, lack of support from administrators, and the social-emotional reaction to the management of student, teacher, administration, and parent behavior (Gouda, Luong, Schmidt, & Bauer, 2016). Researchers agreed that teaching is socially, emotionally, and mentally demanding (Taylor, 2016), and stress does not aid in strengthening a teacher's wellbeing; and that overall, teaching is one of the more stressful occupations, and can result in higher rates of burn out and depression (Flook et al., 2013; Frank et al, 2015; Gold et al., 2010; Jennings et al., 2013; Jennings et al., 2016; Jennings et al., 2017; Kasson & Wilson, 2016; Roeser et al., 2013; Schussler et al., 2016; Taylor et al., 2016). The proposed interventions among the articles returned are varied mindfulness based interventions (MBI). Each article addressed the prominence of stress within the teacher community and recommended the use of mindfulness as a coping strategy, further explaining that it could be useful as a professional development strategy (Taylor et al., 2016). However, each article recommended a different strategy as to how mindful teacher programs would look. Some researchers recommended mindfulness based stress reduction as the MBI, a program developed by n Kabat-Zinn (Flook et al., 2013; Frank et al., 2015; Gold et al., 2010; Sarah et al., 2016; and others recommended Cultivating Awareness and Resilience in Education [CARE]

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(Jennings et al., 2013; Jennings et al., 2016; Jennings et al.; 2017; Schussler et al., 2016). All programs stemmed from the theory of mindfulness and were aimed specifically at teachers in the K-12 sector of education.

Overall, the studies returned on mindful teaching included a variety of studies, (i.e., qualitative, quantitative, experimental, and mixed methods). Many studies were qualitative in nature and did not have as much data outside of surveys, observations, and interviews. The literature search predominately returned items initiated in 2015 to the present, as the popularity of mindfulness as an intervention strategy has continued to grow. Likewise, there appears to be a small circle of researchers dedicated to MBIs for teachers, this includes Jennings, who wrote a small percentage of the articles returned in the literature search. These trends of years and authors are evident in the Mindfulness in Teachers (Appendix B).

Mindfulness in Pre-Service Teachers

The literature returned on undergraduate and teacher mindfulness returned many studies suggesting the improvements of psychological distress via the intervention tool of mindfulness. The researched populations of undergraduates and teachers returned a variety of studies, inclusive of quantitative, qualitative, and mixed methods. This led the researcher to examine the literature available on the implementation of mindfulness interventions for pre-service teachers. These results are displayed in Appendix A. The results were quite different in comparison to the other populations researched, as the search returned a minimal amount of research on pre-service teachers and mindfulness (Cohan & Honigsfeld, 2011; Horgan et al., 2018; Jennings & Greenberg, 2014; Jennings, Snowberg, Coccia, & Greenberg, 2011; Poulin, 2009; Soloway, 2016).

The search did not have any limiters, as the field research in pre-service teacher mindfulness was small. The search returned studies that included experimental designs and pilot studies, exploring the interactions of mindfulness intervention tools on pre-service teacher populations. The search confirmed that pre-service teachers, typically, are stressed, and have limited coping tools (Cohan & Honigsfeld, 2011; Horgan et al., 2018; Jennings & Greenberg, 2014; Jennings et al., 2011; Poulin, 2009; Soloway, 2016).

One of the first studies to explore mindfulness among pre-service teachers was conducted by the Ontario Institute for Studies in Education in Canada, who utilized their Mindfulness-Based Wellness Education (MBWE) program to address adverse effects of stress and burnout in pre-service teachers. Results of the program depicted a significant increase in mindfulness and self-efficacy among pre-service teachers (Poulin, 2009).

Soloway (2016) followed up on Poulin's research by examining the MBWE among pre-service teachers over a prolonged period of time. Soloway conducted qualitative action research to uncover the value of mindfulness training as an elective course for pre-service teachers. The grounded theory research produced five main themes: (a) reflective practice, (b) teacher identity, (c) social and emotional competence and well-being on practicum, (d) learning to fail—learning to teach, and (e) engagement in teacher education. The themes procured from the research, allow further understanding of how to properly implement mindfulness among pre-service teachers.

Additional studies included research by Jennings et al. (2011), prominent researchers in the field of mindfulness, researched pre-service teachers utilizing Jennings' program: Cultivating Awareness and Reliance in Education (CARE). CARE is an inclusive program teaching social emotional coping tools for teachers. Within Jennings et al.'s 2011 study, the researcher in the

present study examined two populations--one with teachers in the field; the other with student teachers. The results indicated improvements in mindfulness training, but only in schools with higher SES populations. The results were indicative of shifting the training to become more inclusionary of all populations.

The most recent study did not specifically focus on mindfulness as an intervention tool, but was inclusive of varied stress-reduction techniques on pre-service teachers. Instead, Horgan et al. (2018) introduced biofeedback and relaxation techniques to pre-service teachers performing their required micro-teach lessons. Results indictated biofeedback training was not effective as a stress-reducing coping tool, and other techniques should be explored for the purpose of pre-service teacher stress reduction.

Overall, the search returned mixed and vague results on mindfulness among pre-service teachers. To address the mindful pre-service teacher literature gap, the present study added to the literature by examining if pre-service teachers who participate in an MBI courses, mindfulness activities, or spiritual/religious groups show improvements across the psychological variable of stress.

Introduction

The purpose of this quantitative non-experimental study is to investigate an undergraduate teacher preparation program, with the purpose of determining if student demographic characteristics influence perceived stress among pre-service teachers. Upon examination of the research available on pre-teacher stress (Balakrishnan, Bahari, & Paul, 2017; Geng et al., 2016; Horgan et al., 2018; Kara & Yilmaz Gungor, 2015; Türkoglu & Cansoy, 2017), the search revealed a gap existed in the literature on understanding stress among pre-service teachers, and the potential use of mindfulness as an intervention tool (Hartigan, 2017; McIntyre, 2018; Poulin, 2009; Powietrzynska & Gangji, 2016; Soloway, 2016; Vorndran, 2009).

This chapter begins with a review of the problem, research question and sub-questions, and the hypotheses. Subsequently, the methodology and research design are presented. The next section describes the study population and sampling methods, including the validity and reliability of the research instrument. In addition, the chapter includes detailed information on the researcher's data preparation, data collection, and the study participant's rights to privacy and measures taken to protect these rights. The final section of this chapter is devoted to the limitations and delimitations of the study.

Problem Statement

Undergraduates and teachers have shown similar trends of increased stress levels, with many researchers explaining the interactions of stress on these populations (Bergmark et al., 2018). However, there have been few studies relating specifically to undergraduate education majors and stress (Balakrishnan et al., 2017; Geng et al., 2016; Conway et al., 2010; Horgan et

al., 2018; Kara & Yilmaz Gungor, 2015; Türkoglu & Cansoy, 2017; Zascavage et al., 2012). Due to the large amounts of stress these college students will likely encounter in their future careers and the stress they may experience during their undergraduate years, it is important to understand their perceived stress prior to employment (Kitzrow, 2003).

It is important to note that the sources of stress experienced by teachers/pre-service teachers are unique to individuals and can vary on their personalities, values, skills and circumstances experienced in and out of the classroom. Thus, there is a desire and need to understand demographic data associated with pre-service teacher stress, and if there are effective coping tools for stress reduction. If there could be a further understanding of what is happening with students' perceived stress during the onset of their teaching careers, there may be a higher potential to address coping tools for stress in and out of the classroom.

Research Design

The researcher utilized a quantitative, non-experimental design based on self-reported survey data collected during the fall 2018 semester. The design for this study used a survey design to evaluate demographic variables and pre-service teacher perceived stress over the course of one academic semester. The researcher used quantitative analysis to obtain a more comprehensive understanding on pre-service teacher perceived stress. Participating pre-service teachers completed online surveys at baseline, midpoint, and final. The research design was guided by the following main research question, five sub questions, and five hypotheses:

Main Research Question

Is there a statistically significant difference in preservice teachers' perceived stress based on select demographic variables?

Sub Research Questions

1. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on their program?

2. Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

3. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on gender?

4. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. Is there a statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

Null Hypotheses

Main Null

There is no statistically significant difference in preservice teachers' perceived stress based on select demographic variables?

Sub Null

1. There is no statistically significant difference in pre-service teachers' perceived stress levels based on their program

2. There is no statistically significant difference in pre-service teachers' perceived stress levels based on their track

3. There is no statistically significant difference in pre-service teachers' perceived stress levels based on gender.

4. There is no statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. There is no statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

The quantitative study was conducted at one of the largest universities in the United States, with over 66,000 students enrolled during the 2017-2018 school year, according to the university website. Within the College of Education, the enrollment for the 2018-2019 school year was close to 6,000 students. At the time of the study, preservice teachers were required to enter in to a year-long internship. In addition to the Internship, pre-service teachers were required to take courses at the university during their Internship I and II semesters.

For this specific university, the internship is divided into Internship I and Internship II, with each being a semester in length. Internship I is less time consuming and requires students to be on their designated campus two times a week, observing the roles and responsibilities of an assigned classroom teacher. During Internship II, preservice teachers are placed in a nearby county public school for five days a week, Monday through Friday. Each preservice teacher is assigned a supervising teacher. The supervising teachers act as mentors and provide continual feedback, training tips, and conducts evaluations of their assigned preservice teachers' performance. In addition to working with a supervising teacher, intern Is and Intern IIs are also assigned a university-based clinical coordinator during the internship experience who is

responsible for observing and mentoring the pre-service teachers throughout their Internship experiences. Interns are required to complete certain benchmarks throughout the semester. These benchmark requirements helped guide the researcher in timing the distribution of the survey administered to gather data for the study

<center>Selection of Participants and Research Site</center>

The target population for the study was comprised of preservice teachers enrolled in Internship I and II from the main campus of a large university in the southeastern United States during the fall, 2018 semester. This population of participants was the focus of the study because students tend to experience more stress during unpaid undergraduate internships (Parent, Bradstreet, Wood, Ameen, & Callahan, 2016), and several of the professors have voiced a need for coping mechanisms during pre-service teacher's internship. To ensure that all participants had the same requirements during their internship, the Internship II preservice teachers enrolled through regional campuses were excluded from the study.

The researcher utilized students who have self-selected the required course for Internship I and II in both Elementary and Secondary Education for the Fall of 2018. Specifically, according to fall 2018 data, the College of Education showed an enrollment of 8,773 students; 5,838 undergraduate students and 2,935 graduate students (CCIE, 2018). According to the Office of Clinical Experiences, there were 92 students enrolled in the Internship I and II courses for Secondary Education, and 240 students for Elementary Education Internship I and II. Upon IRB approval (Appendix C) recruitment began in the first month of the Fall 2018 semester. All 332 students were invited to voluntarily participate in the research. Random assignment occurred naturally, as students self-selected their enrollment for internship I and II for fall of 2018.

<center>40</center>

Purposive sampling was chosen for the study sample type, as to ensure a specific population is examined (Lee-Jen Wu et al., 2012). Although purposive sampling is non-representative, more controls were established to ensure the population remained similar (Etikan, 2016).

<p style="text-align:center">Instrumentation</p>

Data collection for this dissertation was completed using one survey, Stress: Perceived Stress Scale (PSS) (Appendix D). The PSS is a tool used to measure work-related stress in normal populations. The PSS is a 10-item self-report instrument designed to assess the participants' progression by measuring the degree to which participants view their lives as stressful, and is one of the most used surveys of perceived stress (Mozumder, 2017; Vidal et al., 2018). The PSS has been previously used in examining perceived stress in individuals (Brown & Ryan, 2003; Vidal et al., 2018). It is important to note, the original PSS scale included 14-items compared to the 10-item version being used for this study. Originally developed by Cohen, Kamarack, and Mermelstein in 1983, the survey contained 14 items to measure stress among populations. Cohen continued to study the instrument for validity purposes and found the 10-item version to be a better measuring tool of perceived stress (Cohen & Williams, 1988). Likewise, the PSS-10 can be administered in less time, and does not contribute to extra stress of taking a longer survey (Remor, 2006). The PSS-10 also provides a slight improvement in explained variance and internal reliability (Cohen & Williams, 1988).

The PSS includes a 5-point Likert-type scale ranging from 4 = very often to 0 = never and was designed to understand thoughts and feelings surrounding items of stress. According to Cohen (1988), PSS scores are determined first by reversing responses to questions 4, 5, 7, and 8

and summing across all items. When summing scores, an individual score can range from 0 to 40 with higher scores indicative of higher rates of perceived stress as follows: 0-13 = low stress, 14-26 = moderate stress, and 27-40 = high perceived stress. It is important to note the researcher chose to use the PSS to measure students stress in experiencing a similar life circumstance (i.e., internship). Dependent on their individual perceptions, however, the total score shifted students into the low stress or high stress categories.

In addition to the Perceived Stress Survey (Appendix D), demographic information gathered included age, gender, SES related questions, and questions related to past experiences with mindfulness activities. The nine demographic questions were guided by the original research question and the literature review.

Participants completed the PSS toward the beginning of their internship, mid-term, and final weeks of the Fall 2018 semester. Surveys were delivered through Qualtrics. Participants who had not yet completed the survey were sent a reminder email two-weeks after the first request.. To ensure privacy of participants, name and contact information were deleted after data analysis. Prior to analysis, data collected were coded for anonymity. Likewise, consent forms and any additional paperwork were stored securely in locked file cabinets when not in use and only handled by the researcher.

<div align="center">Procedures</div>

The timeline of the study was over the course of one semester and began upon receipt of IRB approval (Appendix C). Towards the beginning of the semester, within the intern's initial orientation, the researcher introduced herself to potential participants and explained the upcoming study.

Following the introduction and receipt of IRB approval (Appendix C), the researcher recruited the sample of students. There were several meetings throughout the semester that Interns I and II were required to attend. The first required meeting occurred in September and acted as the recruitment site. During the required meeting for all interns, the researcher re-introduced herself to the interns and re-explained the intentions of the study. Upon explanation, the researcher asked for interested participants and required them to complete the consent forms in person, dependent upon their interest. The consent form explained the purpose of the study and contained a space to write the participant's name and email information. The information was utilized to distribute the baseline, midpoint, and final survey. The recruitment contact was estimated at approximately 10 minutes, including introduction and collection of contact data for interested participants.

Once the consent forms were collected, the researcher distributed the survey via Qualtrics, using the process described in the recruitment of participants. Directions for completion were contained within the Qualtrics survey link, and all questions were directed to the researcher. The survey took approximately 10 minutes to complete and did not interfere with the scheduled meeting times of the interns. If the interns decided not to complete within a week of distribution, three reminder emails were distributed roughly a week apart. The third email served as the final reminder for participants before discontinuing further contact. Completion of primary analyses ended the week of November 26, 2018. The following schedule includes important dates associated with the data collection process during the fall semester:

- 8/22/18   Internship I/II orientation: initial meeting with interns, recruitment
- 8/17-18/18   Internship I meeting: recruitment of participants

- 9/21/18   Internship II meeting: recruitment of participants

- 10/29/18   Midpoint survey emails sent to participants

- 11/12-16/18   Final survey emails sent to participants

Data Analysis

Data analysis was conducted utilizing Dillman, Smyth, and Christian (2014) as a foundational tool of understanding and implementation. Upon receipt of survey information from pre-service teacher participants, data were uploaded into the Statistical Package for the Social Sciences Software Program (SPSS) version 24. Prior to analysis, the data were checked for accuracy and cleaned. Initially, the mean was assessed for the Perceived Stress Survey, and descriptive statistics were used to check for outliers. If identified as outliers, the cases were deleted from the data file.

