Bells of Mindfulness: An Online Mindfulness Meditation Course to Promote Mindfulness Meditation for PhD Students

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BELLS OF MINDFULNESS: AN ONLINE MINDFULNESS MEDITATION COURSE TO

PROMOTE MINDFULNESS MEDITATION FOR PHD STUDENTS

by

Michael Folland

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ABSTRACT

Bells of Mindfulness: An Online Mindfulness Meditation Course to Promote Mindfulness

Meditation Practice for PhD Students

by

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Utah State University, 2023

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Over the last 20 years, there has been growing evidence of mental health issues in

doctoral candidates worldwide (Zhang et al., 2022; Barry et al., 2019; Gewin, 2012; Radison &

DiGeronimo, 2005). One study at Berkley, University of California, found that 47% of graduate

students were depressed (Panger et al., 2014). A survey of over 2,000 graduate research students

from 26 countries found that, compared to the general population, they were six times more

likely to experience depression and anxiety (Evans et al., 2018). Practicing mindfulness

meditation, which is one way to cope with stress and anxiety (Kabat-Zinn, 1991), could be a

useful practice for these PhD students. However, despite all the evidence that suggests the health

benefits of having a regular meditation routine, motivating graduate students to practice

meditation can be challenging (Franco, 2020). This study addresses this challenge by assessing a

5-week mindfulness meditation course designed to support graduate students in developing a

habit of practicing mindfulness meditation. Graduate students in PhD degree programs, many of

whom worked and/or had families, were recruited to participate in a 5-week online mindfulness meditation course.

The following questions guided this research:

1. How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

2. What factors, if any, contributed to participants' change in their meditation practice?

Principles from social cognitive learning theory, particularly self-efficacy, guided course structure and activities, helping to better understand and interpret participants' experiences and growth throughout the course. Sources leading to self-efficacy according to Bandura (1977; 1997)—mastery experience, social modeling, social persuasion, and changing emotional states—were operationalized to inform decisions related to course design. Features of the course informed by self-efficacy theory included formal and informal meditation practice, mentors who used social modelling and social persuasion to encourage participants to sustain their practice, recording stress levels in a meditation log, and virtual sessions to deepen participants' understanding of mindfulness and build camaraderie. Interviews were conducted mid- and post-course to find out how effective the online course was in helping participants to make a habit of practicing mindfulness meditation and to understand what factors of the course were most effective in changing their mindfulness meditation practice. Participants took the Self-Efficacy for Mindfulness Meditation Practice surveys pre-, mid-, and post-course to inform qualitative data from interviews.

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PUBLIC ABSTRACT

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Meditation Practice for PhD Students

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Over the last 20 years, there has been growing evidence of mental health issues in doctoral candidates worldwide (Zhang et al., 2022; Barry et al., 2019; Gewin, 2012; Radison & DiGeronimo, 2005). Practicing mindfulness meditation, which is one way to cope with stress and anxiety (Kabat-Zinn, 1991), could be a useful practice for these PhD students. However, despite all the evidence that suggests the health benefits of having a regular meditation routine, motivating graduate students to practice meditation can be challenging (Franco, 2020). This study addresses this challenge by assessing a 5-week mindfulness meditation course designed to support graduate students in developing a habit of practicing mindfulness meditation. Graduate students in PhD degree programs, many of whom worked and/or had families, were recruited to participate in a 5-week online mindfulness meditation course. Principles from social cognitive learning theory, particularly self-efficacy, guided course structure and activities, helping to better understand and interpret participants' experiences and growth throughout the course. Interviews were conducted mid- and post-course to find out how effective the online course was in helping participants to make a habit of practicing mindfulness meditation and to understand what factors of the course were most effective in changing their mindfulness meditation practice. Participants took the Self-Efficacy for Mindfulness Meditation Practice surveys pre-, mid-, and post-course to inform qualitative data from interviews.

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To my bells of mindfulness—Lylia, Charlotte, & Aili

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present study. The stories you shared with me about your experiences with mindfulness

meditation are not only inspiring but the heart of this paper.

Michael Folland

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CHAPTER I

INTRODUCTION

Research indicates mindfulness meditation helps to reduce psychological distress in university students (e.g., Burgstahler, 2020; Bamber & Kraenzle, 2016; Regehr et al., 2013). One study focused on doctoral students found that guided mindfulness meditation reduced depression (Barry et al., 2019). Several review studies and meta-analyses suggest mindfulness interventions can improve student mental health and psychological well-being (Chiodelli et al., 2022; Dawson et al., 2020). The mounting evidence suggesting the ability to use mindfulness meditation as an effective tool to address graduate student mental health issues should be welcome news for universities.

Over the last 20 years, there has been growing evidence of mental health issues in doctoral candidates worldwide (Zhang et al., 2022; Barry et al., 2019; Gewin, 2012; Radison & DiGeronimo, 2005). A survey of over 2,000 graduate research students from 26 countries found that, compared to the general population, they were six times more likely to experience depression and anxiety (Evans et al., 2018). The 2015 University of Arizona report found a majority of doctoral students reported "more than average" current stress or "tremendous" stress and indicated the most significant contributors to their stress were school and education related. The COVID-19 pandemic further exacerbated the issue, causing even greater stress and anxiety among university students (Fruehwirth et al., 2021). Many studies showed high levels of anxiety can impair academic performance, lower study satisfaction, and increase the risk of dropping out of school (Litmanen et al., 2014; Stallman, 2010). As a result, several studies recommend implementing programs to promote better mental health among university students (Bai et al., 2020; Kaparounaki et al., 2020).

Some researchers suggest that promoting mental health for students in higher education is important not just for the sake of improving mental health itself but also for improving their academic performance (Mantzios, 2019). There are several ways practicing mindfulness meditation ultimately leads to higher academic performance. For example, one can develop resilience through practicing mindfulness meditation. Resilience is defined as an increased likelihood of success despite environmental adversities (Wang et al., 1994). According to Egan et al. (2022), resilient students can be described "as those who maintain high motivational achievement and performance even when faced with stressful events and conditions that place them at risk of poor performance; in other words, those students who succeed despite the presence of adverse conditions." Students demonstrate resilience when they engage their internal strengths, such as utilizing coping skills and attitude (Ungar, 2006). One means of enhancing adaptive coping skills, which enables students to disengage from less helpful thoughts and behaviors, is mindfulness (Egan et al., 2022).

Practicing mindfulness meditation is promising to enable graduate students to better handle stress and anxiety. There potentially could be additional positive outcomes beyond the ability to handle stress, including improved academic performance (Mrazek, et al., 2013), self-regulatory skills (Norman, 2017), empathy (Shapiro & Walsh, 2003), self-compassion (Neff, 2003), increased mindfulness (Baer et al., 2008), and focused attention (Moore et al., 2012), to highlight a few. Despite the multitude of studies espousing the positive health and well-being benefits derived from practicing mindfulness meditation, getting graduate students not only to start mindfulness meditation but also maintain a regular mindfulness meditation practice can be challenging given their competing priorities, such as work and family responsibilities (Franco, 2020).

Not only is time an obstacle to getting graduate students to practice meditation, but in a survey where veterinary medicine students indicated reasons it would be difficult for them to meditate, 61% of participants reported they preferred to accomplish or achieve something rather than use their time to meditate (Franco, 2020). Addressing this issue is tricky because, at its core, mindfulness is about not attaining or achieving anything. It is about taking some time just "being" instead of "doing." The practice is not always blissful—it can involve feelings of physical discomfort, and emotions of anger, regret, or boredom may arise (Creswell, 2017). In addition, participants may question why they are "wasting time" seemingly doing nothing when they feel they should be doing something productive.

Furthermore, while the techniques to practice meditation as a way to cultivate mindfulness are simple, the time and effort to meditate can be difficult. Apart from other activities that demand both time, effort, and discipline, there is little to show for one's efforts. There are no outward physical differences one may experience by exercising regularly at a gym, no certificates, and nothing that would earn any compliments for effort. So why would anyone, especially students who tend to be driven by achievement, choose to engage in such an activity? That is the challenge this study aims to address.

For the present study, an online mindfulness meditation course informed by self-efficacy theory (Bandura, 1977; 1997) was designed to help PhD students build and sustain a habit of practicing mindfulness meditation. While a behavior change such as regular mindfulness practice is difficult, research showed people can change health-supporting behaviors, including eating healthy (Strachan & Brawley, 2009) and physical activity (Medrano-Urena et al., 2020) by applying principles of self-efficacy. Self-efficacy is a person's belief in their ability to perform a task and plays a critical role in human achievement (Bandura, 1977). An individual who

perceives a high competence for a health behavior is more likely to succeed in maintaining the behavior over time (Schwarzer and Luszczynska, 2007). Self-efficacy is a major determinant of whether an individual chooses to engage in or avoid an activity, how much effort the person invests in the activity, and how long they persist in the activity (Bandura, 1986). In other words, self-efficacy plays a major role in one's intention to initiate and maintain a behavior (Birdee et al., 2020). Factors of self-efficacy have been used to change a variety of health behaviors (Sharma & Romas, 2012) that include practicing yoga (Mehta & Sharma, 2010), developing healthy eating habits (Dewar et al., 2012), and quitting smoking (Wang et al., 2021). Applying self-efficacy theory to the design of an online mindfulness meditation course for graduate students could contribute to our understanding of the features of a course that help motivate students to practice mindfulness meditation.

Statement of the Problem

There are high levels of stress among graduate students (Evans et al., 2018). Studies found 75% of graduate student samples self-reported being stressed or very stressed (Oswalt & Riddock, 2007; Kernan et al., 2011). In addition to the usual academic pressures of higher education, graduate students may experience stress as a result of the pressure to publish, teach, and meet advisor expectations (Allen et al., 2020). Research showed mental health issues affect doctoral students more than the highly educated general population (Allen et al., 2020). One study that included more than 2,000 graduate research students from 26 countries found they were six times more likely to experience anxiety and depression compared to the general population (Evans et al., 2018). A recent study of over 600,000 college students in the United States reported rates of anxiety doubled between 2007 and 2018 (Duffy et al., 2019). The steepest increase in rates of anxiety occurred between 2014 to 2018. One study at Berkley,

University of California, found 47% of graduate students were depressed (University of California, Berkeley, 2014). Graduate students may fail to look after their mental and physical health due to the demands of balancing academic and professional goals with family and career responsibilities (Mazzola et al., 2011).

As mentioned above, the COVID-19 pandemic caused even further increased anxiety and depression among graduate students. For example, graduate students suffering from anxiety disorders increased from 26% to 39% between 2019 (pre-pandemic) and 2020 (during the pandemic) (Chirikov et al., 2020). Similarly, graduate students experiencing major depressive disorders doubled from 15% in 2019 to 32% in 2020. During the pandemic, young adults were more vulnerable to psychological issues due to the relationship between COVID-19 and mental health (Santomauro et al., 2021). Constant news about the pandemic's death rates, variants, outbreaks, and implications on health and the economy further contributed to the decline in students' mental health (Su et al., 2021).

Background of the Problem

Although evidence suggests certain levels of stress can improve one's functioning, a great deal of stress can negatively influence one's physical and mental health (Schneiderman et al., 2005). Stress and anxiety cause health, personal, occupational, and societal issues which can directly influence one's quality of life (Brenneisen Mayer et al., 2016). Graduate students often complain of feeling unhappy or depressed, experiencing constant strain, and losing sleep from worrying (Levecque et al., 2017). Graduate student stress and anxiety also lead to unfavorable outcomes, such as poor academic performance, illness, attrition, depression (Kerrigan et al., 2017), academic burnout (Allen et al., 2020), lower academic integrity, reduced empathetic behavior, alcohol and substance abuse, relationship instability, suicidal thoughts, lack of self-

confidence (January et al., 2018), eating disorders, self-harm, suicide, and social problems (Ghodasara et al., 2011). Furthermore, the impact on students' mental, physical, and emotional well-being can have adverse impacts on various bodily organs (Fink, 2017).

The level of stress cited in self-reported surveys is inversely correlated with well-being and quality of life (Ribeiro et al., 2018). In other words, lower levels of stress correlate positively with well-being and quality of life. Therefore, it is worthwhile to investigate effective solutions to address the problem of increased student stress and anxiety considering the negative snowball effect it can have on other aspects of their academic and personal lives.

Practicing mindfulness meditation, which is one way to cope with stress and anxiety (Kabat-Zinn, 1991), could be a useful practice for graduate students. Shapiro et al. (2008) found in their review of research on meditation in higher education that mindfulness meditation may decrease stress and anxiety, help focus attention, improve preparedness, and support the development of creativity among other outcomes. Deliberate practice is necessary for people to learn and develop the skill of sustaining, in the present moment, non-judgmental attention (Kabat-Zinn, 2003). However, despite all the evidence that suggests health and other benefits of having a regular meditation routine, motivating graduate students to practice meditation can be challenging (Franco, 2020). Therefore, given the potential for graduate students to practice mindfulness meditation to help them better handle stress and anxiety, there is a need to better understand effective strategies that may support graduate students in developing a regular mindfulness meditation practice.

The number of research articles on mindfulness meditation exploded over the last decade; however, fewer studies targeted graduate students enrolled in academic programs. A meta-analysis found 57 published studies examined the effect of mindfulness meditation on college or

university students, yet none of the studies specifically identified PhD students as a target group (Bamber & Schneider, 2016). While online mindfulness trainings showed positive effects in reducing anxiety and depression, fewer research studies examining the mental health benefits of online mindfulness interventions targeted student populations (Karing, 2022; Cavanagh, 2014). A narrative synthesis of qualitative studies on Mindfulness Based Interventions (MBIs) among students found that most of the researchers of the studies used in their synthesis targeted students in helping professions (i.e., social work, physical therapy, medicine, etc.) (Bamber & Schneider, 2022). They suggest that future research should explore differences in MBI experiences between those in helping professions and students in other majors with different perceived stresses and anxieties. Therefore, the present study targeted graduate students pursuing PhD degrees across multiple disciplines.

Purpose of the Study

The purpose of this research was to examine the effectiveness of a 5-week online mindfulness meditation course to help PhD students learn how to practice mindfulness meditation and to sustain a habit of practicing mindfulness meditation. I purposefully built modules based on self-efficacy theory with the goal of increasing student self-efficacy for mindfulness meditation which was measured pre-, mid-, and post-course. According to self-efficacy theory, individuals are more likely to persevere through a difficult task if they have a high-level of self-efficacy, or belief in their ability to achieve the task (Judge & Bono, 2001). By informing the design of the course through self-efficacy theory, I aimed to lower the student attrition rate compared to when the course was conducted in fall 2021 as a pilot study and increase the number of students who sustained a routine practice.

Designing an online mindfulness meditation course conducive to the needs of graduate students was the first step to better understand how to help graduate students form a habit of practicing mindfulness meditation. This study was an investigation to find out which design features of an online mindfulness meditation course, informed by social cognitive learning theory, were effective in helping students to form a habit of practicing mindfulness meditation. Participant interviews provided insight into what factors about the course were helpful in attaining the goal of sustaining a routine meditation practice.

This study contributes to research on mindfulness meditation by explaining in detail how self-efficacy theory was used to inform design features of the course and then assessing the importance of those design features based on in-depth interviews with participants. Furthermore, the present study targets a group of participants, doctoral students, underrepresented in studies on mindfulness meditation. As mentioned, studies that do target graduate students tend to use participants who overwhelmingly seek professions in medical-related industries, such as health care workers. There are few mindfulness meditation studies targeting PhD students.

Research Questions

The guiding research questions were:

1. How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

2. What factors, if any, contributed to participants' change in their meditation practice?

Significance of the Problem

The present study informs future research on the effectiveness, if at all, of an online mindfulness meditation course informed by social cognitive learning theory in helping PhD students to form a habit of practicing mindfulness meditation. The knowledge gained from this

study may provide insight to mindfulness meditation instructors and researchers on what factors should be considered when designing online mindfulness meditation courses specifically for graduate students who are underrepresented in studies on mindfulness meditation. An online course that is effective in helping graduate students to handle stress and anxiety by practicing meditation might be considered for inclusion into a university's overall strategy for supporting graduate students' improved mental health and well-being.

Summary of the Research Study Design

In order to explore the experiences of doctoral students who participated in a 5-week online mindfulness meditation course and understand its efficacy in helping them to make a habit of practicing mindfulness meditation, this study employed a qualitative methods design (Creswell, 2013). The qualitative research method is a good fit for this study seeking to understand the experiences, habits, and transformations among PhD students, requiring detail that "can only be established by talking directly with people … and allowing them to tell the stories unencumbered by what we expect to find or what we have read in the literature" (Creswell, 2013, p. 48). Nine doctoral students participated in this study. The data in this study were collected from the doctoral students over the duration of the 5-week course followed by an interview 4 weeks after the course ended. Data were collected using the Self-Efficacy for Mindfulness Meditation Practice scale pre-, mid-, and post-course surveys; meditation logs in which participants daily recorded the type/duration of their meditation practice, pre- and post-meditation stress levels, and their reflections/experiences; and semi-structured interviews conducted mid- and post-course.

Definitions of Terms

The following terms are defined for this study:

Mindfulness: "The awareness that emerges by paying attention on purpose, in the present

moment, and nonjudgmentally to the unfolding of experience moment to moment"

(Kabat-Zinn, 2003, p. 145).

Self-efficacy: The perceived confidence (Wallston, 1989), competence, or belief in one's own

ability for performing goal-directed behaviors and is shown to play a major role in human

achievement (Bandura, 1997).

Well-being: n. a state of happiness and contentment with low levels of distress, overall good

physical and mental health and outlook, or good quality of life (American Psychological

Association, 2023, March 28).

CHAPTER II

LITERATURE REVIEW

There is a need to understand the important features and design of a mindfulness meditation program resulting in regular, consistent, and sustained meditation practice among participants. There are many studies, some highlighted in this chapter, that examine the effects mindfulness meditation has on stress, anxiety, and other outcomes. The effects tend to be overwhelmingly positive (e.g., Kabat-Zinn, 1982; Breedvelt et al., 2019; Sommers-Spijkerman et al., 2021). There are fewer studies measuring the effectiveness of mindfulness interventions in terms of participant engagement and their meditation practice in terms of frequency and duration. Studies that examined this issue were unable to conclusively determine which course features were responsible for engagement and retention (e.g., Winter et al., 2022). Furthermore, there are fewer studies that targeted graduate students enrolled in PhD programs (e.g., Bamber & Schneider, 2016) to understand how they experienced mindfulness meditation. To help fill this gap in the existing literature on mindfulness meditation, this study focused less on outcomes such as stress and anxiety and more on participant output, particularly time spent cultivating mindfulness through regular and intentional meditation practice, and the elements in the course design that students found useful in supporting their mindfulness meditation.

This chapter first reviews the theoretical underpinnings and empirical research relevant to student mental health and mindfulness meditation as part of the conceptual framework. The study acknowledges graduate student mental health issues universities are challenging to deal with and then examined the literature explaining how managing stress effectively or ineffectively can impact student academic achievement. Next, the chapter reviews literature to define mindfulness meditation and then demonstrated the positive effects practicing mindfulness

meditation can have on stress and anxiety based on research. Then, the self-efficacy learning theory is explained, which was used as the theoretical framework to inform the design of the mindfulness meditation course, and how the study measured the participants' self-efficacy for mindfulness meditation is likewise detailed. This chapter also reviews some of the recent studies comparing face-to-face to online mindfulness interventions, studies examining mindfulness-based interventions' time commitment, and how those findings informed this current study. Finally, this chapter broadly reflects on the existing literature on mindfulness meditation and explains how this study contributes to mindfulness research by examining areas that are less studied prior to the following chapter that explains the design of the 5-week course and the pilot study that preceded and informed the current study.

Conceptual Framework

This study was interested in designing an effective 5-week online mindfulness meditation program to support graduate students in understanding mindfulness meditation, building and sustaining a regular mindfulness meditation practice, and recognizing how practicing meditation could help PhD students navigate challenging situations by better managing their stress. As previously mentioned, stress and mental health issues are becoming prevalent across university campuses. According to the Healthy Minds Study which collects data from 373 campuses nationwide, more than 60% of college students during the 2020-2021 school year met the criteria for at least one mental health problem (Lipson et al., 2022). Universities are prioritizing students' mental health and exploring creative ways to meet the increased demand of students seeking counseling and mental health services (Abrams, 2022). Recently, in a letter to the Lewis & Clark College community, newly appointed president Dr. Robin Holmes-Sullivan named improving

support programs to address the growing need for student mental health services as her first and top priority (Holmes-Sullivan, 2022).

Mindfulness meditation has shown to be an effective way to handle stress and anxiety, and graduate students in previous studies indicated "reducing stress" as a top motivator for practicing mindfulness meditation (Franco, 2020). According to Mousavi et al. (2018) most activities to improve mental health and stress management on campuses focus on undergraduate students rather than addressing the needs of graduate students. Therefore, this study targets graduate students enrolled in PhD programs.

Stress in Higher Education

Stress and mental health issues experienced by graduate students are becoming recognized across university campuses as central issues to address. Studies indicated graduate students report higher levels of stress when compared with undergraduate students (Wyatt & Oswalt, 2013). One study found that about 75% of their graduate student samples reported being stressed or very stressed (Kernan et al., 2011). Clearly, stress is a major problem affecting university graduate students' mental health and well-being. But, more specifically, what does that mean for those students who experience high levels of stress and do not have adequate skills, knowledge, or tools to navigate managing their stress? This section explains how ineffectively managing stress impacts student academic achievement. Then, the following section introduces mindfulness meditation for stress reduction and other positive effects.

High levels of stress adversely affect academic achievement. Findings from an observational study of 456 German undergraduate medical students suggested that higher perceived academic-related stress was a predictor of lower academic performance (Kotter et al., 2017). Since there is evidence that stress and anxiety can impair cognitive function (Eysenck,

1996), the capacity of students to manage stress successfully is crucial in an educational setting. Too much stress can deter cognitive faculties crucial to learning. A person overwhelmed by stress and anxiety loses the ability to screen out irrelevant stimuli which can lead to being more distracted. An overload of stress and anxiety can also hinder one's organizational skills and make it more difficult to focus attention on specific tasks for extended periods of time (Shapiro et al., 2011). This last point is particularly applicable to PhD students who rely heavily on their organizational skills and ability to persistently achieve milestones over several years before completing their degree.

Another negative impact resulting from an inability to effectively manage stress is student burnout. The Graduate Student Stress Model proposes that stress is related to burnout among graduate students (Offstein et al., 2004). Burnout is a prolonged response to chronic emotional and interpersonal stressors (Maslach et al., 2001). According to Allen et al. (2021), burnout is typically defined according to:

1. Fatigue occurring when a person is depleted of their emotional resources.
2. Development of indifferent or negative attitudes related to one's work.
3. Feelings of incompetency and a lack of personal accomplishment.

High levels of exhaustion related to burnout are associated with intentions to leave academia (Hunter & Devine, 2016).

Managing stress effectively or ineffectively directly relates to experiencing more or less positive and negative emotions. This relationship is important because research shows the experience of positive and negative emotions is directly related to levels of student engagement (Reschly et al., 2008). The frequency of negative emotions is associated with lower student engagement, while, conversely, the frequency of positive emotions is associated with higher

engagement (Reschly et al, 2008). Effectively managing stress levels can lead to positive emotions which then lead to higher student engagement.

Mindfulness Meditation

As described in the previous section, the detrimental effects stress can have on students when ineffectively managed include lower academic achievement, burnout leading to graduate student attrition, decline in cognitive functions, and decreased student engagement. Understanding concretely what high stress levels mean for graduate students should help to recognize the need to address this issue. Mindfulness meditation might help to alleviate the problem of high stress among graduate students. This section introduces mindfulness meditation by defining and understanding what it is. It reviews the literature on mindfulness meditation in relation to stress reduction and other positive effects which are particularly beneficial to graduate students, such as improved focused attention and emotion regulation.

What is Mindfulness Meditation?

Jon Kabat-Zinn, considered the foremost pioneer in the therapeutic application of mindfulness (Siegel et al., 2009), defines it as "the awareness that emerges by paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment to moment" (Kabat-Zinn, 2003, p. 145). It is also described as "the self-regulation of attention, which involves sustained attention, attention switching, and the inhibition of elaborative processing" (Bishop et al., 2004, p. 233). It is the mental state of being attentive to and aware of what is taking place in the present (Brown & Ryan, 2003). Meditation can be thought of as the practice to cultivate the skill, or state, of mindfulness (Kabat-Zinn, 1997). Mindfulness meditation practice consists of sitting while paying attention to sensations related to the breath, body and mind while emphasizing non-judgmental awareness focused in the moment (Kabat-

Zinn & Hanh, 2009). There are two major components of mindfulness meditation: self-regulation of attention and the quality of that attention (Bishop, 2004).

Meditative awareness "allows all ways of seeing to exist in the space surrounding an event" (Dass, 2012, p. 24). With mindfulness, the meditator simply notes, without reactivity, whatever comes into mind, such as thoughts, feelings, or sensory impressions like sounds, and then releases them. If the meditator thinks much of anything about what just came up, or lets it trigger any reactivity at all, then one's mindful stance is lost (Goleman & Davidson, 2017). Mindfulness developed out of the Buddhist tradition, but it can be taught independently of spiritual origins. It can be understood as sets of skills that can be developed with practice, as a way of being, or as relating to present-moment experience. Bishop et al. (2004) defined mindfulness as a mode or process of "regulating attention in order to bring a quality of nonelaborative awareness to current experience within an orientation of curiosity, experiential openness, and acceptance" (p. 234).

Mindfulness is often associated with the formal practice of mindfulness meditation; however, it is more than meditation. It is a state of consciousness that involves attending to one's moment-to-moment experience consciously (Brown & Ryan, 2003). Meditation practice is like a scaffolding used to develop the skill, or state, of mindfulness (Kabat-Zinn, 2005). Mindfulness is not something one can hear about and then decide willfully to live in the present moment or easily let go of attachments and then immediately feel the benefits of reduced stress and anxiety, not to mention other benefits. "Rather, it is more akin to an art form that one develops over time, and it is greatly enhanced through regular disciplined practice, both formally and informally, on a daily basis" (Kabat-Zinn, 2003, p. 148).

One common misunderstanding of mindfulness is that the practitioner should force, will, coerce or control the mind (Yuan, 2017a). However, effortful and intensive practice can consequently fatigue the mind and even increase levels of the stress hormone cortisol, considered the fight or flight hormone. Therefore, controlling the mind is not a natural method for one's mind and practicing mindfulness. Yuan (2017b) describes that, "trying hard to hold an object still is unnatural and difficult, because we restrict our attention so that it is narrow and static, but in reality, the nature of mind is the opposite: natural, dynamic, relaxed, flowing, and spontaneous" (p. 77).

The origins of mindfulness trace back at least 2,500 years to the emergence of Buddhist traditions (Kabat-Zinn, 2003). Therefore, it is most often associated with Asian religious traditions, but it is an essential part of all the world's major contemplative philosophical and spiritual traditions (Goleman, 1988; Walsh, 1999). There are a variety of mindfulness-based approaches which include ancient Buddhist mindfulness meditations, such as Vipassana and Zen meditations. Meditation practices, most recently, have been taught in secular forms that no longer require following certain religious and cultural beliefs (Shapiro et al., 2011). These forms include modern group-based standardized meditations, including mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT).

Mindfulness meditation can be differentiated from loving-kindness meditation and compassion meditation (Hoffman et al., 2011), although many mindfulness meditation programs include these forms of meditation. For example, Mindfulness-Based Stress Reduction founded by Jon Kabat-Zinn includes loving-kindness meditation. While mindfulness received attention for being a cure for pain, anxiety, inability to concentrate, and more, it was not originally intended for these purposes. The original aim "focuses on a deep exploration of the mind toward

a profound alteration of our very being" (Goleman & Davidson, 2017, p. 2). Learning

mindfulness is like learning to swim or ride a bicycle. It is nearly impossible to learn it without

implicit learning—experiencing it for oneself directly and in a way which involves more than

just understanding words from a manual or listening to someone describe how to do it (Tang,

2017).

Mindfulness Meditation for Stress Reduction

Studies show meditation is effective in reducing stress levels in both non-clinical and

clinical populations, such as patients with anxiety, depression, and chronic pain (Kabat-Zinn,

1982). Mindfulness meditation has shown to lead to reduced stress reactivity among individuals

who practiced as little as 25-minutes per day for three days (Creswell et al., 2014). A recent

meta-analysis of studies targeting participants in tertiary education (i.e., university, college, or

other postsecondary higher education) found moderate positive effects for mindfulness or

meditation-based interventions on symptoms of anxiety and stress (Breedvelt et al., 2019).

Findings from 24 papers in a scoping review suggested that mindfulness-based intervention

approaches are useful in decreasing anxiety and stress in health students in tertiary education

(Parsons et al., 2022).

Mindfulness meditation training fosters resilience to stress (Cohen & Wills, 1985). The

American Psychological Association (2023, March 28) defines resilience as "the process and

outcome of successfully adapting to difficult or challenging life experiences, especially through

mental, emotional, and behavioral adjustment and flexibility to external and internal demands."

The way in which mindfulness effectively reduces stress and increases one's ability to manage

stress may be its capacity to help people to be more comfortable with adversity and allow people

to find meaning in that adversity (Garland et al., 2017). Similarly, the benefit of mindfulness

meditation in relation to reducing anxiety (Kabat-Zinn, 1982) may be partially attributable to the effects of mindfulness meditation on coping with stress more effectively (Sears & Kraus, 2009). Mindfulness meditation may support more effective coping in part by increasing the ability to flexibly cope with stressful situations (Jones et al., 2019).

Another reason a mindfulness meditation practice may help to reduce stress is because it trains the mind to be less reactive to thoughts, situations, and external stimuli that are out of one's control. It teaches nonreactivity to thoughts and feelings that might otherwise cause a stress response (Sedlmeier et al., 2012). Mindfulness practices "reduce cognitive vulnerability to reactive modes of mind that might otherwise heighten stress and emotional distress" (Bishop et al., 2004, 231). Developing mindfulness as a skill by practicing meditation can lead to a decrease in lapsing back on conditioned, automated thoughts and behaviors, or unproductive mental habits (Barbezat & Bush, 2013). Developing the skill of mindfulness (i.e., mindful attention or open awareness) enables practitioners to shift their perspective and relationship to the present experience so they can step out of conditioned patterns and become less reactive and more able to simply observe. Research on practicing mindfulness meditation indicates that a regular practice can help individuals to change habits of mind and behavior (Owen, 2021). To develop mindful skills, one needs to practice deliberately and consistently over time (Banerjee, 2016).

Mindfulness may increase task persistence by increasing one's tolerance to distress (Carpenter et al., 2019). People who are mindful are more comfortable with being uncertain of a particular outcome (Menges & Caltabiano, 2019). It should be noted relaxation training is often compared to mindfulness training. Although both have similar effects on stress, mindfulness increases positive states of mind and decreases rumination more effectively than does relaxation (Zautra et al., 2012). Maintaining a state of calm in the present by practicing mindfulness

meditation helps students to improve their study habits, organizational, and planning skills (Broderick & Jennings, 2012).

Mindfulness has been shown to improve self-regulation which is directly related to one's ability to effectively handle stress. More specifically, self-regulation is the regulation of affect, cognitions, or behaviors in accord with goal-directed behavior (Karoly, 1993). It is an important skill for PhD students, who have a long-term goal of completing their PhD but also experience chronic stress. The inability to self-regulate, which can happen to individuals who have an inordinate amount of stress but do not know how to manage their stress, can lead to a decrease in executive functions. Executive functions consist of working memory, inhibitory control of prepotent impulses, and mental set-shifting (Miyake et al., 2000). Stress and negative affect can impair executive functions which can lead to self-regulation failure (Wagner & Heatherton, 2014). Failure to self-regulate can lead to behaviors that are not aligned with long-term goals (Leyland et al., 2018). For PhD students, this could mean losing the ability to effectively plan, problem solve, and strategize, which are necessary actions to achieving the long-term goal of completing their respective doctoral programs.

Mindfulness Meditation for Students

There are other positive effects gained by regularly practicing mindfulness meditation which are especially applicable to graduate students. One of the positive effects is an improved ability to focus attention. Focus is key to practicing mindfulness, and it is crucial to academic achievement (Leland, 2015). Practicing mindfulness meditation helps to cultivate focused attention and attention regulation. Attention regulation relates to the ability to sustain attention on a chosen object and to redirect attention back to the object when there are distractions (Holzel

et al., 2011). Attention is essential to mental processing, which is central to learning (LaBerge, 1995).

Students trained in mindfulness meditation can better focus on the lesson or task at hand and filter out distractions (Rodgers, 2014). Attention is related to a variety of cognitive processes (e.g., memory, planning, perception, speech), making it a difficult construct to define (Greason & Cashwell, 2009). The process of paying attention includes four main mental capacities:

1. Selective attention (i.e., the ability to attend to some aspects of experience while ignoring others)

2. Divided attention (i.e., the ability to simultaneously hold attention on two different objects or tasks)

3. Sustained attention (i.e., the ability to hold attention over some period of time)

4. Attention switching (i.e., the ability to change focus from one object to another) (Greason & Cashwell, 2009, p. 4)

Everyone has the capacity for attention; however, people differ in their ability to sustain attention and control its focus.

Despite the importance of focused attention during the learning process, most educational settings do not provide opportunities for students to systematically learn or cultivate focused attention (Shapiro et al., 2011). Attentional training has been central to meditative disciplines for centuries (Shapiro et al., 2011), which is another reason why having a sustained meditation practice could be beneficial for PhD students. Strategically managing attention is a crucial skill for all higher education students but especially for PhD students who must consistently focus and refocus their attention in order to achieve their goal of completing their degrees in their

respective programs. Therefore, PhD students need mastery experiences in attention skills, like mindfulness meditation, to hone this important mental skill.

Another positive effect of practicing mindfulness meditation as found by some studies is that it may enhance various cognitive abilities. Ramsburg and Youmans (2014) conducted a study that indicated meditation improved students' retention of information conveyed during class lectures by practicing meditation lasting only six minutes at the start of a class lecture. Brief meditation training may promote certain cognitive strategies (such as decision-making) that are conducive to completing a complex problem-solving task.

There is a large body of research demonstrating a link between mindfulness meditation practice and improving emotional wellbeing (Crescentini & Capurso, 2015; Sulphey, 2016; Splevins et al., 2009). One study found "well-being" to be the second most commonly cited reason for starting mindfulness meditation practice next to reduced negative experiences involving stress/anxiety (Pepping et al., 2016). Mindfulness techniques help train the mind to stay non-judgmentally focused on the present moment and to increase affect tolerance, or the ability to tolerate difficult feelings in the self or others (Greason & Cashwell, 2009). Mindfulness promotes insight into the transient nature of emotions (Luberto et al., 2014). One way mindfulness may influence emotion regulation is relating to thoughts and emotions as fleeting aspects of awareness that do not necessarily reflect reality (Luberto et al., 2014).

Mindfulness meditation has shown to be linked with more positive thought patterns and reduced negative affect (Andrews-Hanna et al., 2013). Practicing mindfulness meditation is linked with constructs such as acceptance, improved management of negative feelings and emotions, and reduced attachment, which lends itself to an individuals' concept of self, becoming less controlled by the external environment (Sulphey, 2016; Crescentini & Capurso,

2015). Mindfulness meditation is conducive to one strategy for emotion regulation, which is to redirect attention away from whatever is causing the negative emotion (Gross, 2001).

Mindfulness meditation exerts effects through emotion regulation, attention control, and self-awareness (Tang et al., 2015). These three components work together to generate enhanced self-regulation. Mindfulness may serve as a tool for emotion regulation by increasing reperceiving, which is a process of stepping back from an experience to more clearly assess it (Garland et al., 2009).

Self-Efficacy for Mindfulness Meditation

The purpose of the previous section was to demonstrate that the positive effects of mindfulness meditation as related to stress reduction, improved emotion regulation and focused attention, and overall well-being are well established. These positive effects can be especially beneficial for graduate students, many of whom deal with high stress and anxiety and other mental health related issues. Online mindfulness meditation programs have potential to be an important part of a university's overall strategy to improve mental health on campus.

Therefore, the present study aims to fill this gap in mindfulness literature by addressing how carefully considered design elements of the course influence participants to practice mindfulness meditation. The mindfulness meditation course for this study used the theory of self-efficacy (Bandura, 1977; 1997) to inform its design. As explained in this next section, while the theory has been applied to various other health-promoting fields of study, there are few studies that consider self-efficacy and its relationship to mindfulness meditation, and no studies to my knowledge have applied this theory to the design elements of a mindfulness meditation course for graduate students.

Bandura's Theory of Self-Efficacy

According to social learning theory, self-efficacy is a person's belief of their ability to perform a task and plays a critical role in human achievement (Bandura, 1977). Self-efficacy is a major determinant in whether an individual chooses to engage in or avoid an activity, how much effort that person invests in the activity, and how long the person persists in the activity (Bandura, 1986). People with higher self-efficacy tend to persevere through challenges and problems, more effectively deal with complications, receive more satisfaction by completing tasks, and be more likely to accomplish expected outcomes (Judge & Bono, 2001).

The relationship between self-efficacy and developing healthy habits has been studied widely in such fields as martial arts (Ortenburger et al., 2021), healthy cooking (de Borba et al., 2021), diet (Fueyo-Diaz, 2019), and smoking cessation (Rajani et al., 2021), among many other studies. There are also studies that examine the relationship between practicing mindfulness meditation and self-efficacy in performing some sort of skill or occupation, such as cultivating key counseling skills (Chan et al., 2021; Greason & Cashwell, 2011) or educational/academic outcomes (Menges & Caltabiano, 2019; Hanley et al., 2015).

Studies show lower self-efficacy is associated with depression, while higher self-efficacy is connected to better health outcomes and well-being (Arslan, 2012; Ghasemizad et al., 2013). People are more likely to engage in healthy behaviors when they feel confident in their capabilities to successfully carry out those behaviors (Bandura, 1988) and more likely to be successful in continuing the behavior over time (Schwarzer and Luszczynska, 2007). Coping self-efficacy is found to be a mediating factor in self-regulation skills such as mindfulness skills (Luberto et al., 2014).

There are many assessments developed to measure mindfulness state and traits (Goleman & Davidson), such as the 39-item Five Facet Mindfulness Questionnaire (FFMQ) based on five

different mindfulness questionnaires (Baer et al., 2008), but until recently there was not an instrument to measure mindfulness meditation self-efficacy. The Self-Efficacy for Mindfulness Meditation Practice scale (SEMMP) was developed to assess the ability to perform mindfulness meditation, rather than focusing on the results of practicing mindfulness meditation (Birdee et al., 2020). SEMMP was designed to help inform research on adopting mindfulness meditation practice as a health behavior (Birdee et al., 2020). The SEEMP has items that measure an individual's perceived competence to perform mindfulness meditation. Each item falls on one, and only one, of three mindfulness self-efficacy factors: attention, self-kindness, and emotion.