The purpose of this dissertation was to identify demographic variables that might influence pre-service teachers' perceived stress. Thus, the researcher determined if there was variability in existence between the means of perceived stress and the surveyed demographic variables. For the purposes of fully addressing the research question, the researcher used descriptive statistics, Spearman's correlation, and two-way mixed analysis of variance (ANOVA) to determine the existence of statistical significance. To fully address the research question, several non-parametric tests were performed, with perceived stress as the dependent variable, and program, academic track, gender, SES, and prior experiences with mindfulness as the predictors.

Ethical Standards

To ensure confidentiality of the participants, all data were treated in a manner that protected the confidentiality and anonymity of the participants and organization involved in the study. The information obtained from the research was coded, and remained at all times the property of the researcher. The information will be stored securely for five years, after which time it will be destroyed.

Prior to the data collection, consent was obtained from the Office of Clinical Experiences to provide access to study participants. Upon permission, a formal written letter that briefly describes the objectives of study, the time commitment, and requirements of the study was given to pre-service teachers to sign as a form of consent for their participation. The researcher stored consent forms securely, and all other documents were stored securely in locked file cabinets when not in use and were only handled by the researcher. Similarly, the survey sent via Qualtrics did not include any identifying information; thus the students were protected while completing the surveys.

Limitations

Mindfulness is a relatively new pedagogy within education and has been continually growing in research interest since the first decade of the 21st century. However, with such a recent interest, the research previously conducted on mindfulness and teacher professional development was limited, especially among the pre-service teacher population. More literature needed to be analyzed and added to the literature to have a further awareness of the emerging themes within the study. This provided more depth into what the themes meant, and their validity.

Limitations involved facilitator bias included the facilitator being the researcher. Likewise, the facilitator/researcher was also employed by the university where the research took place.

There were also weaknesses in the data collection strategies, which would inherently decrease the validity of the data as well. Due to the purposive sample used, the sample size of the groups were homogenous in population, causing some difficulty in quantifying a meaningful relationship within the variables. The sampling selection could be improved by obtaining a larger sample size, potentially by using pre-service teachers outside of Internship. Thus, there was a lack of diversity in data that fails to provide a clearer picture applicable for a more generalizable population. Likewise, a majority of data were self-reported by the selected sample. The self-reported data may not paint a true picture of what was occurring with stress.

CHAPTER 4
RESULTS

<u>Introduction</u>

The purpose of this quantitative study was to determine the effects of demographic variables on pre-service teacher stress. The pre-service teachers involved were enrolled in an undergraduate program at a large southeastern university and were all enrolled in either Internship I or Internship II at the time of the study. The research questions that guided the researcher in this investigation were as follows:

<u>Main Research Question</u>

Is there a statistically significant difference in preservice teachers' perceived stress based on select demographic variables?

<u>Sub Research Questions</u>

1. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on their program?

2. Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

3. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on gender?

4. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. Is there a statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

In this chapter, the researcher presents the results of the data analyses for the main research question and sub research questions. The main research question investigated undergraduate pre-service teachers enrolled in the college of education at a large southeastern university. Survey research was used to investigate the perceived stress of students over the course of one semester, and was collected at three time points.

To determine whether any changes occurred in mean scores from baseline to endpoint based on select demographic variables, pre-service teachers' scores were analyzed via a sample of paired t-tests, mixed-measures ANOVA tests, General Linear Model, and Spearman's correlation. Chapter 4 presents the research question and sub research questions, and details the statistical tests conducted with the corresponding analysis/results. Discussion and implications of the findings are presented in Chapter 5.

<u>Data Analysis</u>

Data analysis was conducted utilizing Dillman, Smyth, and Christian (2014) as a foundational tool of understanding and implementation. Upon receipt of survey information from pre-service teacher participants over the course of three time points, data were uploaded into the Statistical Package for the Social Sciences Software Program (SPSS) version 24. Prior to analysis, the data were checked for accuracy and cleaned. Initially, the mean was assessed for the Perceived Stress Survey, and descriptive statistics were used to check for outliers. If identified as outliers, the cases were deleted from the data file.

The purpose of this dissertation was to identify demographic variables that might influence pre-service teachers' perceived stress; thus, the researcher's desire to determine if there was variability in existence between the means of perceived stress and the surveyed demographic

variables. For the purposes of fully addressing the research question, the researcher used descriptive statistics, Spearman's correlation, and two-way mixed analysis of variance (ANOVA) to determine the existence of statistical significance. To fully address the research question, several non-parametric tests were performed, with perceived stress as the dependent variable, and program, academic track, gender, SES, and prior experiences with mindfulness as the predictors.

A two-way mixed ANOVA was used to examine research sub research questions 1-4. The researcher ran a two-way mixed ANOVA to establish whether there was an interaction between the between-subjects factor and within-subjects factor of perceived stress. The sub research questions met all assumptions to run a two-way mixed ANOVA, with the use of a continuous dependent variable, the incorporation of one between-subjects factor that was categorical with two or more categories, and the incorporation of one within-subjects factor that was categorical with two or more categories. Outliers were extracted from the data in SPSS to reduce any negative effect on outcome. Upon extraction of outliers, a Shapiro-Wilk test was used to test for normality. Data was found to be normally distributed. The final assumption of a mixed two way ANOVA examined the homogeneity of variances for each combination of the groups of the two independent variables. Levene's test was used to assess the equality of variances for a variable calculated for two or more groups. It is important to note, when running a two-way mixed ANOVA, sphericity is typically examined. For the purposes of this study, however, only two time points were examined. Therefore, Mauchly's test of sphericity test was violated and was not utilized in data interpretation.

A Spearman correlation was used to examine sub question 5, as the data was inclusive of ordinal variables. The data were used to examine the correlation coefficient from a range of -1 to 1 (Pedronette & Torres, 2016) to see if there existed a direct or inverse relationship. An alpha of 0.05 (p< .05) was used to determine significance, with 0.00-0.39 considered weak, 0.40-0.59 considered moderate, and above 0.60 strong in relationship (Celik, Elbasan, Gucuyener, Kayihan, & Huri, 2018). If significance was found, the null hypothesis was rejected.

<div align="center">Demographic Characteristics of the Sample</div>

In the fall of 2018, 332 student interns were invited to voluntarily participate in this research study. Of the available population, the researcher received 241 survey responses over the course of the semester. Of the survey responses received, 42 responses were deleted. Submissions were deleted due to incompletion, and were removed prior to any statistical analysis being conducted. In total, the researcher was able to collect 199 usable responses over the course of three time points.

Attrition of participants occurred throughout the data collection process. Data were transmitted over three time periods. A total of 94 students completed the Time1 survey, 56 students completed the Time2 survey, and 49 students completed the Time3 survey. The participant attrition was random and declined over the three time points as referenced in Table 1. The random attrition suggested the results were still generalizable.

Table 1

Survey Attrition

Cases		Perceived Stress Score1	Perceived Stress Score2	Perceived Stress Score3
N	Valid	94	56	49
	Missing	10	48	55

The targeted population consisted of pre-service teachers age 18 years and older and currently enrolled in internship at a specific college. The sample, from purposive sampling, was from the targeted population.

Tables 2-5 provide statistics that describe the demographic portion of the data. Most survey participants were female, 87.10% (n = 81) of the sample observations, with males making up 11.80% (n = 11) of the study's sample. One student chose other (1.10%). Regarding participants' education program, 61.30% (n = 57) of the respondents were elementary pre-service teachers and 28.70% (n = 36) were enrolled in the secondary program. In terms of socio-economic status, 21.7% (n = 20) reported belonging to a family making over $100,000 in annual income, while only 6.5% (n = 6) reported an annual income of less than $20,000.

Table 2

Demographic Statistics: Gender

Current Gender Identity		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	11	10.6	11.8	11.8
	Female	81	77.9	87.1	98.9
	Other	1	1.0	1.1	100.0
	Total	93	89.4	100.0	
Missing	System	11	10.6		
Total		104	100.0		

Table 3

Demographic Statistics: Academic Program

	Academic Program	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary Education	57	54.8	61.3	61.3
	Secondary Education	36	34.6	38.7	100.0
	Total	93	89.4	100.0	
Missing	System	11	10.6		
Total		104	100.0		

Table 4

Demographic Statistics: Academic Track

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social Science Education	16	15.4	20.3	20.3
	Mathematics Education	6	5.8	7.6	27.8
	English Language Arts Education	9	8.7	11.4	39.2
	Art Education	2	1.9	2.5	41.8
	Not Applicable	46	44.2	58.2	100.0
	Total	79	76.0	100.0	
Missing	System	25	24.0		
Total		104	100.0		

Table 5

Demographic Statistics: Social Economic Status

	Income Level	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $20,000	6	5.8	6.5	6.5
	$20,000 to $34,999	19	18.3	20.7	27.2
	$35,000 to $49,999	19	18.3	20.7	47.8
	$50,000 to $74,999	17	16.3	18.5	66.3
	$75,000 to $99,999	11	10.6	12.0	78.3
	Over $100,000	20	19.2	21.7	100.0
	Total	92	88.5	100.0	
Missing	System	12	11.5		
Total		104	100.0		

Data Analysis

A mixed-measures analysis of variance (ANOVA) was conducted to analyze statistically significant interactions within perceived stress and academic program (elementary and secondary academic programs). Prior to determining if there is a two-way interaction between the between- and within-subjects factors, sphericity was analyzed. Mauchly's test of sphericity was violated due to analysis of only two time points. Thus, the researcher focused on the interpretation and report of the main effects within the Tests of Within-subjects Effects SPSS Statistics output tables, to determine any effects.

Typically, the main effect of time has three categories (i.e., pre, mid and post), which means that the assumption of sphericity is required. Due to the limited sample size, only two categories were analyzed, pre and post. Two time periods were analyzed to increase the potential sample size analyzed. However, this increased the likelihood that the test of sphericity of the main effect within-subjects factor would be violated.

The researcher, therefore, concentrated on the tests of between-subjects effects. Testing the main effect of the group allows for the testing of differences in perceived stress and the varied demographic questions with disregard of the two time points. Instead, the emphasis is placed on a comparison among the perceived stress groups based on the variable under analysis.

Thus, the dissertation was designed to explore demographic variables and perceived stress among student interns utilizing an organized data set. This chapter contains the results of the analysis to respond to each sub question and sub null hypothesis, inclusive of statistical tests and results

Sub Research Question 1

Is there a statistically significant difference in pre-service teachers' perceived stress

levels based on their program?

Sub Null Hypothesis 1

There is no statistically significant difference in pre-service teachers' perceived stress

levels based on their program.

Sub question 1 was designed to determine survey respondents' perceived stress level

based on their program of enrollment. Tables 6 - 8 display the results of the analysis of data to

respond to Sub Question 1.

Table 6

Descriptive Statistics: Perceived Stress by Program

Perceived Stress	What program are you enrolled in at the University?	Mean	Std. Deviation	N
Perceived Stress Score1	Elementary Education	22.8696	6.87092	23
	Secondary Education	18.9091	7.70225	22
	Total	20.9333	7.47845	45
Perceived Stress Score3	Elementary Education	22.4348	7.05708	23
	Secondary Education	18.4091	7.02824	22
	Total	20.4667	7.25384	45

Table 7

Tests of Within-subject Effects: Perceived Stress by Program

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Time	Sphericity Assumed	4.913	1	4.913	.176	.677
	Greenhouse-Geisser	4.913	1.000	4.913	.176	.677
	Huynh-Feldt	4.913	1.000	4.913	.176	.677
	Lower-bound	4.913	1.000	4.913	.176	.677
Time * Program	Sphericity Assumed	.024	1	.024	.001	.977
	Greenhouse-Geisser	.024	1.000	.024	.001	.977
	Huynh-Feldt	.024	1.000	.024	.001	.977
	Lower-bound	.024	1.000	.024	.001	.977
Error(Time)	Sphericity Assumed	1199.576	43	27.897		
	Greenhouse-Geisser	1199.576	43.000	27.897		
	Huynh-Feldt	1199.576	43.000	27.897		
	Lower-bound	1199.576	43.000	27.897		

Table 8

Tests of Between-subjects Effects: Perceived Stress by Program

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	38380.001	1	38380.001	512.875	.000
Program	358.579	1	358.579	4.792	.034
Error	3217.821	43	74.833		

Estimated Marginal Means of MEASURE_1
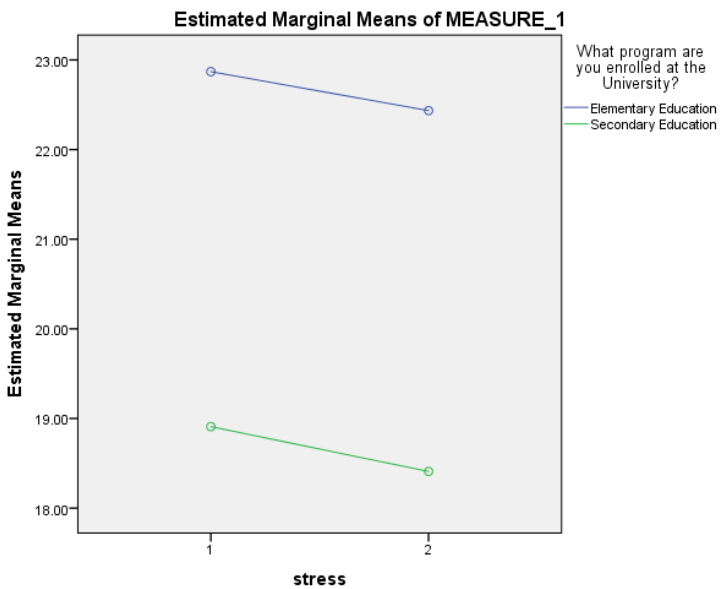
Figure 2. Perceived stress by program

Analysis/Decision

Upon data collection, the perceived stress of pre-service teachers was measured according to their academic program. Elementary and secondary pre-service teachers were examined utilizing the Perceived Stress Survey. The descriptive statistics were examined utilizing the PSS-10 scale where low stress = 0-13, moderate stress = 14-26, and high perceived stress = 27-40.

According to the descriptive statistics for sub question 1 of the main research question, the sample for Elementary Education pre-service students at Time 1 was moderately stressed (M = 22.87, SD = 6.87). Time 3 reflected a slightly lower level of moderate stress for elementary pre-service teachers (M = 22.43, SD = 7.06). Secondary pre-service teachers differed in comparison to elementary pre-service teachers. The sample for secondary pre-service students at Time 1 were moderately stressed (M = 18.91, SD = 7.70). Time 3 reflected a slightly lower level

of moderate stress for elementary pre-service teachers (M = 18.41, SD = 7.03). In total, the descriptive statistics showed trends of secondary students having a lower level of stress compared to those of secondary students.

Upon analysis of descriptive statistics, a mixed-design analysis of variance model was used to test for differences between elementary and secondary pre-service teachers while subjecting the participants to repeated measures of PSS. Mauchly's test of sphericity indicated that the assumption of sphericity was violated for the two-way interaction, as the test was unable to be run. However, the main effect of group showed that there was a statistically significant difference in mean perceived stress between program F(1, 43) = 4.792, p = .034. As predicted, pre-service teachers enrolled in different programs had varied levels of stress by program.

<div align="center">Sub Research Question 2</div>

Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

<div align="center">Sub Null Hypothesis 2</div>

There is no statistically significant difference in pre-service teachers' perceived stress levels based on their track.

Sub question 2 was designed to determine survey respondents' perceived stress level based on academic track. Tables 9 - 11 display the results of the analysis of data to respond to Sub question 2.