There are four sources to Bandura's theory of self-efficacy that can be leveraged to develop or increase self-efficacy. The four factors are mastery experience (achieve simple tasks that lead to more complex objectives), social modeling (the model shows the processes that accomplish a behavior), social persuasion (providing encouragement for a person to complete a task or achieve a certain behavior), and improving physical and emotional states. Chapter III describes in detail how these four sources informed the design of the mindfulness meditation course.

Mindfulness Course Considerations

Face-to-Face vs. Online Mindfulness Programs

The previous section demonstrated how Bandura's theory of self-efficacy could provide a useful framework to design a mindfulness meditation course. Another consideration for a mindfulness meditation course is whether to deliver it in person or online. This section reviews the literature specifically related to online versus face-to-face mindfulness-based interventions to inform a decision about delivery based on what research indicates about both positive and negative aspects of online interventions compared to face-to-face ones.

In-person mindfulness training has traditionally been the standard delivery format for mindfulness interventions (Messer et al., 2016); however, in the last few years there has been an explosion of mindfulness-based interventions offered online. A recent meta-analysis of mindfulness-based interventions included 97 randomized controlled trials demonstrating the rapid growth of mindfulness-based interventions (MBIs) via online health platforms and apps (Sommers-Spijkerman et al., 2021). Only five years earlier, some of the same researchers conducted their first meta-analysis of online MBIs which included only 15 randomized controlled trials (Spijkerman & Bohlmeijer, 2016). The increasing number of mindfulness training programs delivered online follows a general trend in mental health care (Carlbring et al., 2018). As Karing (2022) points out, the rising mental health issues during the COVID-19 pandemic and challenges of delivering face-to-face interventions created a demand for online interventions.

In-person delivery of mindfulness training shows to be effective; despite this, the downside to in-person delivery is the low number of practitioners adequately trained to lead such classes. This situation makes it difficult to offer these classes to large numbers of students (Messer et al., 2016). Online mindfulness classes offer the benefit of being more scalable—thereby increasing the potential number of participants—cost-effective, accessible, and self-paced. Furthermore, several systematic reviews and meta-analyses of online mindfulness-based interventions demonstrate these online programs have positive effects on mental health.

A systematic review reported online mindfulness interventions have positive effects on stress, anxiety, and depression in a general population (Ahmad et al., 2018). A meta-analysis on the efficacy of online mindfulness interventions found moderate effects on stress, depression, and mindfulness in clinical and nonclinical populations (Sommers-Spijkerman et al., 2021). One

of the early meta-analyses of online mindfulness randomized controlled trials found, overall, a significant moderate effect size for decrease in stress and significant effect sizes for depression, anxiety, well-being, and mindfulness (Spijkerman & Bohlmeijer, 2016).

One systematic review and meta-analysis on the effectiveness of online mindfulness-based interventions focused on populations with diagnosed mental health problems (Sevilla-Llewellyn-Jones et al., 2018). They found online MBIs to significantly improve mindfulness skills in people with mental disorders and reduce anxiety in people with anxiety disorders. Two additional meta-analyses of online and technology-enabled MBIs focused on stress management in the general population (Zhang et al., 2020) and distress in both clinical and nonclinical populations (Victorson et al., 2020). They found small to medium effects on stress, anxiety, depression, and mindfulness compared with active and non-active control conditions.

Findings from several studies suggest having a teacher or facilitator involved improves student engagement in practicing meditation, which then leads to better outcomes. The Spijkerman & Bohlmeijer (2016) study performed analyses to investigate differences in effect sizes based on, among other subgroups, with or without therapist guidance. They found significantly higher effect sizes on reducing stress through mindfulness-based interventions with therapist guidance than without therapist guidance. A study comparing videoconference- to podcast-delivered 7-week mindfulness-based interventions found a larger reduction in depression in the videoconferencing group than in the podcast group (Karing, 2022). The participants in the teacher-led videoconference group practiced at a higher frequency than the podcast group which was completely self-directed.

As cited previously, there is research suggesting that a teacher, therapist, or facilitator involved with the course can lead to increased student participation. Therefore, while the online

mindfulness meditation course for the present study was mostly self-guided, there were three virtual sessions throughout the 5 weeks to include some remote interaction between the meditation teacher and students.

Time Commitment

As mentioned in the introduction, it can be difficult for graduate students to sustain a habit of practicing mindfulness meditation. One reason often cited by students is the issue of time commitment. Considering that time is a precious commodity for graduate students who have many competing tasks and activities, it is an important consideration for the length of time that can realistically be expected of graduate students to dedicate towards their mindfulness meditation practice. Studies have been assessing the effectiveness of mindfulness programs that reduce the total amount of time used for classroom instruction and outside-of-class meditation practice compared to their traditional lengthy counterparts.

The mindfulness-based stress reduction (MBSR) program originally consists of 26 hours of session time, including eight classes of 2.5 hours, and a 6-hour class on the weekend in Week 6 (Kabat-Zinn, 1997). This time commitment would likely lead many students to decline the opportunity to participate in such a program. This phenomenon was found to be true in non-student populations, such as caregivers of children with chronic illness who reported the length of the program as their reason for declining to participate (Minor, 2006).

Previous research suggested the effects of brief mindfulness training are comparable to those of prolonged training. A review found that studies that reduced the number of MBSR hours from 26 to 10.5 hours (Speca et al., 2000) had similar effect sizes on reducing stress (Carmody, 2009). Research suggests that both larger and lower dose mindfulness-based interventions are

effective in reducing anxiety and depression, and increasing mindfulness in student populations (McConville et al., 2016; Strohmaier, 2020).

There have been several effective mindfulness training interventions offered in medical schools requiring up to two hours of face-to-face training per week and 30-45 minutes of practice per day for 5 to 8 weeks; however, this level of time commitment may be impractical for medical students given their schoolwork loads (Moore et al., 2020). Furthermore, it was reported that medical students may not be motivated to practice mindfulness meditation for long periods (Hassed et al., 2009). Although Hassed et al. specifically refers to medical students, the same could be true of other students who are enrolled in intense academic or professional programs. There are studies indicating that practicing for less time than required by some mindfulness training programs can still reap benefits for its participants. Research from Australia's Monash University found that as little as 10 minutes of regular daily practice improves medical students' quality of life, well-being, and study engagement (Hassed et al., 2009).

A study was conducted of an 8-week online mindfulness training program for rural medical students which included regular, brief mindfulness practices, such as weekly 10-minute mini-lecture videos covering topics from mindful communication to regulating emotions, and 5-minute guided meditations, such as body scan and mountain meditation (Moore et al., 2020). This study measured the proportion of participants who still practiced formal mindfulness by the end of the program and the frequency and duration of their practice. Regarding frequency, half of the participants practiced mindfulness a minimum of three days per week in the first 3 weeks, but practice dropped over the remaining 5 weeks. By Week 8, the median frequency of mindfulness practice was once per week. In the present study, the course is 5 weeks, while recommending participants to practice formal meditation three times a week for 5 to 25 minutes, and informal

meditation twice per week for an amount of time left up to the participants. This time commitment is assessed in the Discussion and Conclusion chapter.

Summary

Graduate students experience higher levels of stress than the general population and undergraduates. The positive effect practicing mindfulness meditation has on reducing stress is well researched. There is also evidence that practicing mindfulness meditation can help one to self-regulate emotions, persevere through challenges, and maintain focus—all important skills for graduate students, in particular, to cultivate. Therefore, an online mindfulness meditation course could be beneficial for PhD students. The present study draws on self-efficacy theory as a framework to design a 5-week online mindfulness meditation course for PhD students.

There are several gaps in the current research literature on mindfulness meditation that the present study aims to fill. Research on mindfulness meditation for graduate students tends to target those in health professions, such as medical students, nurses, and other health professionals. The present study targets PhD students who are underrepresented in mindfulness meditation studies. Furthermore, the majority of research on mindfulness meditation tests a mindfulness training intervention by assessing the effects of one or several outcomes, such as stress, anxiety, depression, self-efficacy, self-regulation, creative problem solving, academic achievement, attention, work productivity, well-being, etc. There are fewer studies that seek to understand how an online mindfulness course changes participants' meditation practice and their experience incorporating mindfulness meditation into their lives. Finally, few studies explain, in depth, the design of the course with recommendations for improving the course.

The aim of this chapter was to:

1. Accurately describe the mental health crisis in higher education

2. Propose mindfulness meditation as one way to address this crisis

3. Review evidence demonstrating the positive effects of practicing mindfulness meditation for students

4. Explain Bandura's self-efficacy theory and why it is a useful framework for this study and the design of the online mindfulness meditation course

5. Review studies on other issues related to mindfulness meditation course design, including online versus face-to-face and participant time commitment

6. Explain the contributions of this study based on existing research related to mindfulness meditation

The next chapter explains in more detail the course design for a 5-week mindfulness meditation program for graduate students. It discusses a pilot study, conducted in the fall of 2021, which provided the foundation for the present study. The chapter provides an overview of the 5-week mindfulness meditation course. Next, it states the research questions for the pilot study, describes how data were collected, analyzes the results, and finally explains how this pilot study informed the present study.

CHAPTER III

DESIGNING A MINDFULNESS MEDITATION COURSE

I conducted a pilot study in fall 2021 when I designed and tested the efficacy of a 5-week online mindfulness course to help graduate students form a habit of practicing mindfulness meditation. The lessons learned from this pilot study informed revisions to the course to make it a more effective course for graduate students. This chapter discusses the pilot study by giving an overview of the course, research questions, and the key findings. Detailed findings about the pilot study are found in the Appendix. Then, the chapter provides a detailed description of the course modules, the lessons learned from the pilot study based on participant feedback, and how the findings from the pilot study informed the design of the course for the current study.

Pilot Study Fall 2021

Course Name: Bells of Mindfulness: Mindfulness Meditation for Graduate Students

A course was designed in Canvas that introduced students to various types of mindfulness meditation while gradually increasing the duration of meditation practice each week throughout the course. The course had 5 modules—an introduction module in the first week, followed by a new module each subsequent week focusing on a certain aspect of mindfulness meditation. Students practiced formal meditation—a seated, mantra, walking, or loving-kindness meditation—three times per week from Week 1. Formal mindfulness meditation practice generally refers to sitting meditation (Williams and Kabat-Zinn, 2011), although the course also included walking meditation in the definition. Formal meditation can include guided instruction concerning the nature and content of practice, the attitudinal and attentional qualities to use, and physical posture (Hawley et al., 2014). In addition to the formal meditation, from Week 2,

students also practiced an informal meditation two times per week in which they applied the principles they learned during formal meditation—using the breath to bring their attention to the present moment—while doing daily activities, such as washing the dishes or driving a car. Informal meditation involves bringing mindful awareness to daily activities while transferring skills and attitudes cultivated during formal practice into everyday life (Kabat-Zinn, 1990). A weekly video of the instructor explained the meditation practice for the week and reviewed what was practiced the previous week. In these videos, the instructor addressed one or two important things to consider or pay attention to while practicing meditation.

Research Questions

To test the efficacy of the course and understand how practicing mindfulness meditation affected the participants, the following research questions guided the pilot study:

1. How effective, if at all, is a 5-week mindfulness meditation course in helping students reduce stress and anxiety?

2. How effective, if at all, is a 5-week mindfulness meditation course in helping students increase mindfulness?

3. How effective, if at all, is a 5-week mindfulness meditation course in helping students form a habit of regularly practicing mindfulness meditation?

4. How do participants describe their experience of practicing mindfulness meditation?

5. How can the 5-week mindfulness meditation course for graduate students be improved?

Participants

There were 11 participants who signed up for the study—five participants completed the 5-week mindfulness meditation course; six participants dropped out. Of the five participants who

completed the study, two were PhD students (one in instructional technology & learning sciences (ITLS) and one in landscape architecture); three were in master's programs—two in ITLS and one in psychology. Three of the five participants were married, two of whom had children. Three participants worked part-time; two participants worked full-time.

Ethics and Human Subjects

All research was carried out under the guidelines of the USU IRB. All participants consented to participate.

Procedures & Instrumentation

Prior to the start of the course, participants took two pre-surveys via Qualtrics. One survey measured their perceived stress and anxiety, and another measured their mindfulness. After completing the surveys, participants were granted access to the course. Each participant received a meditation log Google sheet to daily record the type of mindfulness meditation practice, duration, and stress level directly before and after practicing the meditation, and their experience or reflections. This information was collected to understand how closely the participants followed the recommended meditation schedule and to assess how well they formed a habit of practicing mindfulness meditation. A Slack channel, #bellsofmindfulness, was created for the course. Slack was originally chosen as a social learning tool because it is used in the ITLS program. Mid-semester, the students participated in an interview. After the course was completed, participants took two post-surveys. Two weeks after completing the course, students participated in a post-course interview about their experience. To help answer the research questions, I conducted two focus groups with 2-3 participants in each group during Week 3, individual interviews during Week 4, and individual interviews 2-weeks post-course completion.

Key Findings

Findings from the pilot study informed the design of the course for the present study.

Table 1 describes the key findings and the course revisions.

Table 1

Key Pilot Study Findings to Inform Course Revisions

Pilot study	
Findings	Course revisions
Participants expressed they had difficulty with time management and prioritizing activities or tasks throughout the day to ensure they practiced meditation every day.	Invite the participants from the pilot study to discuss with the new students some of their own challenges making time for their practice and any tips they have to help with time management or prioritizing their practice.
Overall, the participants' time practicing meditation steadily increased between Weeks 1-3, then decreased in Weeks 4 and 5 even though it should have increased the most in the last two weeks.	Apply principles of self-efficacy to the design of the course. Allow four factors leading to developing self-efficacy to inform the design of the course.
Participants noted it was helpful to record in their meditation logs the pre- and post-meditation stress levels using the SUDS scale. This exercise helped them become aware how meditation practice immediately impacted their physical and emotional states.	Continue using the meditation log to record pre- and post-meditation stress levels.
Participants reported recording their daily meditation practice in the meditation log gave them a sense of accountability.	Continue using the meditation log to record meditation practice.
Participants dealt with feelings of uncertainty/lack of confidence as to whether they	Engage and welcome uncertainty throughout the course. Encourage participants to share and discuss their experience dealing with feelings of uncertainty as they approach their mindfulness meditation practice.

Pilot study	
Findings	Course revisions
practiced meditation correctly.	Encourage participants to record their successes/challenges in the experiences/reflections section of the meditation log and discuss these openly during the virtual sessions. Include social modelers/persuaders (two participants from the pilot study) and the meditation teacher to offer encouragement to the participants.
Participants did not like using the Slack channel and they did not engage in discussions on Slack. Reasons included: • Slack was not a tool they already used • Online discussion burnout from other classes • Lack of digital self—prefer not to communicate on social media platforms • Do not feel comfortable sharing individual experiences on a discussion board without knowing the other participants	Instead of online discussions, there will be three virtual sessions via Zoom for participants to get to know one another, ask questions, share experiences, and offer support.
Overall, the participants enjoyed meeting over Zoom and preferred it over Slack as a means of having discussion and sharing information/individual experiences.	Instead of online discussions, there will be three sessions via Zoom for participants to get to know one another, ask questions, share experiences, and offer support.
It helps to have someone in your life who has a good meditation practice and can speak to how it has affected them. This person can also offer you encouragement.	Invite the pilot study participants who completed the 5-week course to join the Zoom sessions with the new group of participants to share their experiences and offer encouragement to the participants in the present study.

Pilot study	
Findings	Course revisions
One participant who dropped out during the first week of the course said the reason for dropping the course, aside from being busy, was not having enough information about the benefits of practicing mindfulness to want to continue.	Mentors who completed the 5-week course will be invited to share during the Zoom sessions what they found to be the benefits of practicing mindfulness meditation. The meditation teacher will also cover how practicing mindfulness can act as a guide for the rest of one's life. Revisions based on self-efficacy theory may lead to decreased attrition rate.

In addition to revising the course based on some of the lessons learned from conducting the course for the pilot study, self-efficacy theory provided a framework to redesign the mindfulness meditation course. Table 2 displays the four main sources leading to increased self-efficacy and the course revisions based on those sources.

Table 2

Course Revisions Based on Self-Efficacy Theory

Revisions based on self-efficacy theory	
Self-efficacy sources	Course revisions
Mastery experience	• Begin with 5-minute meditation in first week; increase duration weekly. • Practice variations of mindfulness meditation (e.g., seated, walking). • Bring awareness to successes and challenges by recording these in the experience/reflections section of the meditation log.
Social modeling	• Model the behavior/techniques of mindfulness meditation using instructor-led videos. • Mentors (participants who completed 5-week course) to model the behavior by talking about the benefits, challenges (e.g., time management), and strategies for overcoming challenges and maintaining a consistent routine. • The meditation teacher to model the behavior by demonstrating how to be present with another person. During group discussion, the meditation

Revisions based on self-efficacy theory	
Self-efficacy sources	Course revisions
	teacher listens deeply to each student and connects with the student by commenting and giving insight on what the student shared. He takes a couple breaths between the time the student finishes talking and before he begins to reply.
Social persuasion	• Meditation teacher to discuss reasons for incorporating mindfulness into one's life. • Meditation teacher will suggest practicing mindfulness can be a guide throughout life. • Teacher/mentors to offer encouragement to participants.
Improve emotional and physical states	• Record stress levels before/after meditation practice using Subjective Units of Distress Scale (SUDS).

The Present Study: Redesigning the Bells of Mindfulness Course for PhD Students

I revised the course in some areas and kept other aspects the same based on participant feedback, as described in Table 1, to make the 5-week course more effective in helping graduate students form a habit of practicing mindfulness meditation. In addition, principles of self-efficacy based on social cognitive theory informed the design for the revised course. This section gives a detailed description of the weekly modules and discusses how four sources of self-efficacy were applied to the course. To begin, Figure 1 shows the objectives of the course from the syllabus.

Figure *1*

Bells of Mindfulness Course Objectives

Course Objectives

It feels somewhat of a paradox to write objectives for a course on mindfulness meditation when a big component of practicing is non-doing (called *wuwei* in Chinese), not having any expectations, and non-striving - but just being. But even for a practice that involves non-doing and non-striving, I think we can set some objectives to help guide what we might accomplish in this course.

- Make a habit of practicing mindfulness each day through both formal meditations and informal mindfulness activities.
- Increase our awareness by paying attention to the present moment, on purpose, and non-judgmentally.
- Gain a basic understanding of mindfulness meditation and appreciation for how it can be beneficial to maintain a regular practice.
- Create a community among the participants in this course to offer support, encouragement, and share knowledge to help one another in forming a habit of practicing mindfulness meditation (which can be very challenging at times!).
- Communicate to your peers in this course how you are experiencing mindfulness meditation which may include challenges, observations made during your meditation or even during the day since starting a mindfulness practice, frustrations, feelings, etc. during 3 virtual meetings throughout the course.

A description of the weekly modules are as follows:

Module 1: Week 1: Welcome to Mindfulness Meditation

The first module provided a course overview and introduced students to a formal seated mindfulness meditation. The first video guided students through navigating the course on Canvas, showed how to access the meditation log, and explained what information to record in the log. The next video introduced the instructor, provided an overview of the course, explained the weekly schedule of alternating daily between formal and informal meditations, and set expectations for participation. Next, an instructor-led video, along with a written description, taught how to do a formal seated mindfulness meditation. In a fourth video, Jon Kabat-Zinn explained what mindfulness meditation is and guided the listener through a brief meditation. The

participants met via Zoom with the instructor in Week 1. This gave the participants a chance to meet one another and the instructor. Two participants who completed the course in 2021 returned to model the behavior of practicing mindfulness meditation by sharing their experiences and meditation practice with the new participants. Described later in this chapter is the reason why including the former participants as models was an important choice in relation to self-efficacy theory.

Module 2: Week 2: Introduction to Informal Mindfulness Meditation

Students practiced a formal seated meditation while bringing their attention to a word, phrase, or mantra with each in-breath and out-breath. The first informal meditation, chores meditation, was introduced. The second Zoom session occurred in Week 2. This time a mindfulness meditation practitioner and professor emeritus from Western Oregon University, ordained as a Buddhist dharma teacher by Zen Master Thich Nhat Hanh, led a 1-hour session. During the session, the meditation teacher shared his own journey into mindfulness meditation, shared the benefits of practicing mindfulness meditation such as helping to better manage stress and anxiety, and led the class in a group meditation. Participants were invited to share their own progress in meditation practice.

Module 3: Week 3: Bells of Mindfulness

The week's formal meditation was loving-kindness meditation. The "bells of mindfulness" concept—the idea that various objects and sounds can act as reminders throughout the day to return to the present moment—was explained. For informal practice, participants applied the "bells of mindfulness" concept while interacting or having a conversation with another person. The concept of practicing non-judgment towards oneself during meditation was

emphasized by watching a TED Talk, "The Power of Mindfulness: What You Practice Grows Stronger," by Shauna Shapiro (TED, 2017).

Module 4: Week 4: "I Have Arrived, I am Home"

Students practiced a walking meditation for formal meditation. A video of Thich Nhat Hanh and an excerpt taken from his book modeled how to practice this type of meditation. Additionally, an informal eating meditation was practiced while listening to a 5-minute guided meditation on eating a raisin mindfully. The final Zoom session followed a similar format as the second Zoom meeting in Week 2. However, more time was allotted during the second half of the session for participants to share what aspect of mindfulness meditation resonated the most in their personal or academic lives.

Module 5: Week 5: Group Meditation

Students practiced a formal group meditation by joining one of the 30-minute mindfulness meditation sessions offered through the UCLA Mindful Awareness Research Center. For the informal meditation, students were invited to practice mindfulness while doing schoolwork. To learn about the science of mindfulness, students watched the TED Talk, "How Mindfulness Changes the Emotional Life of our Brains," by Richard Davidson (TED, 2019).

Course Design Based on Self-Efficacy Theory

In addition to revising the course based on lessons learned from the pilot study, self-efficacy theory informed course revisions. As mentioned in Chapter II, increased self-efficacy predicts the likelihood of a person sticking with a health-related routine (Bandura, 1988). There are four factors to Bandura's theory of self-efficacy that can be leveraged to develop or increase self-efficacy. The four factors are mastery experience (achieve simple tasks that lead to more complex objectives), social modeling (model shows the processes that accomplish a behavior),

social persuasion (providing encouragement for a person to complete a task or achieve a certain behavior), and improving physical and emotional states (Bandura, 1997). These four factors that lead to developing self-efficacy were used to inform the design of the mindfulness meditation course. This section describes how these four factors informed the design of the mindfulness meditation course.

Mastery Experience

While the technique of meditating is simple in theory, it can be difficult to put into practice, especially for a sustained amount of time. Many aspects of practicing mindfulness meditation differ from how one typically behaves throughout the day. Most of one's day is focused on doing—completing tasks, checking off items on to-do lists, or working towards one's goals. On the contrary, mindfulness meditation is about non-doing (Kabat-Zinn, 1997), or in Chinese, "wuwei." Non-doing can be an uncomfortable state when the mind and body have been programmed over many years to always be doing something.

One's attention is often fragmented and distracted due in part to the technologies that are designed to grab attention as frequently and persistently as one allows them (Braza, 2011). In contrast to the fast-paced environment of tweeting and texting, mindfulness encourages the meditator to slow down (Hadar & Ergas, 2019; Hanh, 1987). For instance, the breath is a rather monotonous stimulus for the mind to focus on, especially compared to the fancy images and "urgent" notifications on screens that lure one's attention away. As Hadar and Ergas (2019) state:

> Rather than have our attention focus passively on what is outside us, mindfulness asks us to attend inwardly to our minds and bodies. Rather than a fragmented, frenzied, and

scattered attention that runs after stimuli that catches one's interest, mindfulness

encourages long periods of sustained attention. (p. 100)

This dramatic switch in attention can be difficult, particularly for new practitioners.

Considering some of these challenges to practicing meditation, the following design

features were included to help lead participants to mastery experience:

1. Start meditation practice in short durations, building up to sustain focused attention for

   longer periods of time.

2. Experience a variety of meditations.

3. Direct practitioners' awareness to their successes in practicing, however small.

To build the participants' confidence in their ability to sustain a meditative state for a

prolonged period, the course was designed for participants to begin meditating for a short

amount of time (5 minutes) and gradually increase the duration throughout the course. If

participants were unable to sustain meditating for 5 minutes, they had the option to start with 20

breaths or even 10 breaths. The idea was to start somewhere and build from there.

Each week introduced a new type of meditation, such as silent breathing meditation,

mantra meditation, loving-kindness meditation, and walking meditation. Experiencing different

types of meditation was thought to increase the likelihood that participants would discover one or

more meditations they enjoyed doing, or at least develop an appreciation for the many types of

meditations available to them.

Practitioners' awareness of their successes in practicing mindfulness meditation were

cultivated in two ways. First, there was a space in their meditation log to record their experiences

and reflections. In this space, they were encouraged to reflect and write down something they felt

good about or considered a win in their practice, for example, if they struggled to focus on their

breath towards the beginning of the meditation but then found it easier towards the end of the meditation. Perhaps they struggled with practicing non-judgment but became aware of feeling compassion towards themselves. Or, they experienced the feeling of wanting to end the meditation early but they continued with it for the allotted time. Whatever the success, recording it in their log made them more aware of what they were doing well. In turn, participants were invited to share their successes during the Zoom sessions. This served as additional opportunities to reinforce what they were doing well and to hear similar stories from fellow participants. Getting participants to record their accomplishments in their meditation log and share these with the class was an important exercise as part of their mastery experience.

Social Modeling

Demonstrating mindfulness meditation behavior was accomplished by modeling:

1. Mindfulness meditation technique, which included posture, stance, where to focus attention, practicing non-judgment, etc.

2. Strategies to practice meditation as a routine.

Weekly videos of the instructor modeled the technique of practicing meditation. One video in the first week covered the fundamentals to practice a formal seated meditation. Each subsequent weekly video explained various meditation techniques to focus on in a particular week. The techniques were based on and cited from well-known, prominent teachers of mindfulness meditation, including Jon Kabat-Zinn, Thich Nhat Hanh, and Jerry Braza. There were short meditations included in the Zoom sessions, and students participated in a group guided meditation offered through the UCLA Mindful Awareness Research Center in Week 5.

Other videos, not created by the instructor, featured mindfulness meditation experts, including academics, researchers, and dedicated practitioners. Similarly, these videos served to

model how to practice meditation. The videos were directly related to the weekly theme and helped to build a deeper understanding of mindfulness meditation. Listening to mindfulness meditation experts and then reflecting on their teachings were important parts of the process for learners to deepen and refine their own understanding. As described in the pilot study, one participant found one of the mindfulness experts' experience, described in the Shauna Shapiro TED Talk video, to be relatable and even helped her overcome feelings of personal judgment, something with which the participant struggled.

To model the behavior of practicing meditation as a routine over a sustained time period, participants who completed the 5-week course as part of the pilot study were invited to talk to the new participants in the current study as mentors. They shared with the new participants their own meditation practice, what benefits they noticed since practicing meditation, and how they prioritized meditation against competing responsibilities. Equally important, they were asked to share challenges they encountered when they first began practicing mindfulness meditation and continuing challenges. This knowledge helped the new participants realize feelings of difficulty or frustration or other negative emotions they experienced during mindfulness meditation were normal and to be expected. The mentors also provided recommendations on how to successfully navigate those emotions while staying committed to their practice.

Researchers who conducted a meta-analysis of qualitative studies on Mindfulness Based Interventions (MBIs) among students suggested MBIs should be developed in a way that specifically addresses the needs of students (Bamber & Schneider, 2020). To this point, a mindfulness meditation course for graduate students should consider the challenges perceived by students in maintaining a regular practice and the practice itself. The pilot study found that one of the most frequently noted challenges among participants was the ability to manage time in a

way to prioritize their meditation practice against other competing tasks and activities throughout the day. An inability to effectively manage time as the main reason for not practicing mindfulness meditation was even cited by students who sincerely wanted to make mindfulness meditation a regular routine. In fact, Franco (2020) found that "I don't have time" was the second most common reason that veterinary medicine students felt it would be difficult to meditate. Consequently, Pilot study participants modeled strategies they used to prioritize their meditation practice against other competing tasks and activities. The mentors easily related to the new participants since they too were graduate students who experienced similar time-management issues having to juggle academic, work, family, and other responsibilities.

Social Persuasion

There were three sessions via Zoom throughout the 5-week course intended to provide participants encouragement to achieve the behavior of practicing formal or informal mindfulness meditation each day. During these sessions, the course instructor, meditation teacher, and pilot study participants offered reasons why incorporating a mindfulness practice into one's life is beneficial. There were discussions for participants to share what they considered to be their successes and failures in practicing mindfulness meditation. The course instructor, mindfulness meditation teacher, pilot study participants, and current study participants offered encouragement to the new practitioners both for their successes and failures. Recognizing small successes, such as completing a full 5-minute meditation in the first week even if they encountered difficulties like maintaining focus on their breath, helped to slowly build their confidence.

Discussing their perceived failures was also important. Listening to other participants' failures helped them acknowledge they were not alone in the challenges they experienced. These virtual sessions provided opportunities for social interactions, getting to know other participants

who had a shared interest in meditation, asking questions, sharing experiences, deepening their own understanding and interpretation of mindfulness, and offering social support.

Six out of 11 participants in the pilot study dropped the course within the first week. When asked via email why they decided to drop the course, one participant replied, "As a person who isn't too involved in meditation to begin with, the first interactions were important for me to find benefit in the work." This statement suggests the first week of the course did not do an adequate job explaining the benefits of practicing mindfulness meditation for the participant to feel motivated to continue with the work. The course for the present study intentionally used social persuasion to better communicate to participants the potential benefits of practicing mindfulness meditation. Socially persuading the participants that there was value in having a meditation practice by more clearly articulating during Week 1 the benefits of practicing mindfulness meditation was one strategy used to increase engagement.

Improving Physical and Emotional States

The third factor that develops self-efficacy according to social cognitive learning theory is improving physical and emotional states (Bandura, 1997). There are studies showing evidence that practicing mindfulness meditation can affect a person's state, that is their state of mind or emotions, right after and during a meditation practice (Goleman & Richardson, 2018). To help the participants become aware of how practicing mindfulness meditation affected their stress levels, participants recorded their stress levels based on Subjective Units of Distress Scale (SUDS) on their meditation log right before and after the meditation. This enabled participants to quantify their stress level and then objectively see how their stress levels changed before and after meditation. The exercise was used as part of the pilot study and the results were positive—

stress levels were almost always lower after meditation. Therefore, this exercise was also part of the current study.

Summary

There were many lessons from the pilot study conducted in the fall of 2021 based on interviews with participants that informed revisions to the course for the present study. Furthermore, applying sources of self-efficacy helped to re-conceptualize the design of the online mindfulness meditation course. The research questions from the pilot study were also modified for the present study. Whereas the pilot study addressed certain outcomes from practicing mindfulness meditation, such as reducing stress and increasing mindfulness, the research questions for the present study were focused less on outcomes and more on understanding how the online course changed participants' meditation practice and what factors related to the course design influenced the participants' meditation practice. Similar to the pilot study, the present study offered ways to improve the course for future iterations.

CHAPTER IV

METHODS

The purpose of the present study was to examine how, if at all, a 5-week online mindfulness meditation course designed for PhD students affected their mindfulness meditation practice. Principles of self-efficacy based on social cognitive theory informed the design of the course to increase engagement, and ultimately, to increase the effectiveness of the course in helping participants establish a routine of practicing mindfulness. This chapter outlines the research questions, research design, participants, procedures, measures, data analysis, and threats to validity. The main research questions of the study are:

1. How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

2. What factors, if any, contributed to participants' change in their meditation practice?

Research Design

This study employed a qualitative method design; however, there were pre-, mid-, and post-course Self-Efficacy for Mindfulness Meditation Practice surveys that were analyzed using descriptive statistics. In a qualitative study, "the meanings, beliefs, and so on of the participants in your study are a major part of what you want to understand" (Maxwell, 2013, p. 30). This statement was true for the current study. I was interested to understand how the participants thought the course affected their mindfulness meditation practice and which characteristics in the design of the course, if any, were beneficial. A focus on meaning is a fundamental aspect of most qualitative research (Maxwell, 2013) and is central to what is known as the interpretive approach to social science (Battacharya, 2008).

Intensive interviews were conducted with the participants of the 5-week mindfulness meditation course. The interviews enabled the collection of rich data—data that were varied and detailed enough to provide a clear picture of what was going on (Becker, 1970). Qualitative research affords the flexibility to pursue new discoveries and relationships during the research. I approached the current study without preconceived expectations on outcomes and practiced having a "beginner's mind" throughout the research process in order to remain open to possibilities not previously considered. Data collected from the Self-Efficacy for Mindfulness Meditation Practice surveys were analyzed using descriptive statistics to inform the qualitative data to better understand how significantly, if at all, the course affected participants' self-efficacy before and after the course.

Participants

Nine PhD students participated in the course, seven women and two men. The participants represented a diverse mix of departments, including Communicative Disorders and Deaf Education, Computer Science, Civil and Environmental Engineering, Kinesiology and Health Science, Mechanical and Aerospace Engineering, Human Development & Family Studies, Teacher Education and Leadership (TEAL), and Plant, Soil and Climate. Geographically, participants were from Utah (two), outside of Utah (Oregon, Texas, Missouri), and international (Nepal (two), Pakistan, Indonesia). There were three unmarried students without children, three students married with no children, two students married with children, and one student unmarried with children.

The participants most engaged in the course (i.e., actively recorded meditation practice in their log and attended Zoom sessions) as of the middle of the second week were selected for the interviews. A spreadsheet was created with the names of the 30 participants who had signed the

consent form indicating they intended to take the 5-week mindfulness meditation course. The spreadsheet had a column to indicate the number of times they recorded their meditation practice in their meditation log and the number of Zoom sessions they attended by the second week (maximum two). Only participants who recorded their meditation practice and attended at least one of the Zoom sessions were selected to participate in the interviews. Ten participants were interviewed mid-course. One participant dropped the course after the mid-course interview. The data from this participant's first interview was not included in the present study to maintain consistency that interview data were representative of only participants who were interviewed both mid- and post-course.

Procedures

Once 25 participants were recruited with informed consent; an email was sent to all participants. The email included a link for them to access the 5-week online mindfulness meditation course on Canvas. Participants were instructed in the email to contact the researcher directly if there were any questions, concerns, or difficulty accessing the curriculum on Canvas. They began following the daily mindfulness meditation practice schedule. Once participants began the 5-week program, they daily recorded in their meditation logs the type of mindfulness practice and duration, their stress levels directly before and after their meditation practice, and reflections of their experience. Participants took the Self-Efficacy for Mindfulness Meditation Practice survey pre-, mid-, and post- course.

Ten participants were selected in the middle of the second week based on their engagement for individual interviews in the middle of the course and one-month post-completion. An Excel spreadsheet was used to mark the number of times participants recorded their practice in their meditation logs and number of virtual sessions out of two they attended.

Out of the 30 participants who signed the consent form indicating they wanted to participate in the study, 14 participants had recorded in their meditation logs and attended a virtual session, three participants recorded in their meditation logs but did not attend a single virtual session, four participants attended at least one virtual session but did not record in their meditation logs, and nine participants had neither recorded in their meditation logs nor attended a virtual session. Out of the 14 participants who had recorded in their meditation logs and attended at least one virtual session, the 10 participants who had recorded most actively in their meditation logs were invited to participate in the interviews. As mentioned, one participant dropped the course and did not participate in the post-course interview. Interviews were conducted via Zoom, and audio only (no video) was recorded. Directly after the interview, the recorded audio was transcribed, and participant names were de-identified using a pseudonym. All data were stored on Box, a cloud-based storage drive. Figure 2 displays a timeline of events.

Figure 2

Procedures Timeline
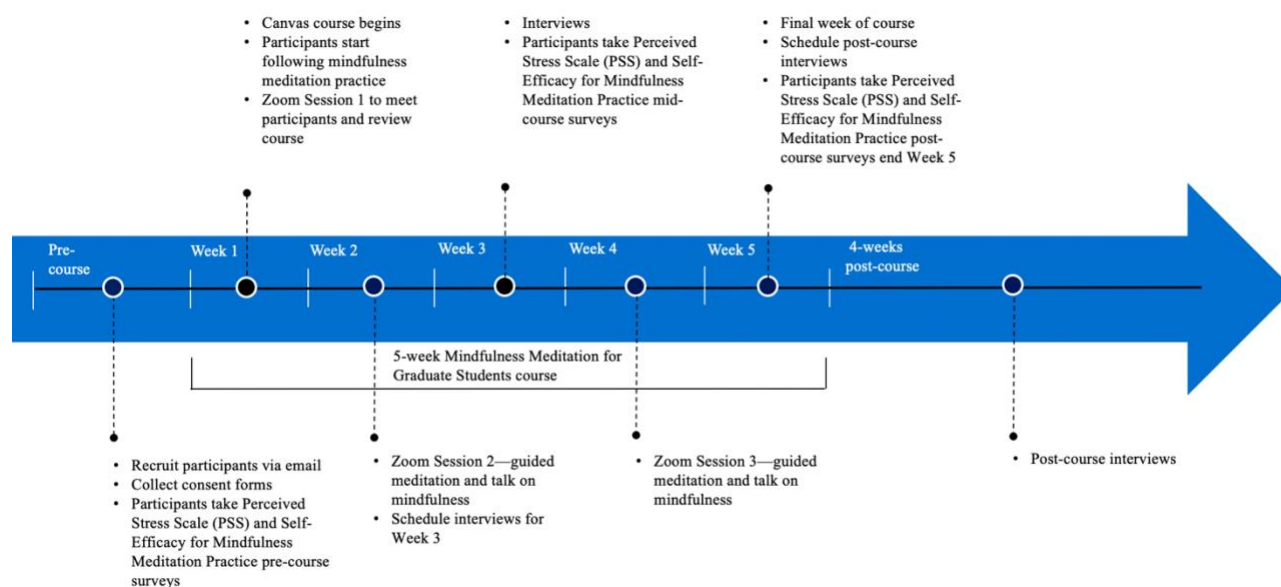
Data Sources

The present study used a combination of data sources to answer the research questions.