Table 9

Descriptive Statistics by Academic Track

Perceived Stress	If enrolled in the program of Secondary Education, what track are you listed under?	Mean	Std. Deviation	N
Perceived Stress Score1	Social Science Education	16.7000	4.80856	10
	Mathematics Education	18.8000	12.15319	5
	English Language Arts Education	22.7500	7.58837	4
	Art Education	23.0000	.	1
	Other- Not Applicable	22.6190	7.44632	21
	Total	20.7317	7.67797	41
Perceived Stress Score3	Social Science Education	17.7000	6.73383	10
	Mathematics Education	21.0000	7.58288	5
	English Language Arts Education	20.7500	6.02080	4
	Art Education	23.0000	.	1
	Other- Not Applicable	20.5714	8.15213	21
	Total	20.0000	7.33485	41

Table 10

Tests of Within-subjects Effects: Perceived Stress by Academic Track

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
stress	Sphericity Assumed	.225	1	.225	.007	.933
	Greenhouse-Geisser	.225	1.000	.225	.007	.933
	Huynh-Feldt	.225	1.000	.225	.007	.933
	Lower-bound	.225	1.000	.225	.007	.933
stress * Track	Sphericity Assumed	58.148	4	14.537	.467	.760
	Greenhouse-Geisser	58.148	4.000	14.537	.467	.760
	Huynh-Feldt	58.148	4.000	14.537	.467	.760
	Lower-bound	58.148	4.000	14.537	.467	.760
Error(stress)	Sphericity Assumed	1120.876	36	31.135		
	Greenhouse-Geisser	1120.876	36.000	31.135		
	Huynh-Feldt	1120.876	36.000	31.135		
	Lower-bound	1120.876	36.000	31.135		

Table 11

Tests of Between-subjects Effects: Perceived Stress by Academic Track

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	13396.081	1	13396.081	158.862	.000
Track	295.305	4	73.826	.875	.488
Error	3035.719	36	84.326		
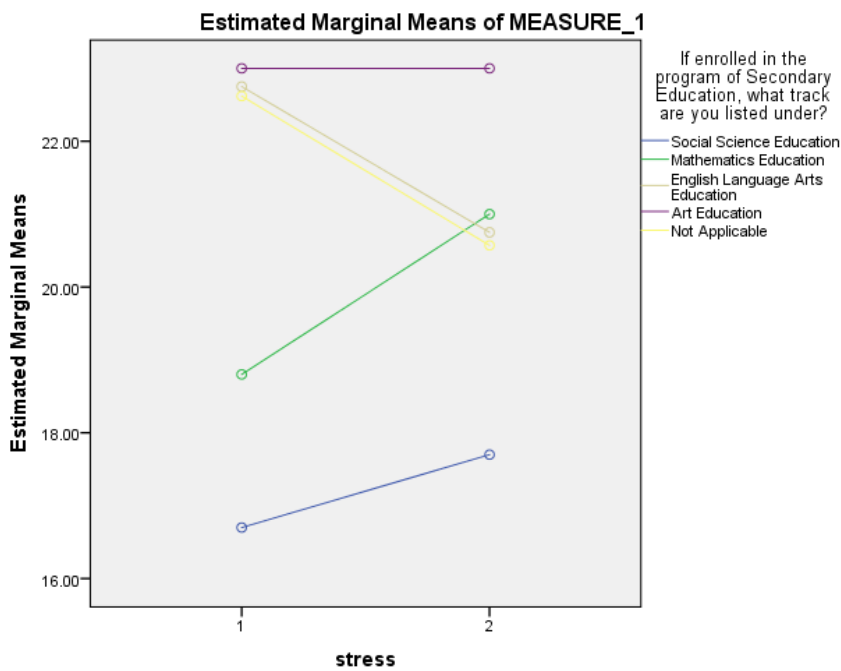
Figure 3. Perceived stress by track

Analysis/Decision

A mixed-measures analysis of variance (ANOVA) was conducted to analyze statistically significant interactions within perceived stress and academic track (secondary academic programs: social science, mathematics, English language arts, art). Prior to determining if there was a two-way interaction between the between- and within-subjects factors, sphericity was analyzed. Mauchly's test of sphericity was violated due to analysis of only two time points. Thus,

the researcher focused on the interpretation and report of the main effects within the Tests of Within-Subjects Effects SPSS Statistics output tables, to determine any effects.

Upon data collection, the perceived stress of pre-service teachers was measured according to their academic tracks. According to the descriptive statistics for sub question 2 of the research question, the sample for secondary academic programs (social science, mathematics, English language arts, art) depicted differed trends across variables. The sample for secondary mathematics pre-service students at Time 1 were towards the lower end of moderately stressed (M = 18.80, SD = 12.15). Time 3 reflected a slightly higher level of moderate stress for mathematics pre-service teachers (M = 21.00, SD = 7.58). The sample for secondary mathematics pre-service students at Time 1 were towards the lower end of moderately stressed (M = 18.80, SD = 12.15). Time 3 reflected a slightly higher level of moderate stress for mathematics pre-service teachers (M = 21.00, SD = 7.58). The sample for secondary English language arts pre-service students at Time 1 were moderately stressed (M = 22.75, SD = 7.59). Time 3 reflected a slightly lower level of moderate stress for mathematics pre-service teachers (M = 20.75, SD= 6.02). Art education only returned one response, with Time 1 reflecting a moderate level of stress (M = 23.00). Time 3 indicated the same response with the same moderate level of stress (M = 23.00). Social science education pre-service students at Time 1 were at the lower end of moderately stress levels (M = 16.70, SD = 4.81). Time 3 reflected a slightly higher level of moderate stress for social science pre-service teachers (M = 17.70, SD = 6.73). Other tracks of secondary pre-service teachers demonstrated higher levels of stress according to the descriptive trends. In total, the descriptive statistics showed trends of moderate stress levels among varied tracks of all secondary students.

Upon analysis of descriptive statistics, a mixed-design analysis of variance model was used to test for differences among secondary tracks of pre-service teachers while subjecting the participants to repeated measures of PSS. Mauchly's test of sphericity indicated that the assumption of sphericity was violated for the two-way interaction, as the test was unable to be run. However, the main effect showed that there was no statistically significant difference in mean perceived stress between track $F(4, 36) = .875$, $p = .488$. The result supported the null, and rejected the hypothesis.

<div align="center">Sub Research Question 3</div>

Is there a statistically significant difference in pre-service teachers' perceived stress levels based on gender?

<div align="center">Sub Null Hypothesis 3</div>

There is no statistically significant difference in pre-service teachers' perceived stress levels based on gender.

Sub question 3 was designed to determine survey respondents' perceived stress level based on gender. Tables 12-14 display the results of the analysis of data to respond to Sub Question 3.

Table 12

Descriptive Statistics: Perceived Stress by Gender

Perceived Stress	Current gender identity?	Mean	Std. Deviation	N
Perceived Stress Score1	Male	14.1429	6.61888	7
	Female	22.5405	6.74370	37
	Other	9.0000	.	1
	Total	20.9333	7.47845	45
Perceived Stress Score3	Male	12.7143	6.57557	7
	Female	22.1622	6.36184	37
	Other	12.0000	.	1
	Total	20.4667	7.25384	45

Table 13

Tests of Within-subjects Effects: Perceived Stress by Gender

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Stress	Sphericity Assumed	.608	1	.608	.021	.884
	Greenhouse-Geisser	.608	1.000	.608	.021	.884
	Huynh-Feldt	.608	1.000	.608	.021	.884
	Lower-bound	.608	1.000	.608	.021	.884
Stress * Q14	Sphericity Assumed	9.392	2	4.696	.166	.848
	Greenhouse-Geisser	9.392	2.000	4.696	.166	.848
	Huynh-Feldt	9.392	2.000	4.696	.166	.848
	Lower-bound	9.392	2.000	4.696	.166	.848
Error(Stress)	Sphericity Assumed	1190.208	42	28.338		
	Greenhouse-Geisser	1190.208	42.000	28.338		
	Huynh-Feldt	1190.208	42.000	28.338		
	Lower-bound	1190.208	42.000	28.338		

Table 14

Tests of Between-subjects Effects: Perceived Stress by Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	3661.613	1	3661.613	63.384	.000
Gender	1150.107	2	575.053	9.954	.000
Error	2426.293	42	57.769		
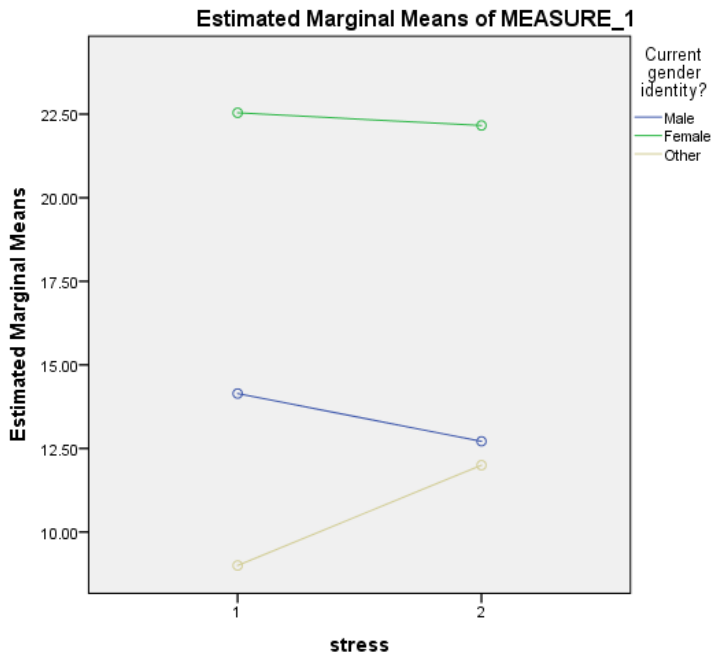
Figure 4. Perceived stress by gender

Analysis/Decision

According to the descriptive statistics for sub question 3 of the main research question, the sample for pre-service students based on gender (male, female, and other) depicted trends of variance. At Time 1, males were at the lowest levels of moderate stress (M = 14.12, SD = 6.62). Time 3 reflected a slightly lower level of stress for male pre-service teachers reflecting a low level of stress (M = 12.71, SD = 6.58). Female pre-service teachers differed in comparison to male pre-service teachers. The sample for female pre-service students at Time 1 was moderately stressed (M = 22.54, SD = 6.74). Time 3 reflected a slightly lower level of moderate stress for female pre-service teachers (M = 22.16, SD = 6.36). One person responded with "other," and indicated low levels of stress in Time 1 (M = 9.00) and Time 3 (M = 12.00). In total, the

descriptive statistics showed trends of male students having a lower level of stress compared to those of female students.

Upon analysis of descriptive statistics, a mixed-measures analysis of variance (ANOVA) was conducted to analyze statistically significant interactions within perceived stress and gender (male, female, and other). Prior to determining if there was a two-way interaction between the between- and within-subject factors, sphericity was analyzed. Mauchly's test of sphericity was violated due to analysis of only two time points. Thus, the researcher focused on the interpretation and report of the main effects within the Tests of Within-Subjects Effects SPSS Statistics output tables, to determine any effects.

Mauchly's test of sphericity indicated that the assumption of sphericity was violated for the two-way interaction, as the test was unable to be run. However, the main effect showed that there was a statistically significant difference in mean perceived stress between gender $F(4, 36) = 9.954$, $p = .000$. As predicted, pre-service teachers of differing gender had varied levels of stress among time.

<div align="center">Sub Research Question 4</div>

Is there a statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

<div align="center">Sub Null Hypothesis 4</div>

There is no statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

Sub question 4 was designed to determine survey respondents' perceived stress level based on socioeconomic status. Tables 15 - 17 display the results of the analysis of data to respond to Sub question 4.

Table 15

Descriptive Statistics: Perceived Stress by Socioeconomic Status (SES)

Perceived Stress	What is your best estimate of your family's annual income in the year you entered this college?	Mean	Std. Deviation	N
Perceived Stress Score1	Less than $20,000	30.0000	4.54606	4
	$20,000 to $34,999	20.0000	8.17662	8
	$35,000 to $49,999	21.2727	5.12037	11
	$50,000 to $74,999	14.2857	6.47339	7
	$75,000 to $99,999	23.0000	7.58947	6
	Over $100,000	21.1111	7.55719	9
	Total	20.9333	7.47845	45
Perceived Stress Score3	Less than $20,000	28.7500	4.50000	4
	$20,000 to $34,999	17.6250	8.73315	8
	$35,000 to $49,999	19.9091	6.02419	11
	$50,000 to $74,999	15.2857	7.47695	7
	$75,000 to $99,999	25.3333	6.65332	6
	Over $100,000	20.7778	3.99305	9
	Total	20.4667	7.25384	45

Table 16

Tests of Within-subjects Effects: Perceived Stress by Socioeconomic Status (SES)

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Stress	Sphericity Assumed	2.230	1	2.230	.076	.785
	Greenhouse-Geisser	2.230	1.000	2.230	.076	.785
	Huynh-Feldt	2.230	1.000	2.230	.076	.785
	Lower-bound	2.230	1.000	2.230	.076	.785
Stress * SES	Sphericity Assumed	51.348	5	10.270	.349	.880
	Greenhouse-Geisser	51.348	5.000	10.270	.349	.880
	Huynh-Feldt	51.348	5.000	10.270	.349	.880
	Lower-bound	51.348	5.000	10.270	.349	.880
Error(stress)	Sphericity Assumed	1148.252	39	29.442		
	Greenhouse-Geisser	1148.252	39.000	29.442		
	Huynh-Feldt	1148.252	39.000	29.442		
	Lower-bound	1148.252	39.000	29.442		

Table 17

Tests of Between-subjects Effects: Perceived Stress by Socioeconomic Status (SES)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	37352.496	1	37352.496	638.337	.000
SES	1294.301	5	258.860	4.424	.003
Error	2282.099	39	58.515		

Estimated Marginal Means of MEASURE_1
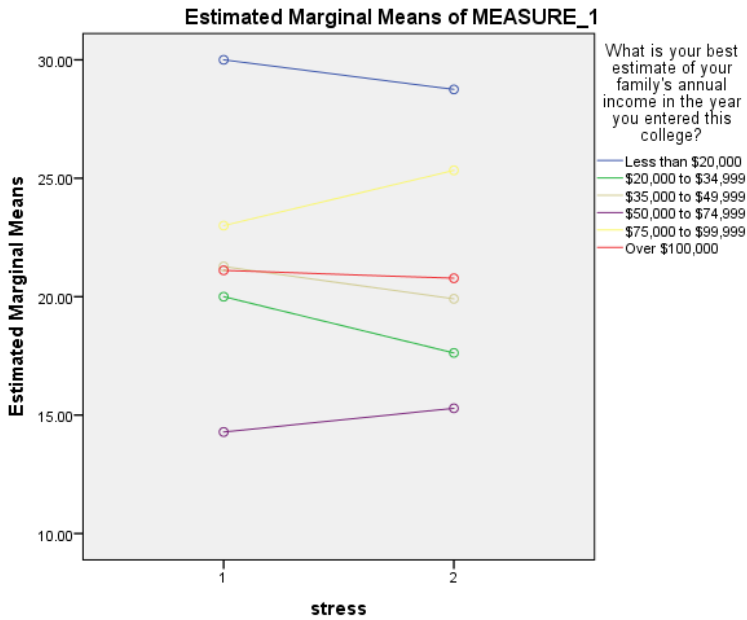
Figure 5. Perceived stress by socioeconomic status (SES)

Analysis/Decision

According to the descriptive statistics for sub question 4 of the main research question,

the sample for pre-service students based on socioeconomic status categories (parents make less

than $20,000, $20,000 to $34,999, $35,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999,

over $100,000) depicted trends of variance in perceived stress. According to the descriptives, at

Time 1 parents who made less than $20,000 were at the highest levels of stress (M = 30.00, SD =

4.55). Time 3 reflected a slightly lower level of high stress (M = 28.75, SD = 4.50). Students

who were in a family earning $20,000 to $34,999 were moderately stressed at Time 1 (M =

20.00, SD = 8.18) compared to a slightly lower level of moderate stress at Time 3 (M = 17.63,

SD = 8.37). Students who were in a family earning $35,000 to $49,999, were moderately

stressed at Time 1 (M = 21.27, SD = 5.12) compared to a slightly lower level of moderate stress

at Time 3 (M=19.91, SD= 6.03). Students who were in a family earning $50,000 to $74,999, were moderately stressed at Time 1 (M = 14.29, SD = 6.47) compared to a slightly higher level of moderate stress at Time 3 (M = 15.29, SD = 7.48). Students who were in a family earning $75,000 to $99,999, were moderately stressed at Time 1 (M = 23.00, SD = 7.59) compared to a slightly higher level of moderate stress at Time 3 (M = 25.33, SD = 6.65). Students who were in a family earning over $100,000, were moderately stressed at Time 1 (M = 21.11, SD = 7.58) compared to a slightly lower level of moderate stress at Time 3 (M = 20.78, SD = 3.99). In total, the descriptive statistics showed trends of moderate stress levels among varied SES of all pre-service teachers. According to the descriptives, students in a family making less than $20,000 had the highest levels of stress across time.