- **The Self-Efficacy for Mindfulness Meditation Practice survey:** This survey was developed by Birdee et al. (2020) and shown to have internal consistency reliability of $\alpha = .89$. This survey was used to assess participants' self-efficacy in practicing mindfulness meditation pre-, mid-, and post-course. The survey has nine items (see Appendix E), each of which corresponds to one of three factors related to mindfulness meditation—attention, self-kindness, and emotion. The items were rated by respondents using a 9-point response scale that went from never (1), rarely (3), sometimes (5), usually (7), always (9).

- **Meditation logs:** Participants were asked to keep daily meditation logs. They also recorded their stress levels using the Subjective Units of Distress Scale (SUDS) that was developed by Wolpe (1969). They recorded their stress levels right before and after practicing mindfulness meditation (see Appendix D).

- **Interviews:** I conducted two interviews with nine participants using semi-structured interview protocols (see Appendices F & G). Questions asked participants to reflect on their experience in the course and factors that supported or hindered their practice. In the post-completion interview, I asked participants how often they planned to meditate moving forward, how often they meditated since completing the course, and about the design features of the course that fostered self-efficacy. The intention was to have a mix of participants who represented a variety of academic disciplines, varying levels of self-efficacy in practicing mindfulness meditation (high, medium, low), equal number of males/females, and diverse races/ethnicities.

Due to the low number of males who actively engaged in the course, there was an unbalanced gender ratio of two males and seven females.

Data Analysis

RQ 1: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

To answer the first research question, the daily meditation logs recording the type of meditation and duration each day were examined. These logs were analyzed to understand how closely participants followed the recommended weekly meditation schedule to build a habit of practicing mindfulness meditation. In the post-course interviews, participants were asked to describe their mindfulness meditation practice since completing the course. This information was analyzed to understand how well participants were able to sustain their practice post-course completion.

The data from the pre-, mid-, and post-course Self-Efficacy for Mindfulness Meditation Practice surveys were analyzed using descriptive statistics to determine how participants' self-efficacy changed, if at all, throughout the course. Participants' stress levels directly before and after meditation practice recorded in the meditation logs were analyzed using descriptive statistics to assess how meditation practice affected their stress levels. Individual results from the Self-Efficacy for Mindfulness Meditation Practice survey informed post-interview questions to gain a better understanding of how participants perceived their self-efficacy in practicing mindfulness meditation compared to the beginning of the course.

RQ2: What factors, if any, contributed to participants' change in their meditation practice?

To answer the second research question, interview data were analyzed. Participants were asked in the mid- and post-course interviews what factors, including design features of the class,

were most influential in changing their meditation practice. Participants were also asked about specific features of the course, including their meditation logs, experience practicing different types of meditation introduced in the course, mindfulness meditation sessions facilitated via Zoom, etc. to better understand how these features were beneficial, if at all, in helping participants to develop and sustain a mindfulness meditation practice. The reflections section from the meditation log was analyzed to understand what kind of experiences were significant or meaningful for participants. All interviews were transcribed, then open coding was used to identify recurring themes according to participants' answers.

I used a combination of inductive data analysis (Patton, 2001) and open coding (Emerson et al., 2011) to make sense of the participants' experiences. I looked for patterns, themes, and categories within participants, then conducted a thematic analysis across all participants. This was an iterative process in which codes and collapsed codes were organized into categories to understand relationships, themes, and theoretical ideas that emerged from the data. Table 3 organizes the data sources and data analysis corresponding to each research questions.

Table 3

Present Study—Data Analysis

Research question	Data sources	Data analysis
RQ1: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?	Meditation log: Record frequency/duration of meditation.	• Calculate meditation frequencies/duration for individuals and class average. • Compare meditation frequency/duration for individuals and class average to recommended schedule.
	Interview (mid-course/post-course):	• Listen to recorded interviews. • Transcribe interviews.

Research question	Data sources	Data analysis

	1. How do you describe your mindfulness meditation practice before the course began? (mid-course only)
	2. How do you describe your current mindfulness meditation practice?
	3. How do you feel about your current mindfulness meditation practice?
	   a. (probe) Do you feel like it's going well? If not, why?
	   b. (probe) What aspects of your practice are going well?
	4. How confident are you in your ability to effectively practice mindfulness meditation?
	   a. (probe if not confident) What is it that makes you not feel confident?
	   b. What would help you develop the confidence to practice mindfulness meditation?
	5. How confident are you in your ability to sustain a regular mindfulness meditation practice long term?
	6. Do you feel confident to meditate for the recommended amount of time each week? How has it been for you to increase the amount of time spent in meditation by adding 5 minutes each week?
		• Organize data by making a table with the interview question, interviewee response, and a list of recurring words, ideas, themes/categories.
		• Make a list of common themes recurring throughout all interviews while noting outliers.
		• Consider the implications of the findings.

	Pre-, mid-, and post-course Self-Efficacy for Mindfulness Meditation Practice surveys.	• Calculate pre-, mid-, and post-course scores. • Compare an individual's scores pre-, mid-, and post-course to detect

Research question	Data sources	Data analysis
		change, if any, in self-efficacy.
RQ2: What factors, if any, contributed to participants' change in their meditation practice?	Interview (mid-course/post-course): 1. What do you think has been most influential in helping you to practice mindfulness meditation? 2. What aspects, if any, about the course do you think have helped you to practice mindfulness meditation? 3. Has the meditation log been helpful for your meditation practice? a. What about the meditation log has been the most helpful? 4. Were the Zoom sessions useful for your meditation practice? a. If so, what part of the sessions did you find the most useful? 5. During the Zoom sessions, did you share anything about your meditation practice? If so, did you feel encouraged by the instructor or other participants? 6. Participants who previously completed the 5-week program shared their experiences with meditation. Was it helpful to hear their stories? If so, what about their stories did you find most helpful?	

Threats to Validity

One limitation was that I acted as course designer, instructor, as well as interviewer. Even though the course was not graded, the instructor-student relationship may have influenced how the participants answered questions, particularly those inquiring about what features of the course, such as design and activities, were most beneficial in helping participants to practice mindfulness meditation. Additionally, my own enthusiasm for the subject matter could have influenced how the interviewees answered questions.

<div align="center">

Summary

</div>

This study examined the effectiveness of a 5-week online mindfulness meditation course for doctoral students to help them develop a high level of self-efficacy in practicing mindfulness meditation and to ultimately sustain a habit of practicing mindfulness meditation. Making mindfulness meditation a regular practice may help to address increasing stress and anxiety, which has become a prevalent problem at universities across the United States. Since there are few studies examining mindfulness as it pertains to doctoral students, this study recruited PhD students across multiple disciplines. These students, many of whom have families and work, were likely to have experienced stressors for reasons that are typical of doctoral students. The 5-week course designed with doctoral students in mind using affordances of Social Cognitive Theory (Bandura, 1987) may lead to participants sustaining a mindfulness meditation practice throughout their academic careers.

CHAPTER V

RESULTS

Research Question 1

How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

To answer the first research question, this study describes the participants' meditation practices prior to participating in the course and groups the participants according to their experiences. Then it looks at how closely the participants followed the weekly meditation schedule based on the meditation logs. Following this analysis, it compares the participants pre- and post-course meditation practice in terms of frequency, duration, and type. Next, it assesses the participants' self-efficacy to practice mindfulness meditation based on the results from the Self-Efficacy for Mindfulness Meditation Practice survey they took pre-, mid-, and post-course, and mid- and post-course interviews. Participants also described their confidence in the ability to sustain a long-term mindfulness meditation practice. Finally, aside from the frequency/duration of their practice and their confidence to practice meditation, it reviews ways participants noticed their meditation practice change based on themes that emerged by analyzing their mid-course and post-course interviews as well as their meditation logs.

Participants' Meditation Practice

Pre-Course Meditation Practice

Prior to participating in the online Bells of Mindfulness course, some of the participants (N = 3) had previous experience with some type of formal instruction (i.e., participating in a Mindfulness Based Stress Reduction (MBSR) or other mindfulness program or mindfulness retreat). Some participants (N = 4) had previous experience using a mindfulness app or other

resource on their own, but no formal instruction. Finally, two participants (N = 2) did not have any previous experience (i.e., they never participated in a class or tried mindfulness meditation on their own). Based on their prior practice, participants are organized into three groups (experienced meditators, less-experienced meditators, and first-time meditators), which are discussed below.

Experienced Meditators

The first group, experienced meditators, had three students who had previous experience practicing mindfulness meditation in formal settings with some type of instruction. Candra (note: all participant names were changed to pseudonyms), an international student and practicing Buddhist, regularly practiced weekly at a Buddhist temple in Indonesia before coming to the United States and attended several 1- to 4-day mindfulness retreats also offered at the temple. In addition, she regularly practiced 2 to 3 times per week for 7 to 10 minutes on her own.

The second participant of the experienced meditators, Amelia, recently completed a 3-month mindfulness meditation program that was part of a mental health program offered through her insurance. This program involved downloading an app to listen to guided meditations on a daily basis that varied in duration (5 to 30 minutes) while tracking her heart rate variability by clipping a heart rate monitor to herself that was connected by Bluetooth through her phone. That program ended about one month before this course began, and she had not routinely practiced since completing the previous course.

Isabella, the third participant of experienced meditators, was a schoolteacher who completed a 6-month Mindfulness Based Stress Reduction (MBSR) program her school offered to teachers. The program ended with a half-day mindfulness meditation retreat. Around the same time the MBSR program was ending, her school began implementing a mindfulness program to

have students practice mindfulness meditation twice a day. The school started this program

around the same time it began to conduct classes virtually in response to the pandemic in early

2020. In the morning during school announcements, the school principal led a 5-minute or less

meditation. The meditations varied day-to-day from focusing on the breath to imagining a

balloon holding all your stress floating up high in the sky until it is out of reach. Teachers,

including this participant, were encouraged to offer another mindfulness meditation to their

students for about 5 minutes at some point during the day. Table 4 shows experienced

meditators' pre-course meditation practice, major, and hometown.

Table 4

Experienced Meditators' Pre-Course Meditation Practice, Major, and Hometown

Participant	Pre-course frequency, duration, and meditation type	Major	Hometown
Candra	2-3 times per week, 7-10 minutes, seated meditation, meditation app	Teacher Education and Leadership	Indonesia
Amelia	Irregular, meditation app with heart variability monitor	Communicative Disorders and Deaf Education	Oregon
Isabella	Irregular, meditation app	Teacher Education and Leadership	Utah

Less Experienced Meditators

The second group, less experienced meditators, was comprised of four participants who

never had any formal instruction in mindfulness meditation, but had practiced on their own the

last 2 to 6 years. Mia, James, and Ameerah started about two years ago, around the time of the

pandemic. James noted that at the beginning of the pandemic, he and his wife were not getting

out of the house much because they were working from home. As a way to help them cope with

the isolation of being home all the time, they started using a meditation app. Less experienced

meditators typically had tried mindfulness meditation on their own by using a meditation app or searched for guided meditations on YouTube. They practiced meditation when they felt like it, but none of them had a consistent practice. Table 5 shows less experienced meditators' pre-course meditation practice, major, and hometown.

Table 5

Less Experienced Meditators' Pre-Course Meditation Practice, Major, and Hometown

Participant	Pre-course frequency, duration, and meditation type	Major	Hometown
Ameerah	Irregular, meditation app	Civil and Environmental Engineering	Pakistan
Dhriti	Irregular, meditation app	Computer Science	Nepal
Mia	Irregular, YouTube video	Kinesiology and Health Science	Missouri
James	Irregular, meditation app	Mechanical and Aerospace Engineering	Utah

First-Time Meditators

Finally, first-time meditators consisted of two students, Sophia and Sejun, who had never practiced mindfulness meditation—neither in a formal setting with an instructor nor on their own. Both students were interested in how meditation worked and intended to practice it long term. Table 6 shows experienced meditators' pre-course meditation practice, major, and hometown.

Table 6

First-Time Meditators' Pre-Course Meditation Practice, Major, and Hometown

Participant	Pre-course frequency, duration, and meditation type	Major	Hometown
Sejun	None	Plant, Soil and Climate	Nepal

Sophia	None	Human Development & Family Studies	Texas

Meditation Practice During the Course

In this section, I analyzed the data from the participants' meditation logs to understand how closely they followed the recommended weekly meditation schedule throughout the 5 weeks of the course. I then compared their pre- and post-course meditation practice based on the mid- and post-course interviews.

Throughout the course the participants generally followed the recommended schedule. However, they tended to lapse in their practice when they got sick or were travelling. Here is how Sophia (first-time) who never practiced meditation before the course described her meditation practice by the third week of the course:

Um, it's not perfect, which I don't expect it to be; like, I'm kind of a novice at it. But that's okay. Um, I would say, because I'm in this particular course, it is more structured in the sense that since we have a certain amount of time we need to dedicate for certain days, I do that, and I choose normally to do it. Mornings, either mornings or evenings, depending on how I feel that day. If I wake up anxious, and I'll do it in the morning. If I feel anxious before I go to sleep, I'll do it. And then also, just trying to be more mindful throughout the day.

I asked the participants to record the type of meditation practice and duration for each individual session they did throughout the week in their meditation logs. The recommended schedule was to practice three formal meditations, defined by either a seated or walking meditation, and two informal meditations, defined by practicing mindfulness while simultaneously doing another activity, such as a chore. The first week began with a 5-minute meditation, and each subsequent

week the duration increased by 5 minutes. By Week 5, they were to practice for a total of 25

minutes for each formal practice. The bar graph in Figure 3 shows the average number of times

participants practiced formal meditation each week. On the left is the group average, followed by

each participants' practice. As a group, the average was very close to the recommended 3 times

of formal practice per week. However, that frequency dropped to 2.4 and 2.3 in Weeks 4 and 5,

respectively. The number of times they practiced, on average, peaked at Week 3 and then

decreased in Week 5. There were 4 participants—Isabella, James, Ameerah, and Sophia—who

did at least three formal meditations per week for the duration of the course. Figure 3 shows

Candra and Isabella, both experienced meditators, consistently practiced more times than

recommended, which increased the group average.

Figure 3

Number of Times (Recommended 3) Participants Practiced Formal Meditation Each Week
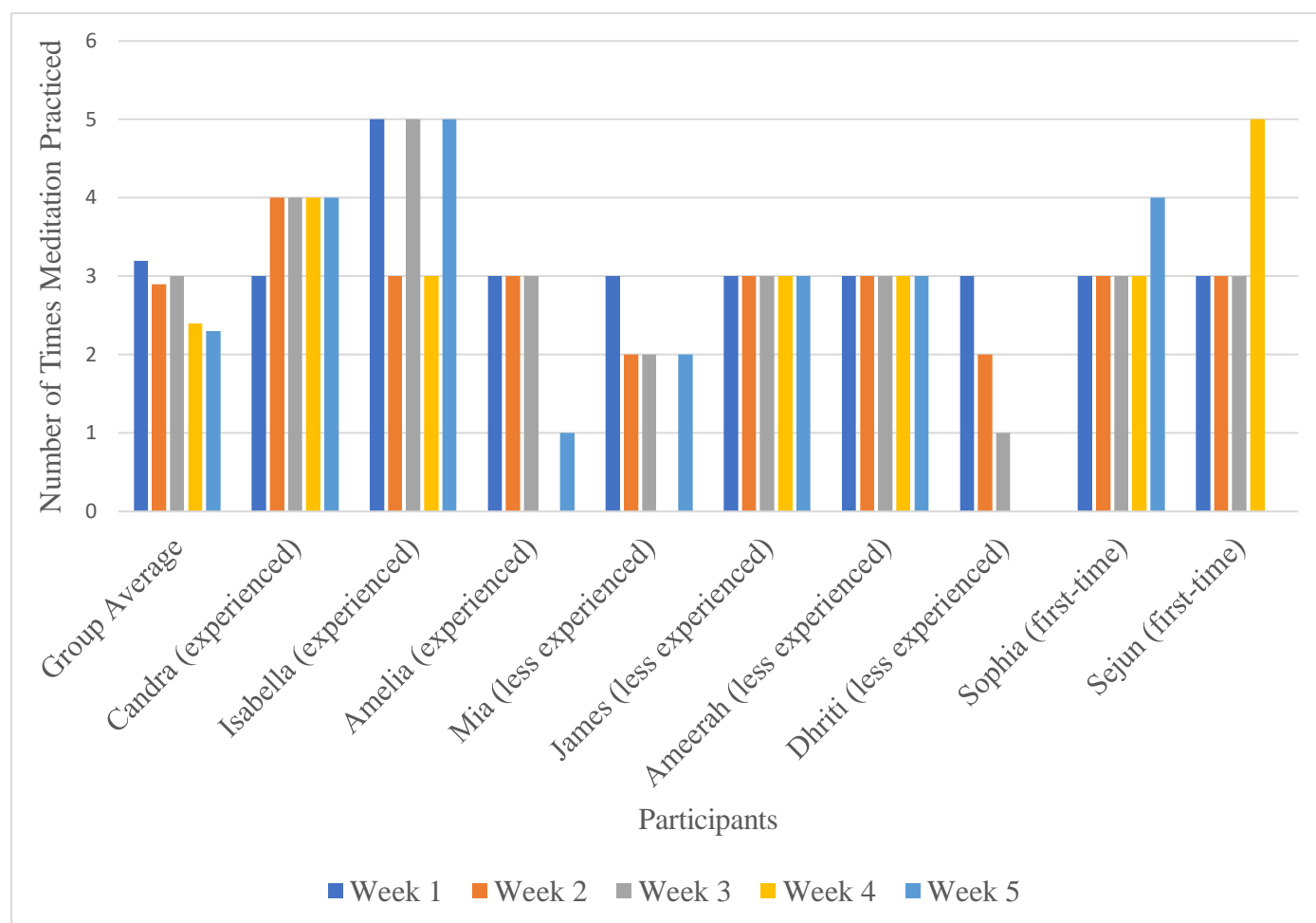
Figure 4 shows how many total minutes the participants practiced formal meditation each week. On the left is the group average, followed by each individual participant's time. As mentioned previously, the total minutes of meditation practice should have steadily increased each week. As Figure 4 shows, the average total minutes of formal practice increased the first 3 weeks, dropped slightly in Week 4, but then increased again in Week 5. However, looking at the weekly minutes of each participant illustrates the variability in practice among the participants. For example, Sophia (first-time) consistently followed the recommended amount of time each

week, whereas Isabella (experienced) practiced more than the recommended amount of time one week and then less than the recommended amount of time the following week.

Figure 4

Total Minutes of Weekly Formal Meditation Practice
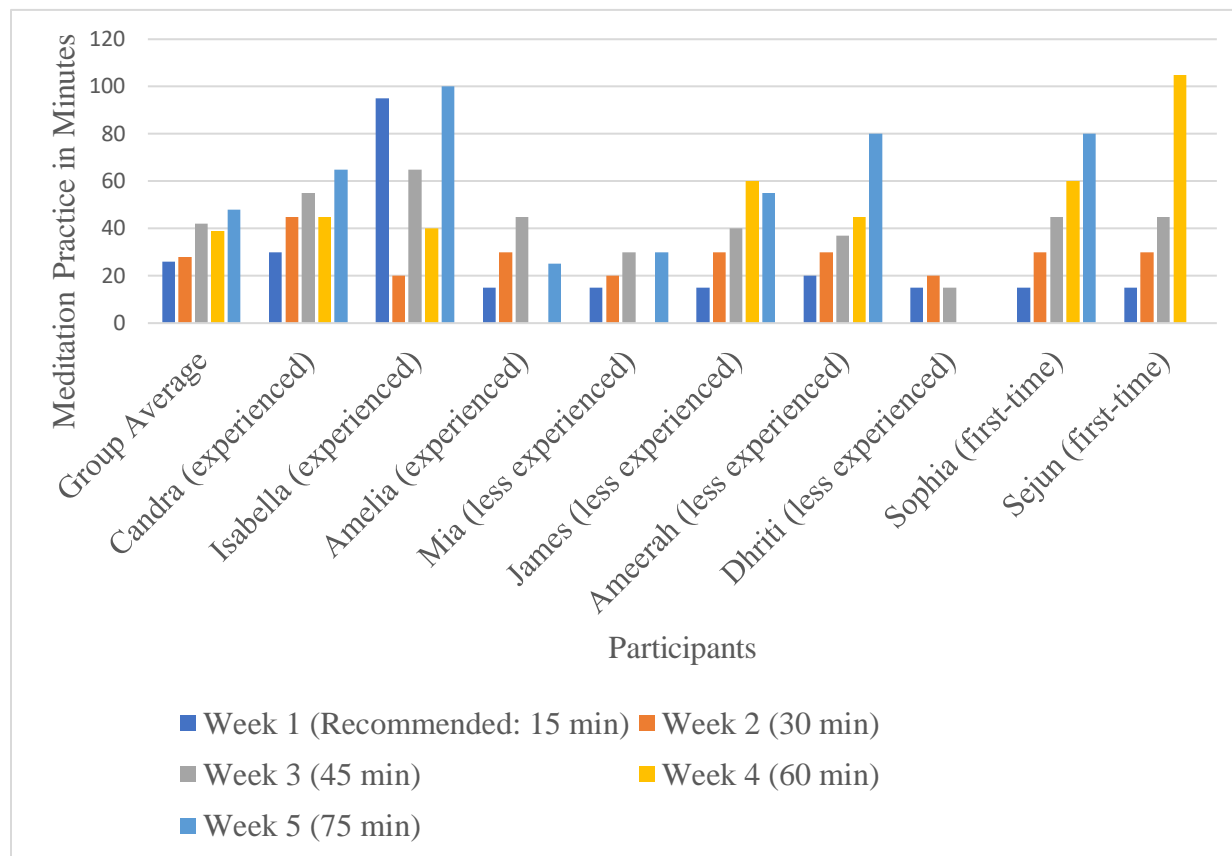
Recall that seven participants practiced some form of mindfulness meditation before the class either through a formal instructional program or by using a meditation app on their own (see participants in the experienced and less experienced groups in Table 7). When asked to provide information about their pre-course frequency and meditation type, most of the experienced participants referred to their practice as "irregular." Only one experienced meditator, Candra, practiced regularly before the class. Table 7 and Figure 5 provide comparisons of the participants' pre-course and post-course formal meditation practice.

Table 7

Participants' Pre- and Post-Course Meditation Practice

Group	Participant	Pre-course frequency, duration, and meditation type	Post-course frequency, duration, and meditation type
Experienced	Candra	2-3 times per week, 7-10 minutes, seated meditation, meditation app	2-3 times per week, 7-10 minutes, seated meditation
	Amelia[a]	Irregular, meditation app with heart variability monitor	0 None
	Isabella	Irregular, meditation app	7 times per week, 5 minutes, walking, seated, meditation app
Less experienced	Ameerah	Irregular, meditation app	2-3 times per week, 5-10 minutes
	Dhriti	Irregular, meditation app	2-3 times per week, 10 minutes
	Mia	Irregular, YouTube video	Not regular
	James	Irregular, meditation app	Not regular, 25-30 minutes
First-time	Sejun	None	5 times per week, 10-15 minutes
	Sophia	None	7 times per week, 5-15 minutes

Note: [a]Amelia participated in a 3-month program in which she meditated daily. However, she did not practice during the 1-month interim before our class.

Figure 5

Comparing Participants' Pre- and 4-Weeks Post-Course Meditation Practice (n = 9)

Pre-course

None 22%
Regular 11%
Irregular 67%

■ Regular ■ Irregular ■ None

4-Weeks post-course

None 11%
Irregular 22%
Regular 67%

■ Regular ■ Irregular ■ None
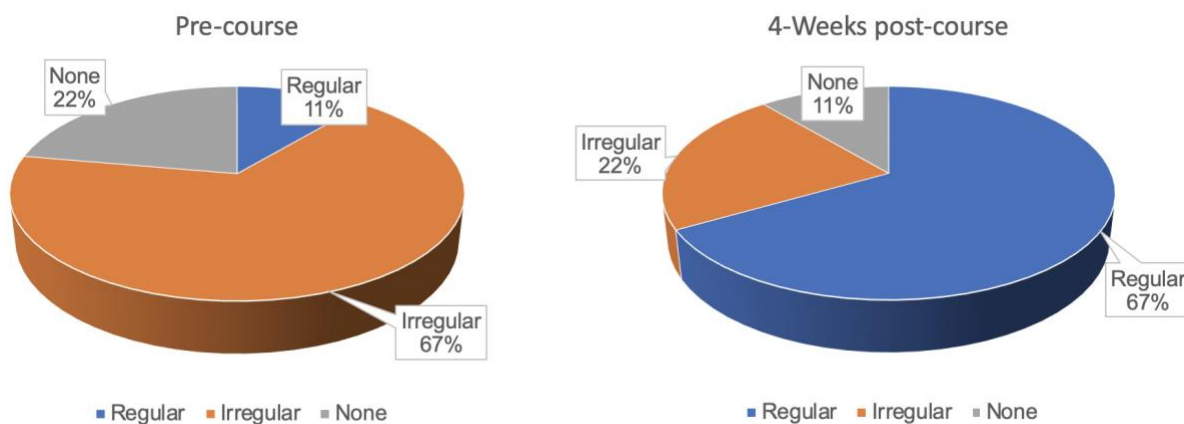
When asked to describe their meditation practice 4 weeks after the course ended, six participants practiced regularly, two participants practiced irregularly, and one participant did not practice at all once the course ended. Figure 5 shows, as a group, participants' meditation practice went from 67% irregular pre-course to 67% regular 4-weeks post-course. In general, they did not practice formal meditation for as long a duration as they had in Week 4 (20 minutes) and Week 5 (25 minutes) of the course. They tended to practice 5-15 minutes, except for James, who practiced walking meditation up to 30 minutes. In addition to regularly practicing the formal meditation, they practiced informal meditation more consistently. When asked to comment on his practice 4 weeks after he finished the course, James (less experienced) said:

> So, just after the course finished, I was in the habit of doing the walking meditation just about every day during work, like I would go on my lunch break and just go walk around campus. And so it was a little bit less of the formal meditations and was doing more of informal meditations. And that was really nice. So, you know, I'd do 25-30 minutes. Since school started, it's just been so busy. I've been teaching in class this semester.

> Other things and so I let that lapse, unfortunately. But I'm going to get that going again.

Prior to the course, James had only practiced meditation on his own. While he tended to stick to the meditation schedule during the class, he admitted not practicing as much after the class. In fact, several students mentioned that maintaining a regular practice was easier during the summer break when they were not enrolled in classes versus during the semester. Once the fall semester began, student schedules became busier, making it more difficult to maintain their meditation practice.

Figure 6

Number of Virtual Class Sessions Attended by Participant
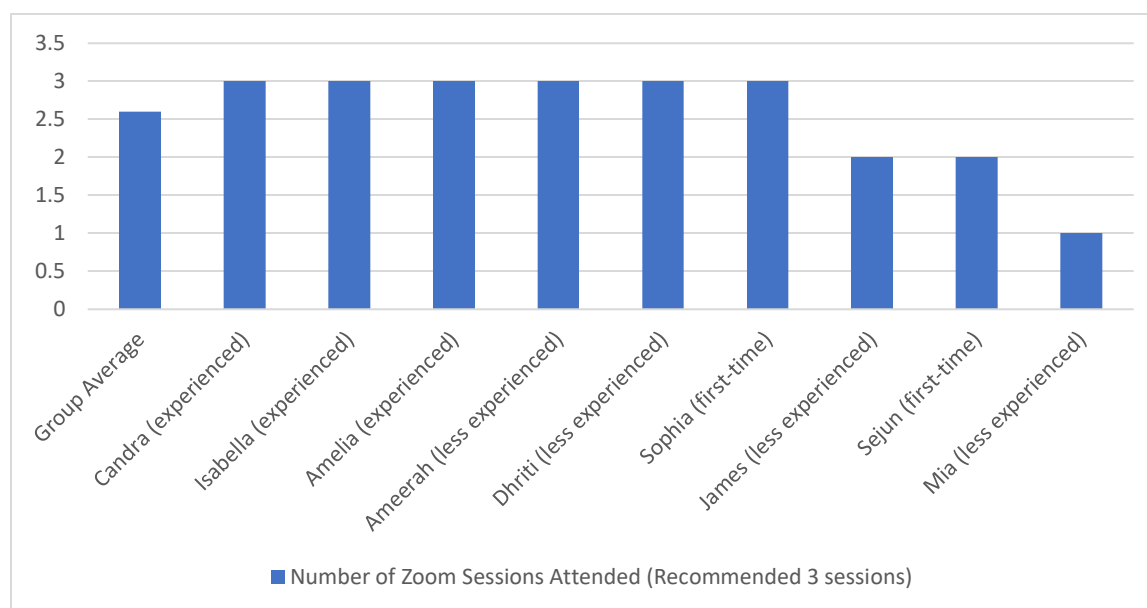
It was recommended to participants that they attend three virtual Zoom sessions. As Figure 6 demonstrates, only six participants (Candra, Isabella, Amelia, Ameerah, Dhriti, and Sophia) of the nine participants attended all three virtual class sessions. James and Sejun attended two sessions, and Mia attended only one session. Of the six participants who attend all three sessions, three were experienced meditators, two were less experienced, and one was a first-time meditator.

Self-Efficacy to Practice Mindfulness Meditation

Participants were asked to complete the Self-Efficacy for Mindfulness Meditation survey before, during, and after the course. The Self-Efficacy for Mindfulness Meditation Practice survey evaluates one's ability to practice three essential components—attention, self-kindness, and emotion. "Mindfulness meditation practice emphasizes non-judgmental awareness focused in the moment, and consists of sitting while paying attention to sensations and patterns related to the breath, body, and mind" (Kabat-Zinn, 2009). This definition can be operationalized

as two major components. The first is self-regulation of attention (Bishop, 2004). During meditation, one typically uses the breath or another fixated object to bring attention to the present moment. As soon as one notices attention goes somewhere other than the breath, often caught up in thought, one is instructed to return attention back to the breath.

The second component is the quality of that attention (Bishop, 2004). Thus, mindfulness meditation is also a practice of reappraisal of mental events perspective and, again, non-judgmental awareness. During meditation, naturally one has thoughts that arise, and when that happens, one recognizes the thought and then releases it, returning attention to the breath. Recognizing the thought and being aware that one lost concentration non-judgmentally is the beginning of practicing self-kindness. This, in turn, results in emotion regulation (Holzel et al., 2011; Neff, 2010).

Attention, self-kindness, and emotion are connected to one another as part of the meditation practice. The Self-Efficacy for Mindfulness Meditation Practice survey examines each component separately to better understand how one practicing mindfulness meditation has mastered each of the three components. Findings from the self-efficacy survey and the mid- and post-course interviews suggest that the participants' self-efficacy in their ability to practice mindfulness meditation increased. In the following sections, I present the self-efficacy results by each of the three areas (attention, self-kindness, and emotion).

Attention

The first component of mindfulness meditation consists of paying attention to the breath while noticing the activities of mind, such as thoughts that come up. The cultivation of attention control is proposed as a core competency gained during early stages of meditation practice (Holzel et al., 2011). The three statements in the survey related to attention are:

1. I am able to notice thoughts as they arise.

2. When I set the intention, I am able to be in open awareness of my thoughts.

3. I am able to notice when my mind wanders.

Recall that participants responded to the items using a 9-point response scale that went from never (1), rarely (3), sometimes (5), usually (7), and always (9). A composite attention score was created for each individual at each time point (pre, mid, post-course), by averaging the response number and dividing by 3. For example, on the pre-survey, Ameerah (less experienced), responded sometimes (5) to the first question related to attention, rarely (3) to the second question, and rarely (3) to the third question. Her composite score for attention on the pre-survey was 3.7, which indicates she was not confident in her ability to maintain attention prior to the course.

Figure 7 presents pre-, mid-, and post-course composite scores at both the group and individual level. Looking at the "group average" (first columns on the left in Figure 7), we see that on average, at the group level, confidence in their ability to be attentive increased at each time point. While none of the participants' attention went down, some looking at the individual ratings shows the variability of their experiences and confidence in their ability to be attentive. Participants' responses are organized by their starting experience. For example, Candra, Isabella, and Amelia all had prior experience practicing meditation, and all had higher confidence in their ability to be attentive than the group average for the pre-survey. However, Candra and Amelia reported the biggest change in attention from pre- to mid-course. Both of them had lower ratings for attention in the post-course survey, whereas Isabella had the largest increase in the post-course survey.

Figure 7

Participants' Composite Attention Scores Pre-, Mid-, and Post-Course
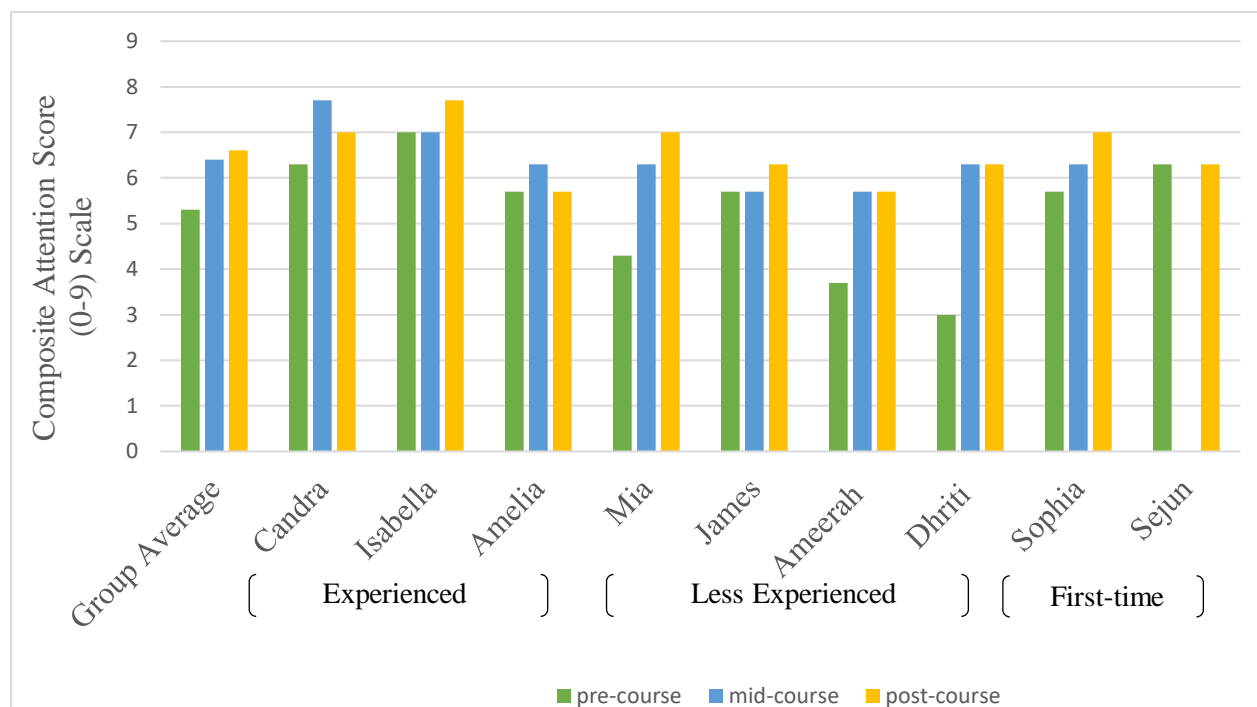
Sophia's attention scores steadily improved: pre-course (5.7), mid-course (6.3), and post-course (7). On the other hand, Sejun's scores stayed the same at 6.3 for both pre-course and post-course. In the post interview, when asked about her ability to notice her mind wandering, Sophia (first-time) said that since completing the course, she was more pro-active about anticipating when her mind wanders. In other words, she consciously set the intention to be more aware of it, which helped her to notice it more frequently.

When the mind wandered away from the breath during meditation, the participants were instructed to bring their attention back to the breath. Sejun (first-time), who had never practiced meditation prior to the class, described what it was like to focus on his breath in the first week:

> I tried to focus on my breathing, but my mind used to get away from the breath, you know, and I had to just focus on the breath again. And again, that was hard. Because on the first week, it was the first time I was sitting idle with my closed eyes for the five minutes. I hadn't done that before. And so that was a difficult one … the mind tends to go away to other things, what is happening around when your eyes are closed. So that was a hard thing. But yeah, it happened on the first week. And it also happened some time, I think, one or two times and the second [week] as well. But whenever it happens, I just focused on the breath. Again, that was the thing.

Although Sejun did not notice any major changes the first week, part-way through the second week, he noticed he focused better on his work. The survey asks participants to consider the statements based on when they practice mindfulness meditation. However, as demonstrated by participants' reflections on their daily lives throughout the course, even when they were not practicing a formal meditation, what they learned and practiced through the formal meditations influenced other aspects of their lives. Next, the study examines the results of the second component highlighted in the survey—self-kindness.

Self-Kindness

A key concept of mindfulness meditation is to learn to be compassionate with oneself, in other words, practicing self-kindness. The three items in the survey related to self-kindness are:

1. I am able to be compassionate with myself when my mind wanders.
2. I am able to be aware of my thoughts without judgment.
3. I am able to maintain compassion toward myself.

As with attention, a composite self-kindness score was created for each individual at each time point (pre, mid, post-course) by averaging the number associated with each response and dividing by 3. Figure 8 shows the average self-kindness at the group and individual level at each time point. Out of the three factors—attention, self-kindness, and emotion—overall, the participants had the lowest overall average on the pre-course survey for self-kindness. Despite starting with lower confidence in self-kindess, all participants gained confidence in their ability to be self-kind, except for Sejun. Some participants saw an increase only from pre-to-mid, and some gained confidence over time, as captured by the three time points.