Upon analysis of the descriptives, a mixed-measures analysis of variance (ANOVA) was conducted to analyze statistically significant interactions within perceived stress and SES categories (less than $20,000, $20,000 to $34,999, $35,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, over $100,000). Prior to determining if there was a two-way interaction between the between- and within-subjects factors, sphericity was analyzed. Mauchly's test of sphericity was violated due to analysis of only two time points. Thus, the researcher focused on the interpretation and report of the main effects within the Tests of Within-Subjects Effects SPSS Statistics output tables, to determine any effects.

Upon data collection, the perceived stress of pre-service teachers was measured according to their SES based on levels of parental income. Mauchly's test of sphericity indicated that the assumption of sphericity was violated for the two-way interaction, as the test was unable to be run. However, the main effect of group showed that there was a statistically significant

difference in mean perceived stress between SES levels F(5, 39) = 4.424, p = .003. As predicted, pre-service teachers of differing socioeconomic status had varied levels of stress among time.

Sub Research Question 5

Is there a statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

Sub Null Hypothesis 5

There is no statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

Sub question 5 was designed to determine survey respondents' perceived stress level based on prior experiences with mindfulness (spirituality, mindfulness activities, and mindfulness training. Tables 18-20 display the results of the analysis of data to respond to sub question 5.

To answer the final sub research question and hypothesis, the data were analyzed using a Spearman's rank correlation coefficient (de Winter, Gosling, & Potter, 2016). All assumptions of Spearman's correlation were met. The first assumption of Spearman's rank-order correlation was met via the collection of ordinal data. The survey instrument utilized a Likert-type scale emphasizing ordinal data. The second assumption that was met was the observed and researched relationship of mindfulness and perceived stress. The last assumption involves the data and assumes a monotonic relationship among the variables. To answer the fifth sub-research question regarding a relationship between mindfulness and perceived stress levels, the participants'

responses were analyzed using spearman's correlation statistics. Spearman's correlation was used to analyze the potential relationship of sub question 5, which was inclusive of three varied mindfulness questions:

- How often do you engage in spiritual/religious practices (prayer, meditation, self-examination, etc.)?

- How often do you participate in activities that foster mind-body connection?

- Have you ever participated in a mindfulness training program?

Each question was examined using Spearman's correlation to provide evidence to indicate whether or not the relationship of mindfulness and pre-service teacher perceived stress was statistically significant.

Spiritual/Religious Practices

A Spearman's rank-order correlation was run to assess the relationship between perceived stress and amount of time engaged in spiritual/religious practices (prayer, meditation, self-examination, etc.) among pre-service teachers. There was no statistically significant correlation between daily time spent in spiritual/religious activity and perceived stress in Time 1 $rs(102) = .07$, $p = .491$. There was no statistically significant correlation between daily time spent in spiritual/religious activity and perceived stress in Time 2 $rs(48) = .09$, $p = .542$. There was no statistically significant correlation between daily time spent in spiritual activity and perceived stress in Time 3 $rs(44) = 0.10$, $p = .525$. The results of the analysis are displayed in Table 18.

Table 18

Correlations: Perceived Stress by Spiritual/Religious Practices

Descriptors	1	2	3	4	5	6
1. Spiritual/religious practices at time 1	1	-	-	-	-	-
2. Spiritual/religious practices at time 2	.875**	1	-	-	-	-
3. Spiritual/religious practices at time 3	.860**	.762**	1	-	-	-
4. Perceived Stress Score1	0.069	0.06	0.04	1	-	-
5. Perceived Stress Score2	0.013	0.089	0.034	.732**	1	-
6. Perceived Stress Score3	-0.088	0.025	0.097	.509**	.786**	1

**Correlation is significant at the 0.01 level (2-tailed).
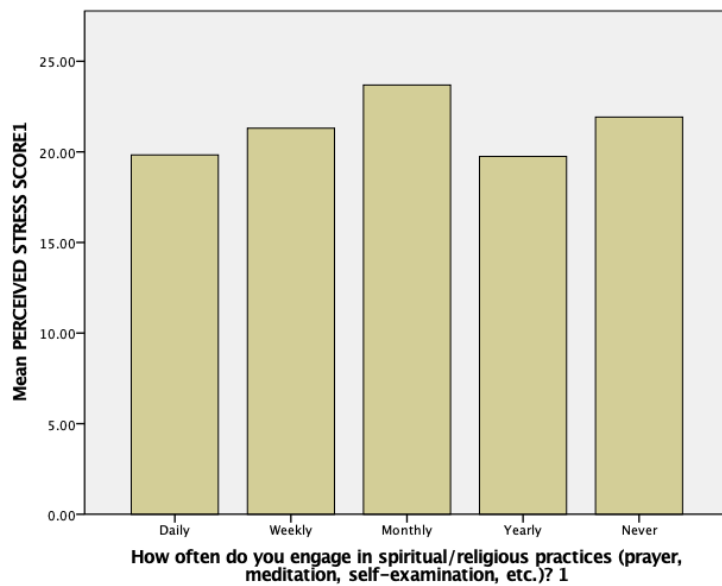
Figure 6. Perceived stress and Spiritual/Religious Practices- Time 1
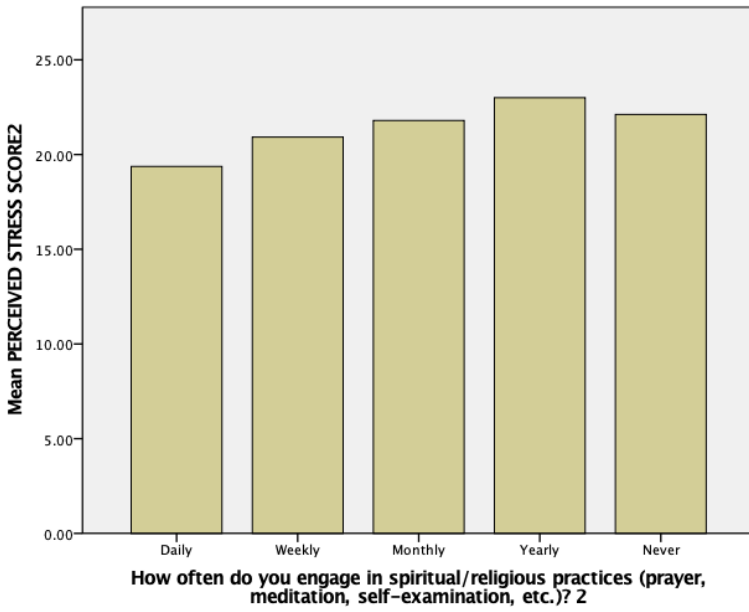
Figure 7. Perceived stress and Spiritual/Religious Practices- Time 2
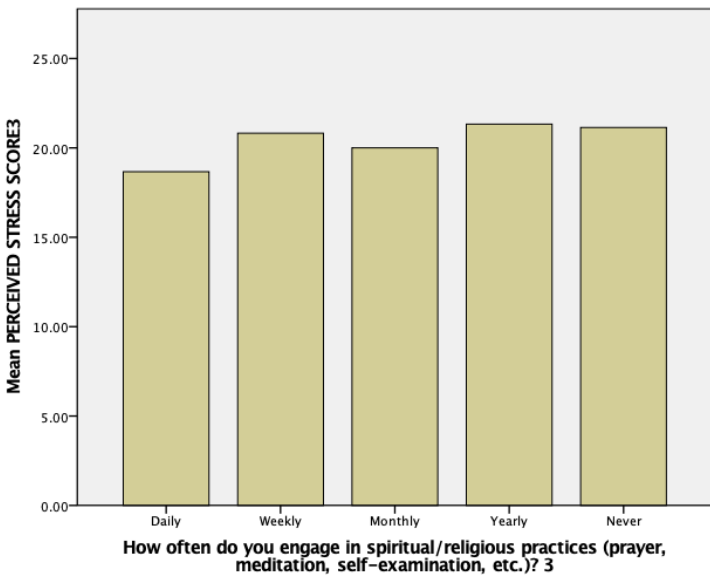
Figure 8. Perceived stress and Spiritual/Religious Practices- Time 3

<u>Mind-body Connection</u>

A Spearman's rank-order correlation was run to assess the relationship between perceived stress and how often pre-service teacher's participate in activities that foster mind-body connection. There was no statistically significant correlation between daily time spent in mind-body activity and perceived stress in Time 1 $rs(102) = .08$, $p = .422$. There was no statistically significant correlation between daily time spent in mind-body activity and perceived stress in Time 2 $rs(48) = .05$, $p = .739$. There was no statistically significant correlation between daily time spent in mind-body activity and perceived stress in Time 3 $rs(44) = 0.05$, $p = .748$.

Table 19

Correlation: Perceived Stress by Mind-Body Connection

Descriptors	1	2	3	4	5	6
1. Mind-body connection time 1	1.00	-	-	-	-	-
2. Mind-body connection time 2	.720**	1.00	-	-	-	-
3. Mind-body connection time 3	.675**	.686**	1.00	-	-	-
4. Perceived Stress Score1	0.08	-0.03	0.24	1.00	-	-
5. Perceived Stress Score2	0.07	0.05	-0.12	.732**	1.00	-
6. Perceived Stress Score3	0.22	-0.06	0.05	.509**	.786**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 9. Perceived stress and Mind-Body Connection Time 1

Figure 10. Perceived stress and Mind-Body Connection Time 2
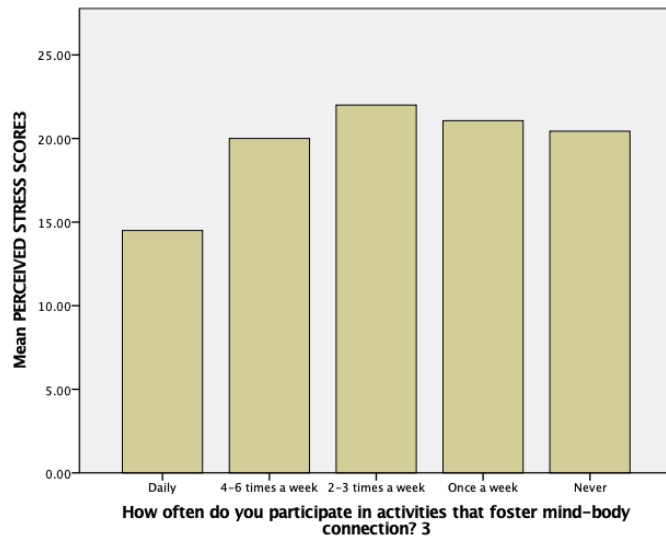
Figure 11. Perceived stress and Mind-Body Connection Time 3

Mindfulness Training Program

A Spearman's rank-order correlation was run to assess the relationship between perceived stress and pre-service teachers' participation in a mindfulness training program. There was no statistically significant correlation between students certified in a mindfulness training program and perceived stress in Time 1 $rs(102) = .17$, $p=.081$. There was no statistically significant correlation between students certified in a mindfulness training program and perceived stress in Time 2 $rs(48) = .27$, $p = .057$. There was no statistically significant students certified in a mindfulness training program and perceived stress in Time 3 $rs(44) = 0.20$, $p = .182$.

Table 20

Correlation: Perceived Stress by Mindfulness Training Program

Descriptors	1	2	3	4	5	6
1. Mindfulness training program time 1	1.00	-	-	-	-	-
2. Mindfulness training program time 2	.518**	1.00	-	-	-	-
3. Mindfulness training program time 2	.610**	.559**	1.00	-	-	-
4. Perceived Stress Score1	0.17	0.24	-0.29	1.00	-	-
5. Perceived Stress Score2	0.331*	0.27	0.13	.732**	1.00	-
6. Perceived Stress Score3	0.13	0.21	0.20	.509**	.786**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
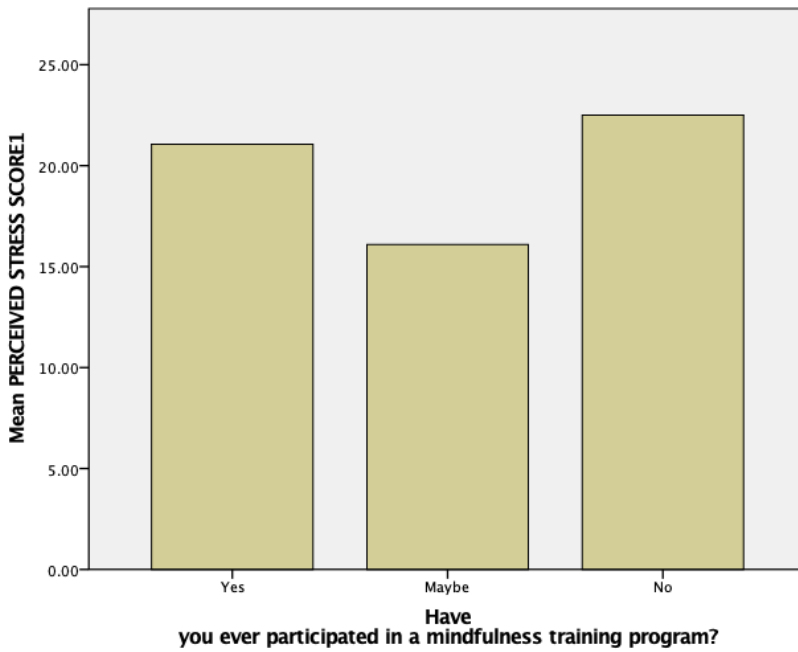
Figure 12. Perceived stress and Mindfulness Training Program Time 1
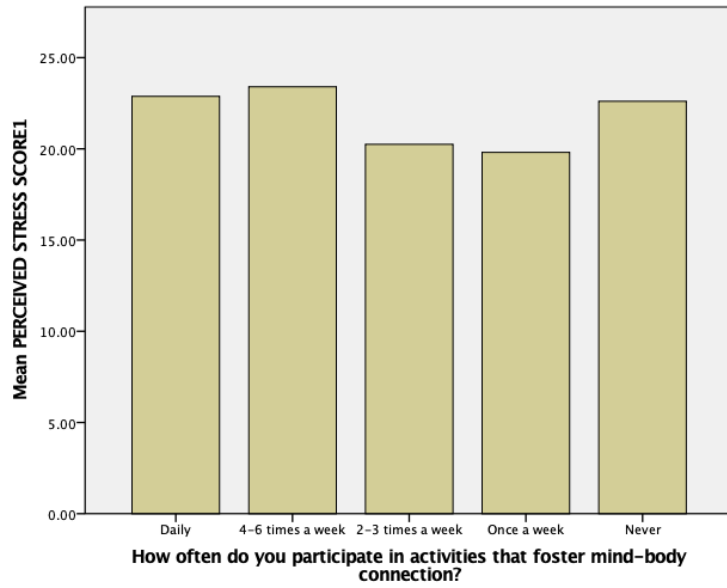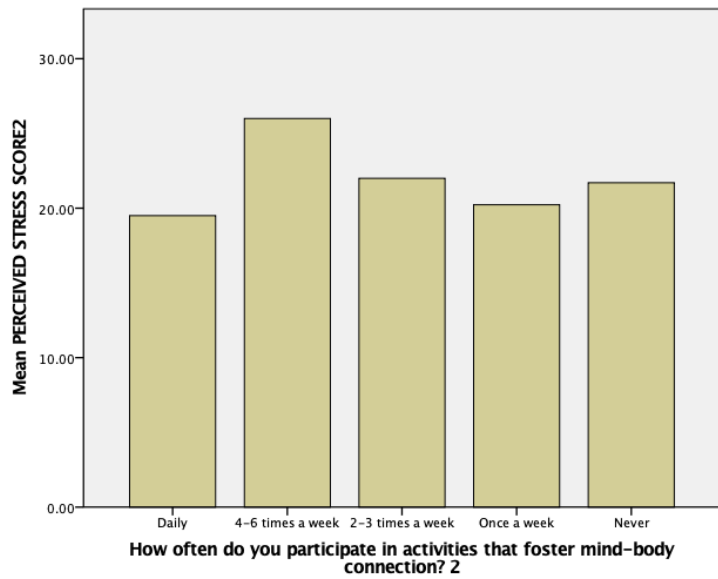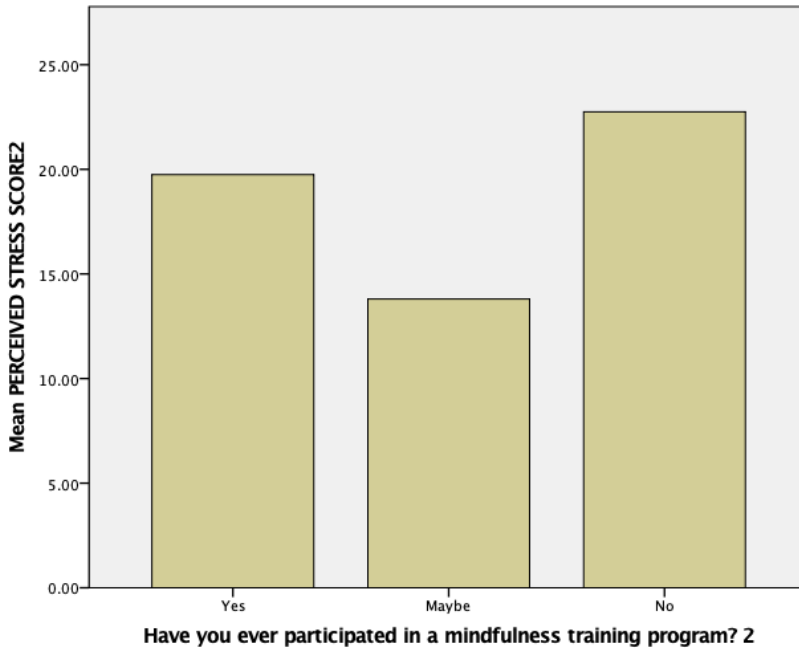
Figure 13. Perceived stress and Mindfulness Training Program Time 2
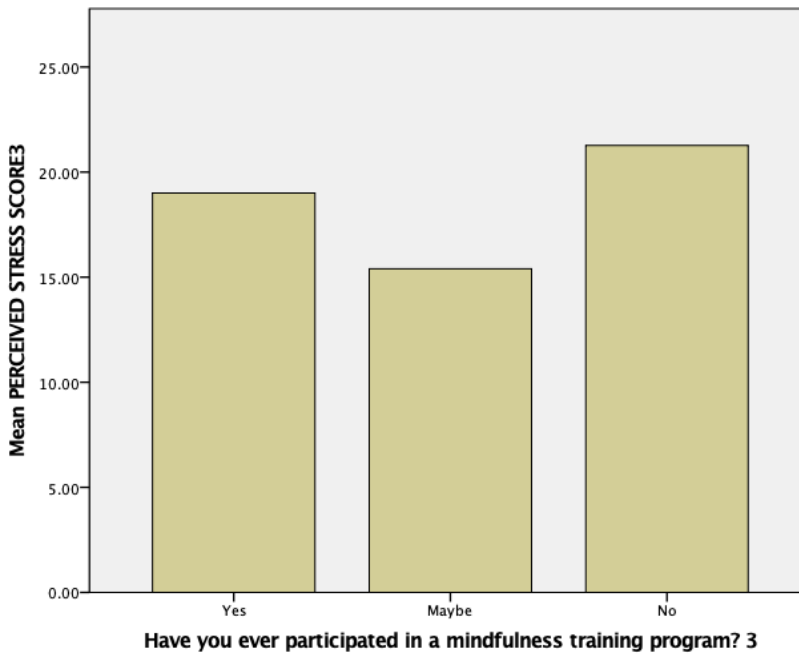
Figure 14. Perceived stress and Mindfulness Training Program Time 3

CHAPTER 5
DISCUSSION

<u>Introduction</u>

The purpose of this quantitative research study was to investigate pre-service teacher stress, and to examine if there was a statistically significant difference in preservice teachers' perceived stress based on selected demographic variables. This chapter includes a summary of the study and discussion of major findings related to the literature on preservice teacher stress and mindfulness. Furthermore, implications of the research are discussed at length as they relate to their potential value in academia, in both the public and private sectors of education, and for college students who plan to pursue the field of education. Though there are other potential coping tools that could be utilized, mindfulness was investigated in the present study as a possible self-regulation tool to be used in undergraduate education and pre-service preparation.

This chapter contains a restatement of the main research question and the five sub questions which guided the study, followed by a summary of the study and discussion organized around each of the sub research questions. The chapter concludes with a discussion of the limitations of the study, recommendations for future research, and a brief summary.

<u>Main Research Question</u>

Is there a statistically significant difference in preservice teachers' perceived stress based on selected demographic variables?

Sub Research Questions

1. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on their program?

2. Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

3. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on gender?

4. Is there a statistically significant difference in pre-service teachers' perceived stress levels based on socioeconomic status (SES)?

5. Is there a statistically significant relationship between a pre-service teachers' perceived stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities, mindfulness training)?

<div align="center">Summary of the Study</div>

Stress is present and problematic for many individuals in the United States (National Institute of Mental Health, 2014). Inclusive in this statistic is the stress of pre-service teachers. It is important to note teaching shows trends of becoming increasingly stressful; yet even prior to entering the workforce, undergraduates have shown similar trends of increased stress levels (Bergmark et al., 2018). There are few studies relating specifically to undergraduate education majors and stress (Conway et al., 2010; Zascavage et al., 2012), yet due to the large amounts of stress these college students are likely to experience in their future careers, it is important to understand their perceived stress prior to employment (Kitzrow, 2003) and how education programs can potentially offer them strategies to cope.

Given the effects and pervasiveness of the problem, more should be done to address the issue of stress in pre-service teachers. As such, the literature provides additional insight into how mindfulness may be useful for stressed students enrolled in undergraduate teacher preparation

programs. The analytic focus on mindfulness and stress provides insight into the need for initial.

development at the university level.

To understand how to provide a better foundation of mental health support for pre-service teachers, mindfulness must be understood as a theory prior to implementation. From a theoretical perspective, mindfulness acts as a self-regulation tool to encourage a calm mind and body, learned through observation of self. Specifically, the observation of self is a cognitive processing of the situational context without judgement. It is important to note, mindfulness has a wide array of definitions dependent on the methodology studied (Chiesa et al., 2011), but for this research mindfulness was defined as "paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally'' (Kabat-Zinn, 1994, p. 4).

Upon understanding mindfulness as theory, literature was further investigated to examine stress, anxiety, and depression among pre-service teachers. According to researchers, pre-service teachers experience stress prior to entering the occupation (Balakrishnan et al., 2017; Geng, Midford, & Buckworth, 2016; Horgan et al., 2018; Kara & Yilmaz Gungor, 2015; Türkoglu & Cansoy, 2017). Researchers have shown varied sources of stress, inclusive of professional and personal demands on pre-service teachers (Maguire, 2001; Sumsion & Thomas, 1995; Zimmermann et al., 2008). More research is still needed, as little research has been conducted investigating preservice teachers' stress (Gardner 2010). Among the studies examined, students self-reported high levels of stress during school-placement experiences (Sumsion & Thomas, 1995).

Examination of prior research led to additional knowledge of pre-service teacher stress. With more information on the problem, the researcher examined the literature for a potential

solution. The literature returned on undergraduate and teacher mindfulness included many studies suggesting the alleviation of psychological distress via the intervention tool of mindfulness. The researched populations of undergraduates and teachers returned a variety of studies, inclusive of quantitative, qualitative, and mixed methods. This led the researcher to examine the literature available on the implementation of mindfulness interventions on pre-service teachers. The results were quite different in comparison to the other populations researched, as the search returned a minimal amount of research on pre-service teachers and mindfulness (Cohan & Honigsfeld, 2011; Horgan et al., 2018; Jennings et al., 2011; Jennings & Greenberg, 2009; Poulin, 2009; Soloway, 2016).

The search returned studies that included experimental designs and pilot studies, exploring the impact of mindfulness intervention tools on pre-service teacher populations. In general, the search confirmed the existence of pre-service teachers' stress, and the lack of coping tools provided to counteract that stress (Cohan & Honigsfeld, 2011; Horgan et al., 2018; Jennings et al., 2011; Jennings & Greenberg, 2009; Poulin, 2009; Soloway, 2016).

Overall, the search returned mixed and vague results on mindfulness among pre-service teachers. To address the mindful pre-service teacher literature gap, the researcher will add to the literature by examining if pre-service teachers who participate in an MBI courses, mindfulness activities, or spiritual/religious groups show improvements across the psychological variable of stress.

The research study was timely, as mindfulness research is relatively new and is slowly becoming incorporated into K-12 institutions (Semple et al., 2017). At the time of the present study, mindfulness programs were in varying stages of development and implementation across

states, but were not being implemented in higher education. Researchers have suggested that insight can be gained through the case studies and qualitative research examined, but more can be done to further investigate and initiate mindfulness in higher education.

Data uncovered in this study mirrored the researcher's assumption that there was perceived stress present among college students enrolled in a university teacher training program, as evidenced in certain demographic variables. Not all variables suggested significance; however, descriptive statistics did suggest trends of moderate stress levels. These data suggested that demographic variables might be indicative of higher levels of stress, dependent on academic program, academic track, gender, and socioeconomic status. The research question also called for the examination of the amount/type of mindfulness students were practicing. Data suggested that students have a limited amount of mindfulness experience, as reflected in Tables 18-20.

The following discussion presents the results of the study in further detail, demonstrating the purpose of the study. The results not only suggest the importance of mindfulness as a potential intervention tool for stress; they further articulate demographic factors and conditions that potentially depict pre-service teacher mental well-being and potential success in their academic programs.

<u>Discussion</u>

The sample consisted of pre-service teachers enrolled in their Internship I and II experiences in the college of education at a large university. The researcher assumed that this group presented higher levels of stress in comparison to other students enrolled in the college of education programs due to pre-requisite requirements and the amount of work required during

their internships prior to graduation. What was unknown prior to examination was the level of perceived stress present based on the demographic variables of academic program, academic track, gender, and socioeconomic status.

<div align="center">Sub Research Question 1</div>

Is there a statistically significant difference in pre-service teachers' perceived stress levels based on their program?

There was a statistically significant difference in pre-service teachers' perceived stress levels based on their program (Table 8). This supports prior studies depicting significance in trend. However, according to descriptive statistics, pre-service teachers enrolled in different programs showed trends of varied levels of stress by program.

The descriptive statistics for sub question 1 of the main research question, showed trends of secondary students having a lower level of stress compared to those of secondary students (Table 6). This finding was supported by Kara & Yilmaz Güngör (2015) who found that pre-service teachers did differ in stress levels based on their enrolled programs. Kara & Yilmaz Güngör further found that pre-service teachers studying in elementary education, social studies education, and mathematics education experienced more anxiety than did pre-service teachers in other programs.

The researcher hypothesized that the potential for a higher amount of moderate stress could be due to the additional requirements elementary pre-service teachers take on during their internship. More research is needed to identify if this hypothesis is true.

Sub Research Question 2

Is there is a statistically significant difference in pre-service teachers' perceived stress levels based on their track?

There was no statistically significant difference in pre-service teachers' perceived stress levels based on their track (Table 11). In comparison, prior researchers depicted significance in trend based on track. Insignificance in the current study could be due to the low number of surveys returned by the students, which limited understanding of potential significance. Academic track was only sampled among secondary interns. This made sampling difficult, as the sample of secondary interns was much smaller in comparison to the number of elementary interns. Insignificance could also be due to differences in surveyed population, as participants surveyed were all enrolled in internship and did not represent a generalized pre-service teacher population.

However, based on the descriptive statistics for Research Sub Question 2, the sample for secondary academic programs (social science, mathematics, English language arts, art) depicted differing trends across variables. This concurs, to some extent with Kara & Yilmaz Güngör's 2015 findings that research programs did vary by stress level. However, in the present study, the researcher found different programs were more stressed than others based on the descriptive statistics. Social studies and mathematics education students were the least stressed in comparison to English education and art education students. Though art education students had the highest amount of moderate stress, identifying any apparent trend was difficult, as there was only one person who responded from the art education program. More qualitative research is needed to further understand the perceived stress of students enrolled in each program.

Is there a statistically significant difference in pre-service teachers' perceived stress

levels based on gender?

In this study, pre-service teachers of differing gender had varied levels of stress based on gender (Table 14). The results were similar to those of past researchers. In comparison to the other demographic variables surveyed, the variable of gender returned a significance in trend. The trend was further analyzed via the descriptive statistics of pre-service teachers based on varied levels of stress by gender (Table 12). The sample for pre-service students based on gender (male, female, and other) depicted trends of variance. In total, the descriptive statistics showed trends of male students having a lower level of stress compared to those of female students.

The results reflect the trends found in the literature. According to Danner (2014), pre-service teachers were found to be stressed regardless of gender. However, Türkoglu and Cansoy (2017) investigated whether the demographic variable of gender influenced pre-service teacher burnout and anxiety, utilizing the Maslach Burnout Inventory-Student Form, Faculty Life Quality Scale, and Occupational Anxiety Scale for Pre-Service Teachers. In their research, Türkoglu and Cansoy also concluded gender did impact burnout and anxiety, with females more anxious and burnout out than their male peers. However, it was also determined that satisfaction with school life was higher in female pre-service teachers than in male pre-service teachers.

The results of the current study returned and confirmed trends of female pre-service teachers having a higher perceived stress level than male pre-service teachers. Further research is needed outside of the PSS survey to confirm why or how these trends are seen in female pre-service teachers.

Sub Research Question 4

Is there a statistically significant difference in pre-service teachers' perceived stress

levels based on socioeconomic status (SES)?

There was a statistically significant difference in pre-service teachers' perceived stress

levels based on socioeconomic status (SES) as seen in Table 17. Prior researchers depicted

significance in trend among income level, and confirmed income levels may be indicative of

stress.