Figure 8

Participants' Composite Self-Kindness Scores Pre-, Mid-, and Post-Course
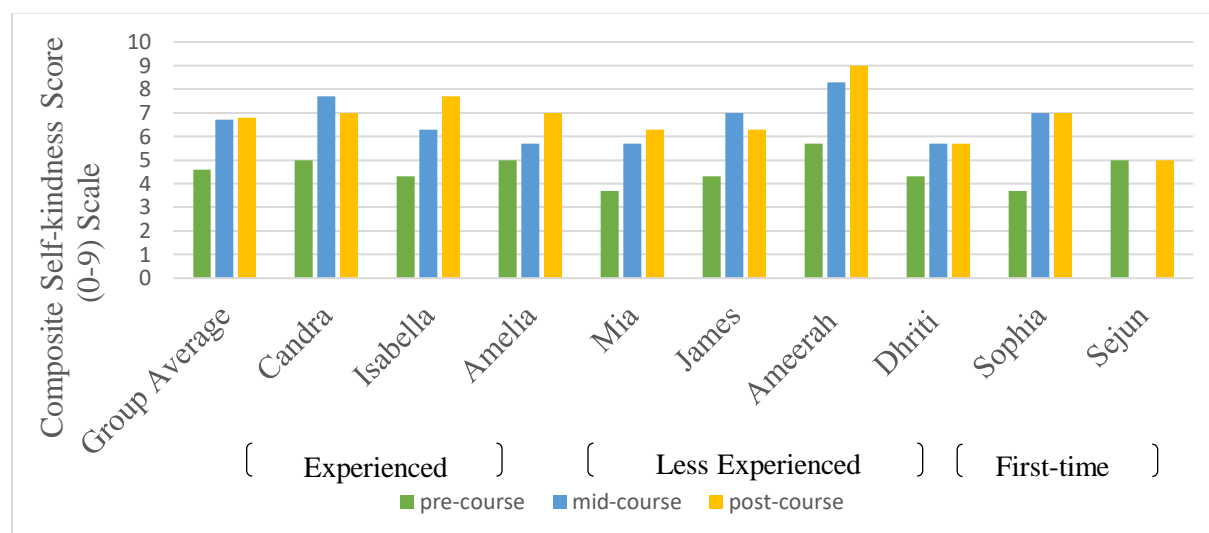
Mia, who did not have a lot of experience practicing mindfulness prior to the course, reported an increase in her ability for self-kindness at each time point. Her composite self-kindness scores were 3.7 (pre-course), 5.7 (mid-course), and 6.3 (post-course). When asked to comment on self-kindness in the post interview, she said that in the middle of the course she traveled for a wedding and ended up contracting COVID-19, which made it difficult to keep up with the recommended meditation schedule. Although Mia recognized she felt stressed about

being unable to keep up with her meditation for that week, she tried to be gentle with herself by setting the intention to make time to take some deep breaths when she found herself feeling stressed about not doing the formal meditations. She acknowledged she could still use some components of mindfulness meditation she learned in class to practice mindfulness meditation throughout the day less formally.

Ameerah, who also did not have a lot of prior experience practicing, reported an increase in ability for self-kindness at every time point (see Figure 8). During the post interview, Ameerah said that she experienced painful back issues throughout the course and was simultaneously going through physical therapy. There were several times throughout the course when she was unable to complete the meditations due to her back issue. Before the course, she would have been more critical of herself by viewing a similar situation as a failure. In this instance, she said,

> … but this time I was like, it's okay, I didn't deliver it because I couldn't, and just move
> on. So, I think it helped that compassionate attitude towards myself, not just for
> meditation, but, like, it surely trickles into other aspects of my life.

Ameerah mentioned that previously when she was unable to get her work done due to her back pain, she would feel stressed and criticize herself for it. Through the course, she learned to be less critical towards herself for circumstances outside of her control.

One of the survey statements related to self-kindness states, "I am able to be aware of my thoughts without judgment." Practicing non-judgment towards oneself is an important concept in practicing mindfulness. The concept of practicing non-judgment strongly resonated with Isabella (experienced), whose confidence in self-kindness went up at each time point. While her biggest gain was pre-course to mid, she became more aware of how often she judged

herself, especially as a first-year doctoral student. It was when she listened to the meditation teacher talk about the importance of practicing non-judgment as an integral part of practicing mindfulness that she became aware of how often she was sending herself messages of judgment.

Isabella's self-judgment was related to maximizing productivity every second of the day, performing her best academically, and doubting her ability to manage the coursework as a PhD student. This self-judgment caused her to feel even more stress. In the following statement, she explains practicing non-judgement through mindfulness meditation became an antidote to her self-criticism:

> Well, I really like that the class emphasized the non-judgement idea. So, in a way, I think usually a person gets confidence from feeling like you're doing something accurately, or better than others, or something like that, that makes you feel highly qualified. But what I enjoyed about the course, and I think is effective, is recognizing that you can have confidence in meditation by realizing that you can just be non-judgmental to yourself, and that it's not a matter of—are you the best meditator? Are you doing it the longest? Are you having the fewest distracted thoughts? Or something like that, that it's more about being gentle with yourself, and with your thoughts, and being accepting of yourself at whatever level you're practicing.

Practicing self-kindness while experiencing an illness, dealing with physical pain, or being too critical of oneself are some of the examples participants shared about how they put the concept of self-kindness, learned through mindfulness meditation, to practice in various situations. Aside from practicing self-compassion during formal meditations, throughout the course participants had many opportunities in their daily lives to practice self-compassion.

Emotion

Finally, the third component of mindfulness meditation the survey addressed was related to emotion. The statements in the survey related to emotion were:

1. I am able to notice emotions as they arise.

2. I am able to observe my emotions without responding immediately.

3. I am able to relate physical sensations in my body to my emotions.

A composite emotion score was created for each individual at each time point (pre-, mid-, and post-course), by averaging the number associated with each response and dividing by 3. Figure 9 presents composite scores for emotion at both the group and individual levels. Higher scores are associated with heightened awareness of one's emotions. While there was variability among individuals, as a group, awareness of their emotions increased incrementally at each time point.

Figure 9

Participants' Composite Emotion Score Pre-, Mid-, and Post-Course

Ameerah (less experienced) mentioned that the ability to control her emotions was an important reason for wanting to sustain a regular mindfulness meditation practice. Specifically, she had improved at recognizing her emotions without reacting to them. In response to the statement, "I am able to observe my emotions without responding immediately," she answered "rarely" (pre-course), "sometimes" (mid-course), and "usually" (post-course). When asked why she thought she improved incrementally throughout the course, she answered that part of it was setting the intention, but it also helped to just be aware that it is an option—one can feel or think something without necessarily having to react to it. Also, she felt regular formal meditation practice helped her hone this skill. By being better able to recognize her emotions without reacting to them, it became easier to take a step back when she noticed her emotions escalate.

Sophia (first-time) dramatically improved her response to the statement, "I am able to relate physical sensations in my body to my emotions." On the pre-course survey she answered "never," but on both the mid- and post-course surveys, she answered "usually." According to Sophia, previously she had difficulty deciphering certain emotions because they elicited similar physiological responses in her body. Here is how she described coming to realize subtle physiological differences between feeling excited and anxious:

> I would check in, especially in the course, I will check in very frequently with myself and I continue to do so of how am I feeling emotionally and how am I feeling physically to try to figure out like, what aligns with what. So, I started realizing what aligns with what—that provides me some guidance of like, okay, well that makes sense. Why my chest feels funny, whenever I feel anxiety and my chest feels funny but lighter, it's more excitement, things like that.

She found it helpful to intentionally take notice several times throughout the day to figure out how she felt and understand the effect her feelings and emotions had on her body. This exercise was something she had never done prior to the class, nor did she know emotions are directly connected with physical sensations. Through mindfulness meditation practice and by taking the time to do this short exercise, she increased her awareness of how her emotional states influenced her physical sensations.

To further understand participant self-efficacy to practice mindfulness meditation, I asked participants about it during the mid-course and post-course interviews. Participants gave several reasons for their increased confidence, including their knowledge of multiple ways to practice meditation that they did not know prior to the course and a better understanding of mindfulness meditation that helped to eliminate barriers towards mindfulness practices they mentally constructed before the course. Even an experienced meditator, Candra, who already had confidence coming into the course, described her increased confidence:

> I feel more confident because I know more ways to do that practice. It add[s] more on what I already know about mindfulness, and it just giving me yeah, maybe, let's say more confidence on having more types of practice, which I can, what, elaborate within day-to-day life.

One of the reasons participants were more confident in practicing meditation was because their view and understanding of mindfulness meditation changed during the course to something that was more approachable. Mia (less experienced) explained that, before the course, she put in place both mental and situational barriers that made it more difficult to practice meditation. After the course, with a better understanding of mindfulness meditation, it felt more easily accessible, which gave her more confidence to practice. For example, before the course, she felt like she

needed to be in the perfect spot in her house to do meditation. After the course, she felt comfortable practicing meditation anywhere, including in her chair at the desk in her office on campus. The barriers she built up previously had diminished and she was confident to practice in locations she had not considered before.

Although participants felt confident in their understanding of how to practice mindfulness meditation and their ability to do so, they admitted there were certain aspects of their practice with which they struggled. The struggle most often mentioned was in their ability to focus or concentrate. Sophia (less experienced) said,

> I'm totally confident. I feel like I can do it. And now again, it's not going to be just perfect ideal. I might struggle with concentration some days, but I think I'm okay with that. It's more about … me just knowing myself a little better.

Particularly, participants felt they struggled to focus on their breath when they were stressed, which was often related to their schoolwork as a PhD student. Ameerah (less experienced) explained,

> Like, after practicing regularly, to some extent, yes, I would say, like, I can, like, meditate, if I want to, but always, like, it is difficult, too, because, like, the mind will be wandering all the time, right? Like, while meditating different thoughts will come, will be coming up. Because I will be having, like, something written with deadlines and research so I feel, like, to some extent, it's I can concentrate and focus on my breath and be present in the moment. But whenever I'm stressed, like, totally stressed, and it's, it's difficult to, like, not let my mind wander.

Participants seemed to recognize that, even though they felt confident in their ability to practice mindfulness meditation, skills such as maintaining focus or being aware of their emotions would continue to develop over time.

Sustaining a Meditation Practice Long-term

The students were less confident in their ability to sustain a mindfulness meditation practice long-term compared to their ability to do mindfulness meditation. One reason was because of the loss of structure once the course ended. Along with that reason came losing a connection to the group. During the post-course interview, Amelia (experienced) explained:

I feel like when we were in the course, again, it was a group thing; it was structured, and I feel like … I do better when things are in groups. And now it's just by myself my own schedule. So, like, it fits when it fits. And if it doesn't, I'm like, oh, I'll just do it tomorrow kind of thing.

When asking Dhriti (less experienced) what would help her develop more confidence in practicing mindfulness meditation, she said practicing with a group a couple times per week. Dhriti explained,

A group, I do so much better in groups for these kinds of stuff. Because the groups kind of feel like they're like a social bond, like, you know, being able to be a part of something. And I feel like anything that is non-academic, it's really driven by being a part of social groups in my life. So, yeah, I actually thought of posting on Canvas at some point. It's like, hey, does anyone want to get together to do it?

The other main reason participants felt less confident to practice long-term was in their ability to schedule their practice against competing priorities throughout the day. Of the experienced meditators, Candra and Isabella continued to practice consistently even at the time

of the post-course interview 4 weeks after the course ended and felt confident in their ability to continue to do so. However, Amelia (experienced) said she had not practiced a formal meditation since the last week of the course. In the middle of the course, when asked about her confidence to practice mindfulness meditation, she said on a scale of 10 she would give herself a "6.5 or 7." Four weeks after the course, her confidence to practice mindfulness meditation dropped by about half—to a "3 or a 4." The reason was her ability to schedule the time for mindfulness meditation amidst competing priorities mostly related to schoolwork. Amelia described,

> It's probably that time that I have. I know, like, we, we've kind of talked about, like, theoretically, what are some best times to practice? And honestly, anything after 8 a.m. I can't do until all the way until 6, just because that's how my schedule is. And then when I come back, it's like, okay, now it's time for homework. Now it's time for this. And it just feels like burning out, I don't know, it just feels like you need to keep churning out things. And not that mindfulness isn't productive. But it just makes me more nervous to pause to do something that isn't really quite related to my coursework at the moment, because I know these due dates are in line, I know I have other things lined up that, like, I need to keep doing… it just feels like even scheduling in mindfulness feels like a lot. Like, looking at my calendar, I feel overwhelmed with all the colors that are involved.

Both first-time meditators were confident they would continue to practice meditation long-term. Sophia explained,

> I still have worries that I might just forget what I've learned. Or that I might stop doing it and revert back because I, I lived on auto pilot for a very long time. But I also think that now that I have this knowledge, it's gonna be hard to go back.

Sejun, who also had no prior experience practicing meditation before the course, was still practicing a formal meditation on most days of the week for about 15 minutes, and he intended to continue practicing long term.

Despite all the promising feedback that participants were practicing mindfulness in various ways throughout their day both formally and informally even several weeks after the course ended, there were students who still struggled to fit a meditation practice into their busy schedules. Amelia (experienced) mentioned that sometimes she was so busy that she did not feel comfortable allowing herself the luxury of spending any time outside of immediate tasks (i.e., moving back to campus after returning to her hometown for the summer, troubleshooting a broken phone, research work, etc.).

Describing a particular busy time towards the end of the course when she only recorded one meditation in her log in Week 5, Amelia explained,

> And I just felt so overwhelmed to even do anything that, like, was remotely fun or how to say it and to be honest, I think I kind of felt like I had to power through, like, all the tasks that I needed to do.

She added later that

> It just feels like you need to keep churning out things. And not that mindfulness isn't productive. But it just makes me more nervous to pause to do something that isn't really quite related to my coursework at the moment, because I know these due dates are in line, I know I have other things lined up that, like, I need to keep doing.

In other words, it was difficult to prioritize her meditation practice against other competing tasks.

Isabella (experienced) said sometimes it was difficult to practice meditation because, even though cognitively she knew it was something good for her health, she obsessed with using

every minute of the day as efficiently as possible. Taking time to just sit and breathe felt like a waste of time. She thought if she included meditation on her to-do-list and marked it off once she completed it, it would make her feel accomplished and that she had made good use of her time.

Changes in Participants' Meditation Practice

Aside from practicing more regularly and increasing their confidence in practicing mindfulness meditation, participants became aware of many ways in which their meditation practice changed by participating in the course. Some of the ways their practice changed include practicing various types of meditation, making the intention to practice informally in various contexts throughout the day, incorporating mindfulness into their morning and evening routines, and more. This section looks more specifically at how participants described the changes they noticed in their meditation practice.

Practicing a Variety of Meditations

Most participants practiced guided meditations using one of several mindfulness meditation apps (i.e., Calm, Insight Timer, etc.) or searched on YouTube for guided meditations. When interviewed, participants expressed that the course exposed them to a variety of mindfulness meditation practices of which they were previously unaware. These practices included an unguided silent seated meditation only focusing on the breath, mantra meditation, loving-kindness meditation, and walking meditation. Dhriti (less experienced) described the change in variety of her practice since taking the course:

> So, previously, what it was like, was like, it was just focusing on the breath. And it was
> more of like seated meditations. But after doing this class or doing different kinds of
> meditations, like going about, like, you can even meditate when you are doing some kind
> of chores. And, like, all different kind of meditations, focusing on mantra and those kinds

of things. So, learning about this different variations of meditations, I think it's kind of like a different thing.

Ameerah (less experienced) said if she were to tell other people about the course, she would emphasize the chance to learn about various types of meditation:

Because previously, like, when, before joining this class, I was more known to, like, seated meditations, just focusing on the breath. Then I came to realize about, like, I came to know about love and kindness meditations and short meditations, mantra meditation. So, these different form[s] of meditation is something that is good to learn … because, like, usually, when people talk about meditations, it is more about the seated meditations or the body scan meditations. Knowing about meditations other than those I do. That is something that is pretty cool from this course.

Practicing Meditation in Meaningful Ways

In Week 2, the participants practiced a mantra meditation. They were given a couple of examples of mantras they could use in the form of a word or phrase. For example, silently think "in" on the in-breath and "out" on the out-breath. A suggested phrase to use on the in-breath was "Breathing in, I calm my breath" and "Breathing out, I smile" on the out-breath (Hanh, 1991). However, the students were encouraged, if they preferred, to use a word or phrase that was more meaningful or personal to them. Several students recorded in their logs that they came up with their own mantra. Dhriti (less experienced) used "om" for the in-breath and "namo" for the out-breath. When asked about the meaning behind this mantra, she replied that she did not know the precise definition of these Sanskrit words, but as a practicing Hindu she did know they were used to bring a sense of calm to oneself. More importantly, the mantra helped her pull through a horrific event when she was all alone.

Dhriti was an international student from Nepal. In 2015, an earthquake registering just below 8 on the Richter scale hit her hometown. When the earthquake hit, she was on the fourth floor of her home. The power with which the earthquake shook the house was terrifying. However, she used this mantra—"om, namo"—to help herself stay as calm as possible while the house shook for several minutes. Dhriti continued to repeat the mantra to herself even after the shaking subsided while she waited for a family member to come get her. The words she chose to practice the mantra meditation in Week 2 had not only cultural significance but a history of helping her through a difficult time.

James (less experienced) used "Forgive immediately" on the in-breath and "Let it go" on the out-breath. He chose these words because they were important to him as a Christian. He explained,

> I subscribe to the belief that I, the Lord, will forgive you; my Lord forgives, but if you are required to forgive all men, and so I am under obligation to not hold any grudges towards anyone, to not hold ill feelings.

He recognized that sometimes he played out scenarios in his mind of past events when someone offended or upset him. In these situations, he later wished he had reacted differently to the person by telling the person off. The mantra was significant for him because it helped him to get in the mindset that the scenario in his mind was something from the past that he needed to learn to set aside and to forgive the person he was ruminating about.

When Isabella (experienced) was asked how her meditation practice changed, she said it was more meaningful. When asked to explain in what way it was more meaningful, she described it in this way:

That I'm not just thinking that I want to get in a quick meditation so that I can check that

off. But I'm thinking that there are more ways to meditate, and that I get something out of

each one, each one's different. So maybe I'm doing a food meditation, and so it's made

eating more meaningful, or, or if I'm thinking that one of my life goals is to be someone

who responds to situations with love, I feel like having the meditation where I'm always

thinking, whatever I breathe in, I want to breathe out with love. I feel like I'm training my

mind and my heart to act upon one of my major life goals.

She went on to say that loved ones in her life, with beliefs about the world contrasting

starkly to her own views, did damaging things to themselves. While it was instinctive for her to

react in frustration, she was more conscious about intentionally responding from a place of love.

Practicing Informal Meditation

The course not only taught a variety of formal meditations, but teaching the concept of

informal meditation was an integral part of the course which changed the participants'

meditation practice when compared to their pre-course practice. As mentioned previously,

informal meditations are meditations that take the same principles and techniques learned during

formal seated meditation and apply them at any time during the day. Several students mentioned

that as part of their mindfulness practice they began to intentionally take breaks throughout the

day to focus on something that brought their attention to the present moment. They focused on

things including their breath, the blue sky, a path in front of them while walking, etc. Here is

how Candra (experienced) described practicing an informal meditation:

I try to be more aware, not only in terms of having a regular seated meditations. So yeah,

so sometimes when sitting in front of the laptop for too long, it's tiring. And I just stopped

for a while just looking out the window and look at the, the bright, blue skies …

something blue, something green, the green grass outside. It is that, that habit, that
habitual actions that I feel I'm really enjoying now.

Sejun (first-time), who studies plant sciences, described finding objects to focus on
throughout the day while he worked on the farm for his research. He looked up at the sky and
only focused on a single cloud or while walking only focused his attention on the road in front of
him. By practicing these simple exercises throughout the day, Sejun felt they helped to focus his
mind.

The course framed mindfulness meditation in a way that made it accessible in everyday
life. For example, at the start of the course, Mia (less experienced) gravitated more towards the
formal meditation than the informal meditation. She particularly liked the silent seated
meditation because she did not have to think of anything else other than focusing on her breath,
and it "forced [her] to be still and silent, and to let go of everything." However, by the end of the
course, Mia found herself practicing more informal meditations than formal meditations. For
example, when walking from her car to campus she intentionally slowed down her pace and
practiced a walking meditation.