According to the descriptive statistics (Table 15), the sample for pre-service students

based on socioeconomic status categories (parents make less than $20,000, $20,000 to $34,999,

$35,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, over $100,000) depicted trends of

variance in perceived stress. In total, the descriptive statistics showed trends of moderate stress

levels among varied SES of all pre-service teachers. According to the descriptives, students in a

family making less than $20,000 had the highest levels of stress across time. This finding was in

agreement with other researchers who found that financial burden and socioeconomic status were

strong indicators of stress and anxiety among undergraduates (Adams et al., 2016; Belle &

Doucet, 2003).

Sub Research Question 5

Is there a statistically significant relationship between a pre-service teachers' perceived

stress levels based on prior experiences with mindfulness (spirituality, mindfulness activities,

mindfulness training)?

The analysis of mindfulness data supported the null hypothesis. There was no statistically

significant relationship between a pre-service teachers' perceived stress levels based on prior

experiences with mindfulness (spirituality, mindfulness activities, mindfulness training), as shown in Tables 18-20. Due to the surprising nature of the finding, the researcher desired to investigate more descriptive data surrounding sub question 5.

According to Figures 6-14, there was no suggested correlation within the descriptive data. A majority of the returned results suggest similarity in answer, depicting no correlation present across all three time points among the three varied questions. The lack in correlation suggests the questions may have been faulty, or may have been misunderstood. In future research, the questions should be re-worded, and terminology used such as "spirituality", "religion", mind-body" should be defined more clearly. Among the literature, there was some inconsistency regarding the clear definition between religion and spirituality. This may have led to inconsistency in the answer of the question (Arrey et al., 2016; Hall et al., 2004).

Likewise, the lack of correlation may depict the misunderstanding of what mindfulness is and the potential need to define and teach the practice of mindfulness tools to pre-service teachers. It is the researcher's belief that if mindfulness had been explained or demonstrated prior to survey administration, students may have understood what the question was asking and thus have had a better frame of reference. It is unsure if the results would have differed.

Nevertheless, the results from this study differed slightly from those found in the literature available on pre-service teacher mindfulness. The other mindfulness studies were more experimental in nature, and explained mindfulness through demonstration of self-regulation tools (Cohan & Honigsfeld, 2011; Horgan et al., 2018; Jennings & Greenberg, 2014; Jennings et al., 2011; Poulin, 2009; Soloway, 2016). The current study differed and may have examined the

understanding of mindfulness, and not the practice of mindfulness itself. Further research is necessary, and clear examples must be provided for student understanding.

Limitations

This study provided an exploration of perceptions related to the stress of undergraduate education students enrolled in either Internship I or II. According to the literature review, there have been limited research studies on this topic that have documented the importance of mindfulness in a teacher preparation program. This study on stress in pre-service teachers adds to the literature and provides further evidence of the need for the development and inclusion of mindfulness training in college courses. Previous studies and data indicated considerable benefits from the self-regulation intervention tools of mindfulness to decrease problems related to stress, supporting the call for action. Further exploration of these themes could inform content of teacher education courses. Although the study illuminates the value and importance of developing a mindfulness training program for pre-service teachers, a variety of limitations must be taken into account with study results.

Literature

Mindfulness is a relatively new pedagogy within education and has been continually growing in research interest over this past decade. However, with such a recent interest, the research previously conducted on mindfulness and teacher professional development is limited, especially among the pre-service teacher population. More research is produced each year and must be analyzed and added to the literature. This will provide more depth of understanding into the continual research of the field. In addition, more examples must be utilized in order to fully

explain to participants what mindfulness is and how it can be implemented through varied tools such as spirituality, mind-body practices, or a mindfulness training program.

Researcher Bias

Limitations involving facilitator bias included the facilitator serving as the researcher and an employee of the university where the research took place. This also implies researcher bias, in the construction of the intervention and the desire for mindfulness to beneficial.

Data Collection

There were also weaknesses in the data collection strategies, which, if addressed, could increase the validity of the data used in the analysis. Due to the purposive sample used, the sample size of the groups were homogenous in population, making it difficult to quantify a meaningful relationship within the variables. The sampling selection could be improved by obtaining a larger sample size, potentially by including pre-service teachers outside of internship.

Likewise, the data were self-reported by the selected sample. The self-reported data may not have presented a true picture of what stress was occurring among the selected population. The PSS is designed to measure a participant's stress at the exact point in time when surveyed. With three data points to compare, students' responses to their experience, exaggerated or withheld, could have large impacts on the outcomes of the statistical analysis. Respondents may have been unwilling to reveal their perceptions of their own stress and feelings or they may not have been able to adequately depict their overall stress levels. The results may, therefore, have been skewed, as emotions and feelings shift moment to moment, and are inherently biased by the individual's feelings at the time of the administration of the questionnaire.

Survey Instrument

The Perceived Stress Survey is a validated instrument that has been used frequently to measure perceived stress (Mozumder, 2017; Vidal et al., 2018). In the construction of the survey instrument, demographic questions were added to collect information from the interns participating in the study. However, the fallibility of demographic questions serves as an on-going reminder of the limitation of demographic data collection efforts and the need for inclusion and clear word choice. Upon replication, the demographic questions would be re-worded to be more inclusionary and easily understood for participants to answer. Several questions in the PSS-demographic portion (Appendix D), would need to be rewritten. For this specific population, it may not be necessary to include the age range of the participants (item 11), as many enrolled as interns are in a similar age range of 18-24. Likewise, the socioeconomic questions would need to be changed to reflect the knowledge of their current incomes rather than those of their parents or guardians.

The most important edit to the demographic questions would be to examine and revise items 17, 18, and 19 (Appendix D) of the demographic section. Based on the survey responses, students may have been confused as to the definition of mindfulness, and ideas associated with mindfulness pedagogy. These questions reflect an understanding of the difference between religion and spirituality, mind-body practices, and what a mindfulness training program entails. The items need to be re-formatted so that students have full understanding of what the question is asking. Reformatting the demographic questions would allow for a more detailed understanding of what knowledge, training, and practice students have of mindfulness pedagogy.

<center>Recommendations for Future Research</center>

The outcome of this study suggests that an intervention introducing mindfulness and resilience techniques to pre-service teachers has the potential to interact with students' levels of stress. However, changes are necessary to increase the likelihood of achieving significant outcomes. An experimental study is suggested to understand potential variabilities correlated with mindfulness and pre-service stress.

The researcher's recommendation for future research involves further analysis of mindfulness in the present-day education system, (i.e., to explore the modern-day contextual meaning of mindfulness in a pre-service teacher training program). Through a mixed-methods approach, the researcher suggests implementing a phenomenological and bio-feedback analysis of pre-service participants. This would involve implementing a mindfulness program at a higher education institution for a semester. The study would employ a two-group experimental design:

<center>Sample A: M----------O----------X----------O</center>

<center>- - - - - - - - - - - - - - - - - - - -</center>

<center>Sample B: NM---------O----------------------O</center>
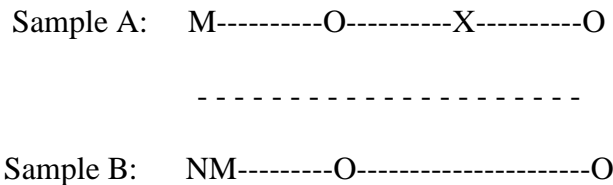
As the design indicates, the "M" represents participants in the mindfulness or experimental group who received the treatment ("X"), a mindful teaching program. The "NM" represents participants in the non-mindfulness or control group who did not receive treatment. The pretest and posttest signified by "O" represents the surveys taken.

Sampled pre-service teachers would receive mindfulness training via Young Yogi Program, a local program that combines both student and teacher mindfulness training. Sessions for training would be held over the summer prior to internship at the local university by

experienced mindfulness trainers. The experimental group would have the same mindfulness facilitator and would be given the same amount of training time and continued professional development throughout the study. The total training would involve weekly check-ins by the facilitator, and monthly professional development.

Young Yogi Program's (YYP) Yoga and their mindfulness-based intervention program, "Mindfulness and Self-Regulation" is founded on Kabat Zinn's Mindfulness Based Stress Reduction Program and rooted in Patanjali's Yoga Sutras, which serve as a foundation for purpose, stability, and consciousness for classroom teachers. YYP Teacher Training focuses on empowering teachers through basic mindfulness principles, so that they may feel calmer in their classrooms and readily able to teach (VoyageMia, 2018).

According to the literature, mindfulness and self-regulation in the classroom offers techniques for both educators and students. This training focuses on tangible tools such as breath, mindful movement, self-understanding and brain science.

Young Yogi Program's Yoga and their mindfulness-based intervention program consists of teacher training over a three-day time period. Each pre-service teacher participates in a mindfulness training intensive, including but not limited to the activities shown in Table 21.

Table 21

Mindfulness and Self-regulation Training

Day 1	Day 2	Day 3
• Introduction to Mindfulness & Self-Regulation	• Jillian Friedman - Internal Motivation & Gradeless Teaching	• Mindful Movement
		• Self-care for Teachers
• The Brain (Executive Functioning)	• Introducing Mindfulness to schools (best practices)	• Trauma and Child development
• Postures & Breathing Practices (Energetics)	• Create-a-Class	• Inclusive language
• Petals & Poses	• C.A.L.M in the Classroom & Mindfulness Projects	• Youth Mindfulness Class

Upon implementation of the intervention, the researcher would utilize a phenomenological approach by observing and interviewing willing participants to describe how they experience and understand mindfulness for self-application, application in the classroom, and the reduction of their own stress and anxiety. With a lack of research describing pre-service teacher's perception of mindfulness, future study would be structured to analyze mindful teaching by understanding the lived experiences of pre-service teachers. The gaps in research can be amended via a phenomenological approach (Creswell, 2018). An online survey via Qualtrics would be administered to the sample at each of the three data points (baseline, midpoint, and final). The teacher survey would be a compilation of other validated measures, including: compassion satisfaction, burnout, mindfulness, self-efficacy, and perceived stress survey.

To fully answer the interaction of mindfulness on pre-service teachers, there must be further study in mindfulness and teaching via biofeedback. Biofeedback would be used to further

understand the mind-body reactions to mindfulness training. It would allow for a clear assessment of each pre-service teacher examined throughout the study to understand if the self-reported data aligns with biofeedback response.

Dependent on the number of devices available, the researcher should utilize a portion of the experimental and non-experimental groups to examine the biomarker data of participants. The researcher would focus on two measurements that showcase pre-service teachers' Psychophysiological Stress Profile (PPSP). PPSP is an assessment of the physiological response to stress (Western Association for Biofeedback and Neuroscience, 2018). The baseline measurement would be obtained with two modalities (i.e., heart rate and salivary cortisol). The biomarker data would contribute to a more detailed understanding of the potential interaction of mindfulness as an intervention tool among pre-service teachers.

Summary

This research was conducted to investigate pre-service teacher stress and to examine if there was a statistically significant difference in preservice teachers' perceived stress based on select demographic variables. Perceived stress and relevant demographic variables have been defined and explained, and literature has been used to discuss ways in which universities may be able to combat issues of stress and anxiety through the coping mechanisms of mindfulness. The data shared in the current study shows significant stress levels present in pre-service teachers may be dependent on certain demographic variables. Specifically, female pre-service teachers enrolled in internship were far more likely to report higher levels of perceived stress than males throughout their internship experiences. Further research is needed to gain a deeper understanding of how and why there are differing higher levels of stress by gender and what

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possible solutions are necessary to support advocacy in mental health. Though mindfulness was researched as a potential solution, there was no correlation between mindfulness and stress levels found in the present study.

It is important to note that mindfulness was not implemented as an intervention tool, as the researcher desired to study the baseline knowledge of mindfulness skills present in pre-service teachers. According to the descriptive data, pre-service teachers were not fully aware of mindfulness as a skill; thus, more education is necessary in the discussion and implementation of mindfulness as a potential intervention tool for stress.

APPENDIX A
LITERATURE REVIEWED: STRESS, ANXIETY OR DEPRESSION
IN UNDERGRADUATES

Mindfulness Meditation: Stress, Anxiety, or Depression in Undergraduates

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
Bellinger, D. B., DeCaro, M. S., & Ralston, P. A. (2015). Mindfulness, anxiety, and high-stakes mathematics performance in the laboratory and classroom. Consciousness And Cognition, 37123-132. doi:10.1016/j.concog.2015.09.001	The current studies examined whether mindfulness improves the emotional response to anxiety-producing testing situations, freeing working memory resources, and improving performance.	Study 1- Participants were undergraduate students (N = 112) from the psychology participant pool who were unfamiliar with modular arithmetic Study 2- Participants (N = 248; 24% female) were first-time, full-time freshman undergraduate engineering students enrolled in a calculus course who gave consent to be in the study.	Trait Mindfulness	This work provides promising initial support for the benefit of mindfulness in academic testing situations. However, the brief mindfulness intervention used in our Study 1 did not reduce anxiety or improve performance.	Based on Self-Report.
Burg, J. M., Wolf, O. T., & Michalak, J. (2012). Mindfulness as Self-Regulated Attention Associations with Heart Rate Variability. Swiss Journal Of Psychology, 71(3), 135-139.	The present study investigated the relationship between mindfulness and HRV.	A total of 23 undergraduate psychology students completed a recently developed measure of mindfulness, the mindful breathing exercise (MBE), which assesses the ability to mindfully stay in contact with one's breath during breathing meditation.	Mindful Breathing Exercise	The findings demonstrate that the ability to mindfully regulate one's attention is associated with higher HRV, a physiological correlate of physical and psychological health, and therefore support on a physiological level the potential benefit of the implemented mindfulness exercises in mindfulness-based clinical interventions.	The sample size was relatively small and homogenous.
Burrows, L. (2016). Safeguarding mindfulness meditation for vulnerable college students. Mindfulness, 7(1), 284-285. doi:10.1007/s12671-015-0434-3	to explore the experiences of American community college students	Qualitative Pilot Study of 13 participants in a 10 week mindfulness program.	mindful communication: regular meditations such as focusing on the breath, loving	12 of the 13 participants who chose to participate reported a range of unusual	The small number of participants and subjective nature of their reports make any generalization

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
	engaging in mindfulness mediation as part of their communication studies		kindness, and body scan mindfulness activities	perceptions, sensations, and altered states and experiences of self as a result of mindfulness meditation. Only one participant reported unambiguously positive effects such as increased relaxation, focused attention, productivity, and reduction in stress and worry.	beyond this study impossible
Canby, N. K., Cameron, I. M., Calhoun, A. T., & Buchanan, G. M. (2015). A brief mindfulness intervention for healthy college students and its effects on psychological distress, self-control, meta-mood, and subjective vitality. Mindfulness, 6(5), 1071-1081. doi:10.1007/s12671-014-0356-5	This study investigated the effects of a 6-week adapted mindfulness-based stress reduction (MBSR) intervention on the psychological health and well-being of college students	The experimental group participants were students and faculty (N = 19) who signed up for the mindfulness-based class, and the control group participants (N = 25) were interested in the class but were unable to sign up in time to enroll.	MBSR	We concluded that MBSR has wide-ranging positive effects on college students, and would be beneficial as a campus stress reduction and preventative mental health intervention.	Group setting and attention were not controlled, and there were evident expectancy effects.
Cho, H., Ryu, S., Noh, J., & Lee, J. (2016). The Effectiveness of Daily Mindful Breathing Practices on Test Anxiety of Students. Plos ONE, (10), doi:10.1371/journal.pone.0164822	The present study examined the effectiveness of daily mindful breathing practices on test anxiety of university students.	A total of 36 participants were randomly assigned to one of three conditions: a training mindful breathing condition (n = 12), a training cognitive reappraisal condition (contrast group, n = 12), and a non-training condition (control group, n = 12).	Each of the participants trained by themselves for 6 days after they had taken one session of education for mindful or cognitive reappraisal practices. They wrote their experiences on daily worksheets and sent	Both mindful breathing practice and cognitive reappraisal practice yielded large effect sizes in reducing test anxiety. In addition, the mindful breathing condition scored significantly higher on positive thoughts	The sample size was relatively small, so the results of this study couldn't generalize to people with test anxiety. Also, the study couldn't avoid sampling biases because participants knew that some of the

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
			it by mobile with taking pictures that were confirmed by the researcher.	than the cognitive reappraisal and control conditions.	respondents could be recruited for an experimental study.
Cieslak, K. J., Hardy, L. E., Kyles, N. S., Miller, E. L., Mullins, B. L., Root, K. M., & Smith, C. .. (2016). An environmental scan of mindfulness-based interventions on university and college campuses: A research note. Journal Of Sociology And Social Welfare, 43(4), 109-133.	The purpose of this research note is to provide readers with an understanding of the diverse types of student mental health interventions that are being offered on North American universities/ colleges	Data were collected, organized, and synthesized during the first 5 months of 2016 (via a simple Google searches) for all North American universities/colleges that offered their students mental health interventions on their campuses.	Google Search of colleges offering (1) traditional, or non-mindfulness-based interventions, and (2) mindfulness-based interventions.	There is an abundance of data that seem to indicate that colleges/universities are increasing the mental health interventions they offer to their students. In addition, the use of mindfulness- based interventions (a sub-set of mental health interventions) seems to be being used with an increasing frequency.	Broad Search online.
CROWLEY, C., & MUNK, D. (2017). AN EXAMINATION OF THE IMPACT OF A COLLEGE LEVEL MEDITATION COURSE ON COLLEGE STUDENT WELL BEING. College Student Journal, 51(1), 91-98.	The purpose of this study was to use qualitative measures to examine how participation in a college level experiential meditation course impacted students' outlook on life and relationship with others	Qualitative. Participants were (N=28) enrolled in a 15 week meditation course which blended techniques from the Buddhist and mindfulness traditions	Mindfulness	Qualitative analysis revealed that students became more mindful, compassionate, and experienced a heightened sense of psychological well-being from practicing meditation. Results demonstrated the practice of meditation can facilitate exploration of emotional states that support the	Small sample and self-reported results.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				process of self-actualization and improve overall college student well-being.	
Duarte, J., & Pinto-Gouveia, J. (2015). Focusing on Self or Others Has Different Consequences for Psychological Well-Being: A Longitudinal Study of the Effects of Distinct Interpersonal Goals. Journal Of Social & Clinical Psychology, 34(9), 809. doi:10.1521/jscp.2015.34.9.809	A longitudinal study examined the association between interpersonal goals (self-image and compassionate goals) and depression, anxiety, and stress symptoms. We propose that having self-image goals (trying to create and manage a positive image) may lead to psychological distress, while genuinely taking others' needs into account and caring for their welfare (compassionate goals) may promote psychological well-being.	The sample was composed by 161 university students (151 female, 8 male) who completed 6 surveys, every two weeks, assessing depression, anxiety, and stress symptoms, interpersonal goals, goal-related affect, feelings of closeness and loneliness, interpersonal conflicts, and positive emotions.	Compassionate Goals and Self Image Goals	Positive affect and feelings of clarity and closeness and less interpersonal conflicts mediated the relation between compassionate goals and depression, anxiety, and stress symptoms, while feelings of fear and confusion, loneliness and interpersonal conflicts and less positive emotions mediated the relation between self-image goals and depression, anxiety, and stress symptoms	The sample is too homogenous and also self-reported.
Hindman, R. K., Glass, C. R., Arnkoff, D. B., & Maron, D. D. (2015). A comparison of formal and informal mindfulness programs for stress reduction in university students. Mindfulness, 6(4), 873-884. doi:10.1007/s12671-014-0331-1	The present study compared a stress management program that used formal meditations and informal practice	Thirty-four undergraduate and graduate students at a private mid-Atlantic university participated in the study: 13 attended the MSM workshop, 11 attended the MSM-I workshop	Mindful Stress Management and Therapists	Results suggest that a program with formal meditations and informal practice may be a more promising intervention for	small sample size, not all of the participants could be randomly assigned to groups, which increased the likelihood of the

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
		and 10 were in the wait-list control group.		university student stress than one with brief mindfulness exercises and informal practice.	conditions not being equivalent at pretest
Kadziolka, M. J., Di Pierdomenico, E., & Miller, C. J. (2016). Trait-like mindfulness promotes healthy self-regulation of stress. Mindfulness, 7(1), 236-245. doi:10.1007/s12671-015-0437-0	This study examined whether trait mindfulness is associated with reduced stress response activation and enhanced self-regulatory activity with recurrent stress.	Self-ratings of mindfulness and continuous measures of physiological reactivity before, during, and after an interview about a recurrent stressful issue were collected from 47 undergraduate participants to examine our primary objective	Mindfulness State and Trait- The Five-Factor Mindfulness Questionnaire, The Mindful Attention and Awareness Scale, The Social Competence Interview, Electrocardiogram, skin conductance response	mindfulness may be associated with physical indices of emotional well-being	Homogenous Sample- mostly Caucasian women, bias present during interview
Koszycki, D., Thake, J., Mavounza, C., Daoust, J., Taljaard, M., & Bradwejn, J. (2016). Preliminary Investigation of a Mindfulness-Based Intervention for Social Anxiety Disorder That Integrates Compassion Meditation and Mindful Exposure. Journal Of Alternative & Complementary Medicine, 22(5), 363-374.	This study evaluated the feasibility and initial efficacy of a 12-week group mindfulness-based intervention tailored for persons with social anxiety disorder (MBI-SAD).	Participants were randomly assigned to the MBI-SAD (n = 21) or a waitlist (WL) (n = 18) control group. Feasibility was assessed by the number of participants who completed at least 75% of the 12 weekly group sessions. Primary efficacy outcomes were clinician- and self-rated measures of social anxiety. Other outcomes included clinician ratings of illness severity and self-rated depression, social adjustment, mindfulness, and self-compassion.	Mindfulness Based Intervention	: The MBI-SAD was acceptable and feasible, with 81% of participants attending at least 75% of sessions. The MBI-SAD fared better than WL in improving social anxiety symptom severity (p £ 0.0001), depression (p £ 0.05), and social adjustment (p £ 0.05). The intervention also enhanced self-compassion (p £ 0.05), and facets of mindfulness (observe and aware; p £ .05). MBI-SAD	The Sample Size is small, and represents a self-selected sample.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				treatment gains were maintained at 3-month follow-up.	
May, R. W., Bamber, M., Seibert, G. S., Sanchez-Gonzalez, M. A., Leonard, J. T., Salsbury, R. A., & Fincham, F. D. (2016). Understanding the physiology of mindfulness: Aortic hemodynamics and heart rate variability. Stress: The International Journal On The Biology Of Stress, 19(2), 168-174. doi:10.3109/10253890.2016.1146669	Data were collected to examine autonomic and hemodynamic cardiovascular modulation underlying mindfulness from two independent samples.	An initial sample (N = 185) underwent laboratory assessments of central aortic blood pressure and myocardial functioning to investigated the association between mindfulness and cardiac functioning. A second sample (N = 124) underwent a brief (15 min) mindfulness inducing intervention to examine the influence of mindfulness on cardiovascular autonomic modulation via blood pressure variability and heart rate variability.	Mindfulness	This research establishes a link between mindfulness and cardiovascular functioning via correlational and experimental methodologies in samples of mostly female undergraduates.	Demographics were restricted to a young, healthy, female population.
Sauer-Zavala, S. E., Walsh, E. C., Eisenlohr-Moul, T. A., & Lykins, E. B. (n.d). Comparing Mindfulness-Based Intervention Strategies: Differential Effects of Sitting Meditation, Body Scan, and Mindful Yoga. Mindfulness, 4(4), 383-388	We investigated whether three different meditation practices that are commonly used in mindfulness-based interventions lead to differential changes in psychological health outcomes when presented separately.	Participants included 141 undergraduates assigned to a sitting meditation, body scan, or mindful yoga condition. Participants in all conditions attended three weekly 1-h sessions (105 min of guided meditation and 75 min of discussion) in addition to pre- and post-intervention questionnaires collected in separate sessions.	MBI and MBSR	The following between-group differences in change over time emerged: (1) mindful yoga was associated with greater increases in psychological wellbeing than the other two practices, (2) sitting meditation and mindful yoga were both associated with greater decreases in difficulties with emotion regulation than the body scan, and (3) sitting meditation was associated with	Short duration of the training, lack of random assignment of the sample, and a waitlist control group.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				greater increases in the tendency to take a non-evaluative stance toward observed stimuli than the body scan.	
Schwind, J. K., McCay, E., Beanlands, H., Schindel Martin, L., Martin, J., & Binder, M. (2017). Mindfulness practice as a teaching-learning strategy in higher education: A qualitative exploratory pilot study. Nurse Education Today, 5092-96. doi:10.1016/j.nedt.2016.12.017	To explore how undergraduate and graduate students experience brief instructor-guided mindfulness practice; specifically, on their feelings of stress and anxiety, and their sense of wellbeing.	Qualitative exploratory pilot study. Participants and Setting Fifty-two graduate and undergraduate students in different disciplines within a community services faculty of an urban university.	Brief (five-minute) instructor-guided mindfulness practices were offered over eight weeks at the beginning and end of classes. Participating students were asked to also engage in individual home practice of five to fifteen-minute mindful breathing four to five times a week and to keep a log of their experiences. At end of term, individual and group feedback (N = 13) was elicited from participating students.	Students reported an increased sense of calm, and a decreased feeling of anxiety. Lovingkindness meditation was mostly perceived as a positive way to close the class. Their instructors also observed that the brief mindful breathing practice at start of class helped students become more grounded and focused before engaging in the course content.	Challenges encountered focused on the need to provide more in-depth information about mindfulness, as it relates to higher education teaching-learning contexts, to both students and participating instructors.
Shapiro, S. L., Jazaieri, H., & Goldin, P. R. (2012). Mindfulness-based stress reduction effects on moral reasoning and decision making. Journal Of Positive Psychology, 7(6), 504-515. doi:10.1080/17439760.2012.723732	To examine the effects of MBSR on moral reasoning and decision making.	Quantitative, N=25	Mindfulness, Mindfulness-Based Stress Reduction, State Trait Anxiety Inventory-Trait and State, Well Being, The Experiences Questionnaire	Two-month follow-up results showed that, MBSR resulted in improvements in moral reasoning and ethical decision making, mindful attention, emotion, and well-being. This study provides	No randomized control group, self-reported data, and there is a need for behavioral assessment

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				preliminary evidence that MBSR may potentially facilitate moral reasoning and decision making in adults.	
Van Gordon, W., Shonin, E., Sumich, A., Sundin, E. C., & Griffiths, M. D. (2014). Meditation Awareness Training (MAT) for psychological well-being in a sub-clinical sample of university students: A controlled pilot study. Mindfulness, 5(4), 381-391. doi:10.1007/s12671-012-0191-5	The aim of this pilot study was to assess the feasibility and effectiveness of MAT for improving psychological well-being in a sub-clinical sample of higher education students with issues of stress, anxiety, and low mood.	Utilizing a controlled design, participants of the study (n = 14) undertook an 8-week MAT program and comparisons were made with a control group (n = 11) on measures of self-assessed psychological well-being (emotional distress, positive affect, and negative affect) and dispositional mindfulness.	Meditation Awareness Training	Participants who received MAT showed significant improvements in psychological well-being and dispositional mindfulness over controls. MAT may increase emotion regulation ability in higher education students with issues of stress, anxiety, and low mood. Individuals receiving training in mindfulness meditation may benefit by engendering a broader, more ethically informed, and compassionate intention for their mindfulness practice.	The small sample size restricts the generalizability of findings.

APPENDIX B
LITERATURE REVIEWED: MINDFULNESS IN TEACHERS

Mindfulness in Teachers

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
Abenavoli, R. M., Harris, A. R., Katz, D. A., Jennings, P. A., Greenberg, M. T., & Society for Research on Educational Effectiveness, (. (2014). Mindfulness Promotes Educators' Efficacy in the Classroom.	The study examines the impact of mindfulness on change in educators' efficacy in the classroom across an academic year, and examines it further in year 2.	Participants were 30 educators (83% female) from a middle school in Pennsylvania who were in the wait-list control condition of a broader study that involved the evaluation of a mindfulness based intervention for teachers and school staff. Approximately 57% of participants were classroom teachers, and 43% were other school staff (e.g., paraprofessionals, learning support staff, counselors). On average, participants were about 45 years old (M = 44.70, SD = 12.50) and had 14 years of experience in education (M = 14.24, SD = 9.09). The sample was predominantly Caucasian.	The data used were from a broader study that evaluated the efficacy of CALM, a new yoga based intervention that is delivered in 20-minute sessions, 4 days per week, over 16 weeks in the school setting.	Awareness may be a particularly powerful component of mindfulness with respect to efficacy in the classroom.	Non-Experimental, and self-reported data.
Benn, R., Akiva, T., Arel, S., & Roeser, R. W. (2012). Mindfulness training effects for parents and educators of children with special needs. Developmental Psychology, 48, 1476–1487. doi:10.1037/ a0027537.	Understanding how parents and teachers of children with special needs face different challenges with extra amounts of stress on their health and well being.	The study was a randomized controlled study assessed the efficacy of a 5-week mindfulness training program for parents and educators, including 32 parents and 38 educators.	The intervention was a mindfulness training program- "SMART-in-Education".	There was no significant difference between treatment and control participant.	Self-reported data, and a passive waiting-list control group. Finally, there declines in study participation.
Beshai, S., McAlpine, L., Weare, K., & Kuyken, W. (2016). A Non-Randomized Feasibility Trial Assessing the Efficacy of a Mindfulness-Based Intervention for	Understanding the Impact of a MBI program on Teachers.	A sample of 89 secondary school teachers and staff were recruited and self-selected into the intervention	The intervention condition utilised the pilot programme '.b Foundations Course'; which is one of the	These results indicate that a customised mindfulness-based programme for	Homogenous population, non-randomized, self-reported data

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
Teachers to Reduce Stress and Improve Well-Being. *Mindfulness*, (1). 198. doi:10.1007/s12671-015-0436-1.		(n=49) or comparison (n=40) conditions.	three school-based mindfulness training programmes developed by the Mindfulness in Schools Project (MiSP). T	teachers is a promising approach to reducing stress and increasing well-being, mindfulness, and self-compassion among secondary school teachers.	
Dariotis, J. K., Mirabal-Beltran, R., Cluxton-Keller, F., Gould, L. F., Greenberg, M. T., & Mendelson, T. (2017). A Qualitative Exploration of Implementation Factors In A School-Based Mindfulness And Yoga Program: Lessons Learned From Students And Teachers. *Psychology In The Schools*, *54*(1), 53-69.	There is a need for research on implementation of mindfulness and yoga programs in schools.	Fifth- and sixth-grade participants and their teachers of a 16-week school-based mindfulness and yoga program in three public schools serving low-income urban communities. Twenty-two fifth- and sixth-grade students participated in six focus groups, two at each of the three participating schools. Students were identified for focus group participation by classroom teachers out of the total sample of 122 intervention participants (18.0% of intervention youth participated in focus groups).	The intervention program included yoga-based body movements and breathing to promote mindfulness	Results included Four themes related to program implementation barriers and facilitators: program delivery factors, program buy-in, implementer communication with teachers, and instructor qualities.	Sample was constructed via parent permission, and interviews were limited due to scheduling.
de Carvalho, J. S., Pinto, A. M., & Maroco, J. (2017). Results of a Mindfulness-Based Social-Emotional Learning Program on Portuguese Elementary Students and Teachers: a Quasi-Experimental Study. *Mindfulness*, *8*(2), 337-350.	The aim of the present study was to evaluate the efficacy of the MindUp curriculum, an SEL program through mindfulness practice for Portuguese students and teachers.	Participants included 454 3rd and 4th grade students and 20 teachers from state schools. A quasi-experimental (pre- and post-test) study compared outcomes for an experimental group with a waitlist control group. Data were collected from teachers and children through self-report measures.	Intervention: MindUp	Data were collected from teachers and children through self-report measures. Results showed that over 50 % of the children who participated in the MindUp program scored above the control group mean in their ability to regulate emotions, to experience more	Groups were not randomized, and need a larger sample of teachers.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				positive affect, and to be more self-compassionate, and over 50 % scored lower in negative affect. In the group of teachers, over 80 % scored above the control group mean in observing, in personal accomplishment, and in self-kindness.	
Flook, L., Goldberg, S. B., Pinger, L., Bonus, K., & Davidson, R. J. (2013). Mindfulness for Teachers: A Pilot Study to Assess Effects on Stress, Burnout, and Teaching Efficacy. *Mind, Brain & Education*, 7(3), 182-195. doi:10.1111/mbe.12026	Trying to understand teacher stress and the effects that come with it. Also, this study adds to the literature by using multiple methods, which include both subjective reports and objective measures, to evaluate the effects of mindfulness training.	A total of 18 public elementary teachers, including a randomized controlled pilot trial of a modified Mindfulness-Based Stress Reduction course (mMBSR) adapted specifically for teachers.	Mindfulness Based Stress Reduction	There were large amount of changes in mindfulness from pre- to postintervention was correlated with improvements in burnout, psychological symptoms, and attention in the intervention group.	Included a small sample size with limited power.
Frank, J. L., Reibel, D., Broderick, P., Cantrell, T., & Metz, S. (2015). The effectiveness of mindfulness-based stress reduction on educator stress and well-being: results from a pilot study. Mindfulness, 6, 208–216. doi:10.1007/s12671-013-0246-2.	Analyzing the effects of a MBSR program on educators.	The study included 36 high school educators who participated in either an 8-week adapted MBSR program or a waitlist control group	MBSR	Results suggested that educators who participated in MBSR reported significant gains in self-regulation, self-compassion, and mindfulnessrelated skills (observation, nonjudgment, and	Study was self reported, and is difficult to generalize.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
				nonreacting). Significant improvements in multiple dimensions of sleep quality were found as well.	
Gold, E., Smith, A., Hopper, I., Herne, D., Tansey, G., & Hulland, C. (2010). Mindfulness-based stress reduction (MBSR) for primary school teachers. Journal of Child and Family Studies, 19, 184– 189. doi:10.1007/s10826-009-9344-0	We investigated the effects of teaching a MBSR course to primary school teachers to reduce stress. The MBSR course was taught to a group of primary school teachers and evaluated to establish its effects on levels of anxiety, depression, and stress, as well as movement towards a stated goal and changes in awareness.	Self selected, Nine qualified teachers and two teaching assistants from six local primary schools were recruited. Detailed demographic information was not collected. Of the eleven participants, one was male, with ages ranging from late 20 s to late 50 s.	MBSR	Most participants experienced reductions in stress, depression, and anxiety as a result of participating in the MBSR course, as shown by changes in the DASS scores. Post-intervention, only four scored within the clinically significant range on any subscale, with two of those only as mildly stressed. One participant reported more anxiety and stress at follow-up, despite achieving their personal goal and feeling that the course had been helpful	Small sample, lack of control group. Not generalizable.
Jennings, P., , , Schussler, D. L., Jennings, P. A., Sharp, J. E., & Frank, J. L. (2016). Improving Teacher Awareness and Well-Being Through CARE: a Qualitative Analysis of the Underlying Mechanisms. *Mindfulness*, 7(1), 130-142.	Cultivating Awareness and Resilience in Education (CARE) is a mindfulness-based professional development program developed to improve teachers'	Using an explanatory design, we analyzed data from four focus groups each with three to eight teachers who participated in CARE to explore the mechanisms underlying the intervention effects	The CARE for Teachers professional development program uses experiential, didactic, and interactive professional development activities to nurture teachers' social-emotional competence. The	Since a major component of CARE is mindfulness-based practice aiming to cultivate participants' awareness across a variety of dimensions, it is not surprising that mindfulness	Self-reported data. Focus groups used "group think".

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
	awareness and well-being and to enhance classroom learning environments.		program integrates direct instruction with practice and reflection so that participants have opportunities to learn about aspects of each program component, practice their skills in applying this learning, discuss in large and small groups, and also reflect on their learning through in-class and at-home activities. Program components include three broad categories: (1) emotion skills instruction (40 %), (2) mindfulness and stress reduction (40 %), and (3) compassion practice (20 %).	emerged as the predominant code	
Jennings, P. A., Frank, J. L., Doyle, S., Yoonkyung, O., Rasheed, D., DeWeese, A., & ... Greenberg, M. T. (2017). Impacts of the CARE for Teachers Program on Teachers' Social and Emotional Competence and Classroom Interactions. *Journal Of Educational Psychology*, *109*(7), 1010-1028.	Understanding the efficacy of CARE.	The efficacy of the program was assessed using a cluster randomized trial design involving 36 urban elementary schools and 224 teachers.	CARE	Compared with teachers in the control group, at the end of one school year intervention teachers showed higher levels of adaptive emotion regulation and mindfulness and lower levels of psychological distress and time urgency	Sample was voluntary, and is had to generalize.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
Jennings, P. A., Frank, J. L., Snowberg, K. E., Coccia, M. A., & Greenberg, M. T. (2013). Improving Classroom Learning Environments by Cultivating Awareness and Resilience in Education (CARE): Results of a Randomized Controlled Trial. *School Psychology Quarterly*, *28*(4), 374-390.	Analyzing the CARE program.	A randomized controlled trial examined program efficacy and acceptability among a sample of 50 teachers randomly assigned to CARE or waitlist control condition. Participants completed a battery of self-report measures at pre- and postintervention to assess the impact of the CARE program on general well-being, efficacy, burnout/time pressure, and mindfulness. P	CARE	The results reported here suggest that CARE had significant positive effects on teachers' general well-being, efficacy, burnout/time pressure, and mindfulness	Small Sample, self reported data.
Kasson, E. M., & Wilson, A. N. (2016). Preliminary Evidence on the Efficacy of Mindfulness Combined with Traditional Classroom Management Strategies. *Behavior Analysis In Practice*, *10*(3), 242-251. doi:10.1007/s40617-016-0160-x	Examining mindfulness-based strategies with a classroom behavior management treatment package, to assist teachers with managing 3rd grade student behaviors	Two teachers (Classroom teacher and Specials teacher) and six students within the same classroom were observed using a 5-min momentary time sampling procedure.	Includes behavioral interventions (e.g., signals, transition timers, differential reinforcement of alternative behaviors, incentive system). We predicted that combining mindfulness with behavior management techniques would increase student engagement in on-task behaviors.	Following teacher implementation of classroom behavior management strategies, four of six students increased engagement in on-task behaviors. However, following the addition of mindfulness exercises, five of six students increased engagement in on-task behaviors.	External Validity Issues
Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., Oberle, E., & Thomson, K. (2013). Mindfulness training and reductions in teacher stress and burnout: results from two randomized, waitlist-control field trials. Journal of Educational Psychology, 105, 787–804.	The theory of change we pursue in this study is that MT provides teachers with a set of resources (mindfulness and occupational self-compassion) that helps them to cope more effectively with	The final Canadian sample included 58 public school teachers (52 women, 6 men; 50% elementary level) from a large urban public school district in western Canada.1	8-week, 36-hour MT for public school teachers	Overall, the results of two randomized, waitlist-control field trials in public school districts in Canada and the United States suggest (a) that MT is both feasible and efficacious in these regards and (b) that it is through the	Self-reported data. Need more quantitative data.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
	and bounce back more quickly from the inherent and considerable social-emotional and cognitive challenges of classroom teaching			skills of mindfulness and a self-compassionate mind-set that teachers can more effectively manage stress on the job and, by inference, better attend to the interpersonal and instructional complexities of teaching and learning	
Sarah, e., Minh Tam, e., Stefan, e., & Joachim, e. (2016). Students and teachers benefit from Mindfulness-Based Stress Reduction in a school-embedded pilot study. *Frontiers In Psychology, Vol 7 (2016)*, doi:10.3389/fpsyg.2016.00590/full	Studies a school embedded mindfulness program for students and teachers.	The study applied a controlled waitlist design with three measurement points. A total of 29 students ($n = 15$ in the intervention and $n = 14$ in the waitlist group) and 29 teachers ($n = 14$ in the intervention and $n = 15$ in the waitlist group) completed questionnaires before and after the MBSR course. The intervention group was also assessed after a 4-month follow-up period.	8-week Mindfulness–Based Stress Reduction (MBSR) group program	The present findings point to significant effects of MBSR among both students and teachers within stress, self-regulation, school-related efficacy, and interpersonal problems.	Homogenous, private school, not randomized.
Schussler, D. L., Jennings, P. A., Sharp, J. E., & Frank, J. L. (2016). Improving teacher awareness and well-being through CARE: a qualitative analysis of the underlying mechanisms. Mindfulness, 7, 130–142.	Understanding CARE- and how CARE affected teachers' awareness and why CARE affected particular aspects of teachers' physical and emotional health and why some aspects of their	Using an explanatory design, we analyzed data from four focus groups each with three to eight teachers who participated in CARE to explore the mechanisms underlying the intervention effects	CARE	Shift in mindfulness, CARE helped them become more aware of their physical and emotional health.	Small Sample and self-reported data, participants had different backgrounds.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
	health were not affected.				
Sharp, J. E., & Jennings, P. A. (2016). Strengthening teacher presence through mindfulness: What educators say about the Cultivating Awareness and Resilience in Education (CARE) program. *Mindfulness*, *7*(1), 209-218. doi:10.1007/s12671-015-0474-8	Given the prevalence of stress and burnout among school personnel, concrete interventions designed to address the unique demands and enhance coping resources of school personnel are necessary.	s. Eight K-12 educators (seven females and one male) who participated in the CARE training and demonstrated positive change following the intervention were included in the present study. Six participants were regular classroom elementary education teachers (grades 2–5), and two participants were secondary education specialist teachers (grades 7–12). Participants in this study had 6 to 13 years of teaching experience and ranged in age from 29 to 51 years. All participants worked in public schools; five participants worked in a large, urban district, one worked in a midsized suburban district, and two worked in a large suburban district. All participants were Caucasian	CARE Intervention	One of the most promising findings of the present study was that the majority of participants demonstrated the ability to reappraise before assessing situations in which they were involved. m. Results suggest that the CARE program is a promising approach to support school personnel experiencing stress and burnout.	This study had several limitations. The sample size was small; therefore, it is important to note that transferability, the extent to which the findings are transferable to other settings, and not generalizability is the aim of the current study
Taylor, C., Harrison, J., Haimovitz, K., Oberle, E., Thomson, K., Schonert-Reichl, K., & Roeser, R. W. (2016). Examining ways that a mindfulness-based intervention reduces stress in public school teachers: A mixed-methods study. Mindfulness, 7, 115–129. doi:10.1007/s12671-015-0425-4.	examine four potential ways by which the MBI reduced teacher stress, including by (1) increasing their efficacy for regulating emotion on the job; (2) improving their ways of coping with stress at work; (3)	Public school teachers (n=59) were randomized to an MBI or a waitlist control condition	The MBI program being evaluated here is Stress Management and Relaxation Training (SMART; Cullen and Brito 2014), a fully manualized mindfulness program designed specifically for teachers. This MBI, based upon Jon Kabat-Zinn's widespread	ss from pre-program to 4 month follow-up. In general, results of the study supported the hypothesis that mindfulness training cultivates these kinds of social-emotional skills in teachers (based on teacher interview and survey measures) and that	Self-reported, small sample size, and lack of control group.

CITATION	PURPOSE	DESIGN/SAMPLE	INTERVENTION	OUTCOMES	LIMITATIONS
	increasing their efficacy for forgiving colleagues and students at work following conflict, as well as the tendency to do so; and (4) increasing teachers' tendency to feel compassion for people generally, and for challenging students in particular		Mindfulness-Based Stress Reduction (MBSR) program	certain of these skills partially explain the stressreducing outcomes of mindfulness training for teachers. Specifically, we found evidence that various aspects of (1) emotion regulation and (2) prosocial tendencies like compassion and forgiveness changed as a function of the mindfulness training and helped to reduce stress. At the same time, the findings for the mediating effect of some mechanisms on stress were weak or mixed	

APPENDIX C
UNIVERSITY OF CENTRAL FLORIDA INSTITUTIONAL REVIEW BOARD APPROVAL

Determination of Exempt Human Research

From: **UCF Institutional Review Board #1**
           FWA00000351, IRB00001138

To: **Kelsey Evans**

Date: **August 23, 2018**

Dear Researcher:

On 08/23/2018, the IRB reviewed the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Pre-service Teachers' and Perceived Stress:A Comparative Study
Investigator:	Kelsey Evans
IRB Number:	SBE-18-14279
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

This letter is signed by:

Signature applied by Racine Jacques on 08/23/2018 09:22:04 AM EDT

Designated Reviewer

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APPENDIX D
PERCEIVED STRESS SURVEY

PERCEIVED STRESS SURVEY

PART I:

The questions in this scale ask you about your feelings and thoughts during THE LAST YEAR. In each case, you will be asked to indicate your response by circling the number representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset

because of something that happened unexpectedly?..0 1 2 3 4

2. In the last month, how often have you felt that you were unable

to control the important things in your life? 0 1 2 3 4

3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4

4. In the last month, how often have you felt confident about your ability

to handle your personal problems? 0 1 2 3 4

5. In the last month, how often have you felt that things

were going your way?...0 1 2 3 4

6. In the last month, how often have you found that you could not cope

with all the things that you had to do? 0 1 2 3 4

7. In the last month, how often have you been able

to control irritations in your life?...…………..0 1 2 3 4

8. In the last month, how often have you felt that you were on top of things?............... 0 1 2 3 4

9. In the last month, how often have you been angered

because of things that were outside of your control?.. 0 1 2 3 4

10. In the last month, how often have you felt difficulties

were piling up so high that you could not overcome them? 0 1 2 3 4

DEMOGRAPHIC INFORMATION- Please fill out the following information to the best of your ability. Answer choices are limited to one selection per question.

11. What is your age?

- 18 to 24 years
- 25 to 34 years
- 35 to 44 years
- 45 to 54 years
- 55 to 64 years
- Age 65 or older

12. Current gender identity?

- Male
- Female
- Other

13. What program are you enrolled at the University?

- Elementary Education
- Early Childhood
- Exceptional Education
- Secondary Education
- Other

14. If enrolled in the program of Secondary Education, what track are you listed under?

- Social Science Education
- Mathematics Education
- English Language Arts Education
- Art Education
- Physical Education
- Not Applicable

15. What is your best estimate of your family's annual income in the year you entered this college?

- Less than $10,000

- $10,000 to $14, 999
- $15,000 to 24, 999
- $25,000 to $34,999
- $35,000 to $49,999
- $50,000 to $74,999
- $75,000 to $99,999
- $100,000 to $149,999
- $150,000 or more

16. Are you employed?

- Yes, 20 hours or more each week
- Yes, 19 hours or less each week
- No

17. How often do you engage in spiritual/religious practices (prayer, meditation, self-examination, etc.)?

- Daily
- Weekly
- Monthly
- Yearly
- Never

18. How often do you participate in Mindfulness Activities (martial arts, meditation, yoga)?

- Daily
- Weekly
- Monthly
- Yearly
- Never

19. Have you ever participated in a mindfulness training program?

- Yes
- No

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