After the course ended, Mia went to southern Utah to hike with friends. She intentionally
walked slower than her friends, not because she was tired or in less physical condition but
because she wanted to practice the walking meditation she learned in class. In addition to
walking slower than she normally would on a hike, she also took the time to stop and look at
wildflowers, focusing more on the details of the hike and less on the destination. Practicing
informal meditation was easier for Mia to fit into her daily activities, such as walking to and
from her car on campus or hiking.

Incorporating Mindfulness into Morning/Evening Routines

As mentioned, a key principle of mindfulness is cultivating increased awareness. During the course, two students became increasingly aware of their habit of checking their phone for social media and email. Sophia (first-time) recognized how her social media consumption was negatively affecting her emotional state. At the same time, her phone had some importance to her because her family lived far away out of state, and her phone also acted as a tool for social support and communication. By the end of the course, she began changing her phone and social media usage by intentionally ignoring her phone during her morning and evening routines. In addition to ignoring her phone, she practiced being mindful as she got ready for her day in the morning and by doing a formal seated meditation as part of her evening routine before going to bed. Since implementing these habits, Sophia noticed she slept better at night. Reducing her social media consumption led to a decrease in negative emotions that it had incited.

Similarly, Sejun (first-time) immediately checked email or social media first thing in the morning after waking up, viewed his schedule, and began thinking about the work he needed to do that day for his research. During the course, he changed this habit to give himself time and space in the morning to practice mindfulness meditation, to practice self-care, and to avoid thinking about work or checking his email until he arrived on campus. Practicing mindfulness and his new routine gave him a new perspective on his work as a PhD student.

Being More Present

The participants became more aware of being in the present moment throughout the day. Ameerah (less experienced) said she realized one can use mindfulness meditation to figure out what one feels in the moment, being in tune with one's senses, and checking in with oneself throughout the day.

Sophia (first-time), who lives alone, often distracted herself from the quiet by playing music or spending time on her phone. Since taking the class, she found that she spent less time on her phone to distract herself. She also noticed herself being more present and focused on what she was doing moment to moment rather than trying to distract herself.

Research Question 2

What factors contributed to participants' change in their meditation practice?

To answer research question 2, this section examines how the design of the course informed by Bandura's theory of self-efficacy contributed to participants' change in their meditation practice. The four factors of self-efficacy theory that informed the design of the course were mastery experience, social modeling, social persuasion, and improving physical and emotional states. The following section explores how these four factors were considered in the design of the course and how, if at all, they influenced participants' meditation practice.

Mastery Experience

There were several elements of the course that were intentionally designed to help lead students to mastery experiences practicing mindfulness meditation. The elements of the course included:

1. Start the first week by practicing for a short amount of time (5 minutes) and gradually increasing the duration by 5 minutes each week.

2. Introduce a variety of mindfulness meditations so that participants could experiment to figure out which ones worked best for them.

3. Provide a meditation log for participants to follow a weekly schedule, record the type and duration of their meditations, and record their reflections/experiences.

The following sub-sections describe the effectiveness of each of these factors in leading participants to having mastery experiences.

Incrementally Increasing Meditation Time

The weekly meditation schedule was designed to ease participants into practicing mindfulness meditation by starting with 5 minutes of formal meditation per session in the first week and gradually adding 5 minutes per week until participants could sustain practicing meditation for up to 25 minutes by the final week. All participants tended to follow the recommended formal meditation schedule. However, experienced meditators practiced informal meditation longer than less experienced meditators and first-time meditators. Doing a silent seated meditation without listening to guided audio can be difficult for the first time, particularly for those accustomed to using guided meditations, which is why the decision was to gradually increase the duration of the meditation one week at a time. In describing her meditation practice before the course, Ameerah (less experienced) pointed out that trying to do meditation on her own without guided audio was difficult:

> Actually, like, I, I tried doing meditation on my own, just watching the videos and then trying on my own, focusing on the present moment and focusing on breath, but it didn't feel effective. Like, I was, my mind was wandering so often. So, I thought maybe, like, having that sound guide would be something that would be helpful. And it did help me compared to, like, try on your own than using that application.

Mia (less experienced) said that before the course, when she wanted to practice mindfulness meditation, she felt she needed to go and find a guided meditation video on YouTube. Using guided meditations was a good first step to learning about meditation and to structure her time. However, the course helped her to have confidence to sit silently and engage

in a seated meditation by herself without needing any sort of guidance. Her own recognition that she was no longer dependent on a guided meditation video to practice was an important step to her mastery experience.

Before the course, two participants who tried meditation on their own would get frustrated then give up in the middle of their meditation practice. Ameerah (less experienced) said she would usually get distracted and then, instead of trying to refocus on her breath again, she would quit doing the meditation and start to do something else. Even after completing the course, there were times when practicing meditation was still difficult. However, she managed to stick with it for the amount of time she designated without giving up in the middle of practicing meditation. Dhriti (less experienced) said that while she tried practicing meditation before the course, because of the intensive amount of work demanded by her PhD program, she felt she could not meditate properly—easily losing her focus—and returned to thinking about her schoolwork. However, she said her ability to bring her focus back to the meditation improved throughout the course. These pre- and post-course comparisons illustrate the sense of mastery and confidence she gained through the duration of the course.

How participants felt about practicing meditation for the recommended duration each week varied. Dhriti (less experienced) thought doing 20 minutes or more of meditation from the beginning would have been too hard, but she felt confident doing the meditation for the recommended duration because it was incremental. Sejun (first-time), who followed the weekly recommended amount of time, noticed a difference in how he felt after doing a 5-minute, a 10-minute, and a 15-minute meditation. For him, the 15-minute meditation was long enough to settle into the meditation to the point where he reached another state of mind and then felt refreshed afterwards.

By Week 3, the recommended time for a meditation was 15 minutes. Ameerah (less experienced) acknowledged the increased duration made it harder for her. However, some days were harder to meditate than others even when the duration of the meditation was the same. She learned to accept if she was having an unfocused day, the meditation tended to be more difficult to get through. Instead of giving up when the meditation felt harder for her, she began using some of the strategies she learned in class, like checking in with her body by asking herself, "How are you feeling?" and guiding herself through the meditation through self-talk. Overcoming these types of obstacles were instrumental to her mastery experience and gave her more confidence in her ability to complete her daily meditation practice.

Practicing Various Types of Meditation

Introducing a new type of formal mediation each week was another way to help lead participants to mastery experience. These included silent seated meditation, mantra meditation, loving-kindness meditation, walking meditation, and group meditation. From Week 2, informal meditations were introduced, including chores, eating, being present with another person, and driving meditations. Participants tended to prefer one to two meditation types, while they struggled with other ones. Yet, even when they struggled with a meditation, they were willing to do their best to make the most of it. For example, Mia (less experienced) struggled with the mantra meditation. She felt she was caught up in syncing the phrase with her breath rather than being in the moment. She kept trying it during the second week, and by the third time, she said, "I was like, okay, I think I can handle this." Similarly, here is how Sophia (first-time) described her struggle with another type of meditation—loving-kindness:

> [F]or me personally, what was really interesting is as we changed over to the loving
>
> kindness meditation, that actually made it very hard for me. I don't know if it's just me

personally struggling with that or what. It made me feel very emotional. Like, I was crying while I was doing it, which is not anything that's happened before in the prior weeks. So, I don't know if it's just the type of meditation I was doing. If I just had a bad day, we'll see. But generally, I mean, I'm never scared of doing something. I'll try it wholeheartedly. But I might not succeed at it. Or I might not be great at it either. Yeah, I have to take a break. Like, I had to on this past week, just because it was very hard. I was crying. I take a couple breaks. I didn't add any timeline. I just accepted that. I'll try again, see what happens.

Even though the loving-kindness meditation was more difficult for her compared to the previous meditations, she demonstrated mastery experience in how she perceived the experience. Sophia accepted the experience even though it was difficult, and she was compassionate with herself by taking a couple breaks. She also demonstrated a willingness to try new meditations "wholeheartedly."

Recording Practice in a Meditation Log

All participants received their own meditation logs—a Google sheet that provided the weekly schedule with the type and duration of meditation, a section to record the type and duration of their meditation, and a section to record their reflections/experiences. The act of recording their practice and experiences/reflections in the meditation logs was another important part of their mastery experience. There were certain aspects of the meditation log that participants mentioned were especially helpful. For instance, participants were more likely to do the meditation because they were expected to record their meditation practice. It made them accountable. Here is how Amelia (experienced) explained why it was helpful:

I would say, the actual structure of the log is pretty helpful because it's very easy to see, as it relates to the class, what we're supposed to do that week. It gives very clear instructions as to the particular topic, like, thing we're doing that day, the time for it. It allows you to actually record the time that you spend on it.

Participants liked that the log had a weekly schedule to follow that outlined the types of meditations and duration for each day. As Mia (less experienced) said, following a pre-determined schedule eliminated "the barrier of choice." In other words, it eliminated the need for students to expend time and effort figuring out for themselves which meditation to do and for how long. Also, already knowing the type and duration of the meditation each day helped students to carve out time during the day to do it. Mia added, "Instead of saying, like, 'Oh, I feel like doing this today,' it's something that I'm, I'm working harder to actually schedule and do something structured, even if I don't feel like it."

Ameerah (less experienced) found it useful to write down her reflections throughout the course. Specifically, she could refer to her log to remember how she coped with stress at the beginning of the course compared to the end. In addition, she said sometimes the way one sees oneself or remembers how one handled certain situations is different from reality, yet the recordings in the meditation log were like a mirror reflecting something closer to reality.

Isabella (experienced) always kept the sheet open on her computer, which served as a visual reminder of her daily practice. On the other hand, Amelia (experienced), who preferred to record her meditation log from her phone, said it would be better if the log was mobile friendly rather than being restricted to a desktop. This is one way the course could be improved, especially for students who preferred to practice their meditation at night and were too tired or did not feel like turning on their computers to record their meditation before going to bed.

Mastery Experience for Overcoming Challenges

There was not a specific design element of the course that promoted mastery experience for overcoming challenges. However, through the interviews, this emerged as an important theme in how participants found strong connections between their meditation practice and how they navigated difficult circumstances as PhD students. Isabella (experienced) described how her meditation practice helped her deal with additional pressures she felt when she returned to classes in the fall after a less academically intense summer.

> I think the example of the semester starting again, and it had been a nice change of pace in the summer that I didn't have as many classes and I wasn't dealing with any difficult professors. And I had some assignments I was working on but they weren't overwhelming. And so, when it suddenly hit me that the summer was over, and I was going to be jumping back into work again and school again at, you know the, the full-time commitments. And so, I had a moment of a feeling sort of panic, like, will I be able to do this? And I feel like focusing back on my meditation practice helped me to realize that I would be able to.

Isabella's comment demonstrates there is an interdependency between mastery of practicing meditation and mastery over effectively dealing with negative emotions (in this example, "panic") by returning one's focus back to the meditation practice, which is a reminder of one's inner strength and ability to endure. In other words, by bringing her attention back to her meditation practice, she was reminded she would be able to get through the next semester just as she had gotten through the previous semesters.

Social Modeling

The second factor that leads to self-efficacy is social modeling. Social modeling was considered in the design of the course by:

1. Recruiting a mindfulness meditation teacher and two student mentors who the participants could identify with.

2. Conveying important knowledge about mindfulness meditation.

3. Modeling mindfulness behavior by being present during each interaction with participants.

4. Inviting student models to sharing insights, personal anecdotes, and challenges with the class.

Two participants took on the roles of social modelers themselves. Although this was unexpected, it is worthwhile to describe these students' experiences.

Relatable Models

According to Bandura (2003), "When people see others like themselves succeed by sustained effort, they come to believe that they too have what it takes to succeed" (22:47). Since all participants were PhD students, it was important to include models with whom the participants could easily relate. The models included the meditation teacher, who was a retired professor, and two PhD students, who previously completed the mindfulness course. Based on the interviews, participants did feel they could see themselves in the models. The meditation teacher, who came from an academic background, had written books and articles on mindfulness. Ameerah (less experienced) explained how she felt connected with him:

So, I like that … Because I always had excuses not to do it. I know, people who do it have a different lifestyle, but then it's like … they are the people who probably have a

similar life. Like, I don't have any excuses now. Yeah. So, you know, it was really

helpful. And I'm glad you brought him in.

Her comment suggests that she saw people who practiced mindfulness meditation as "other," or

separate from herself. In her mind, she did not associate mindfulness practitioners as people with

her background in a similar situation. The ability to see herself in the very people teaching her

was clearly powerful.

Selecting a meditation teacher and student mentors who the participants could relate to

was intentional. However, as one participant demonstrated, there can also be models found

outside of a meditation class who embody qualities of mindfulness either intentionally or

innately. Dhriti (less experienced) saw her husband as someone who modeled the behavior of

being in the present moment in the way he could maintain total focus on a task. In comparing

herself to her husband, she felt that even when she was doing an activity away from her

research, her mind was still thinking about her research work. Her husband could be detached

from his research or work while engaging in hobbies like fishing and gardening and be

completely focused on those activities. She looked up to that "skill" in him and felt it was

something she could learn from him while working to get better at it herself through her

mindfulness meditation practice. As such, the next iteration of the course will ask participants

to identify and describe someone in their life who exemplifies the qualities of mindfulness.

Conveying Important Information About Mindfulness

Competent models build efficacy by conveying knowledge and skills (Bandura, 2003).

The meditation teacher was able to convey knowledge about mindfulness in a way that changed

the participants' schema of mindfulness. Participants found their approach to practicing

mindfulness meditation was different because their concept of mindfulness changed from prior

beliefs or understandings they had before the class. For example, Mia (less experienced) said that before the class, when she prepared for a formal meditation, she felt everything needed to be perfect—from the room or place where she would do the meditation to her mindset. By taking the course, she learned mindfulness was much more approachable than she previously thought. While she realized some meditation sessions were more difficult than others, depending on her circumstances, she felt that, "As long as I'm trying, then I'm doing it right. I think that has really helped me to let go of like the perfectionist in me."

James (less experienced) said, before the course, he thought mindfulness had to do with "forcing yourself into this space of nothingness" or shutting out thoughts rather than being in open awareness of one's thoughts. Having a new understanding of mindfulness meditation enabled him to practice being more compassionate with himself during the meditation. For example, when he noticed his attention drifted away from his breath because he began thinking about something else, he could accept the experience and himself non-judgmentally.

Mia (less experienced) explained how the course helped open her up to a broader definition of mindfulness than she had previously:

> And then I think it just learning about, like, meditation doesn't have to be, like, sitting down and silent all the time. Like, it can be those informal practices that we talked about. I think that, that helped me to feel like, there's no, there's no right or wrong way to do mindfulness meditation. And so, I think, it helped me to feel less, like, restricted by boundaries, with the definition of meditation. Um, and so it was easier and easier now to say, okay, I'm, I'm walking to campus; I could use this time to engage in some of these practices. When I'm folding laundry, or things like that, so I think in those ways it did. Just like being more informed about it.

When participants were asked what factors motivated them to practice meditation, Amelia (experienced) cited one of the lessons she learned from the meditation teacher. During one of the virtual sessions, he talked about brain plasticity and increased grey matter in people who consistently practice meditation. She said this was one of the benefits she looked forward to appreciating later in life.

Modeling Mindfulness

The meditation teacher modeled what it meant to practice mindfulness in everyday life by the way he listened and talked to the participants, while being fully aware and present of what the other person was saying. He demonstrated this behavior in every interaction he had with the students. During group discussions, the meditation teacher listened deeply to each student and connected with the student by commenting and giving insight on what the student shared. He took a couple breaths in between the time the student finished talking and before he began his reply. While preparing for the virtual sessions, the meditation teacher told me making a connection with each student was even more important than any specific information he could convey about mindfulness.

In Week 3, participants had a chance to practice what they learned from the meditation teacher's modelling by being fully present when interacting with another person. This informal meditation was an opportunity to practice the concept of "bells of mindfulness," a theme which resurfaced throughout the course. Figure 10 describes the informal meditation used in Week 3.

Figure 10

Bells of Mindfulness Informal Meditation Week 3

Week 3 - Informal Practice: Bells of Mindfulness

A↓

Due No due date **Points** 0

Week 3 - Informal Practice: Bells of Mindfulness (Tuesday / Thursday)

Everywhere we look there are bells of mindfulness - little reminders throughout the day to bring us back to the present moment. The bell can be a flower, leaves falling from a tree, a phone call - really whatever it is you are paying attention to as a reminder to be present. What if you saw each person you encountered as a "bell of mindfulness?" How might that change your relationship with that person?

For this week's informal meditation, try practicing "bells of mindfulness" with at least two people. While you are with that person, be fully present. If you find your mind wandering there are some techniques you can practice to bring yourself to the present moment. You probably already guessed the first - bring your attention to your breath.

Another way to remind yourself to return to the present is by using a mantra. Here is a simple one from Thich Nhat Hanh to remember.

> *I have arrived.*
>
> *I am home.*
>
> *In the here.*
>
> *In the now.*

Say this phrase to yourself anytime you need to come back to the present moment. You may notice it also has a calming affect on your body.

Participants found ways to practice being more fully present with another person through this informal meditation practice. Here is how Candra (experienced) described the experience in her log:

My youngest daughter is my Bell of Mindfulness today. She is not very needy except for several times only. Today I tried to listening more on her talking (She always has a lot of stories to share). I asked more questions based on the stories she told me today.

Asking follow-up questions, as the participant did with her daughter, and making comments based on what the speaker shared were ways to connect deeply with another person and practice being in the moment together. Experiencing what it was like to be someone else's "bell of mindfulness," as the meditation teacher tried to make each individual feel, may have made the informal meditation a little easier as participants knew how it felt when another person engages with them mindfully.

Student Mentors

Students who completed the 5-week course as part of the pilot study were invited back to model the behavior by talking about the benefits they personally felt; challenges to sticking with the meditation schedule, such as time management; strategies for overcoming challenges; and tips for maintaining a consistent routine. Two students who completed the course returned to share their insight and lessons learned with the class. James (less experienced) found the student mentors' enthusiasm helpful and appreciated that they verified the course was not some "weird program," but it helped other students.

According to Bandura (1983), vicarious experiences influence efficacy appraisals. Similarly, listening to the two mentors inspired other participants to embrace their own experiences. Mia (less experienced) thought it was useful to hear from the two mentors because they both found the course beneficial, but their experiences were very different. It made her realize her experience would be different from somebody else's experience, but it was not any less valuable—"we can find value in experiencing it differently."

One of the mentors discussed the importance of consistently recording one's practice in the meditation log. He said it offered a way to keep one accountable. As mentioned under Mastery Experience, participants took recording in their meditation logs seriously and found it offered a degree of accountability.

Watching others perform successfully can increase efficacy expectations in observers, who then think they also can perform the same or similar activity (Bandura, 1983). When asked if it helped to hear stories from the mentors, Ameerah (less experienced) said, "I like that, you know, [they're] from the same group in the society … if they can do it, I can do it as well." Hearing the two mentors, who also participated in the course as doctorate students, talk about the benefits helped reinforce to the participants the importance of practicing mindfulness meditation. What seemed to be equally important was the two student models also talked about how hard it is to maintain a meditation routine when travelling or experiencing an illness and gave suggestions for navigating these challenges. These stories helped participants to be gentler with themselves when they faced similar circumstances throughout the course and gave them the confidence to stick with the course.

Modeling Mindfulness for Family

At no point during the course were participants asked to take on the role of social modeler by teaching what they learned about mindfulness meditation to a family member; however, two participants did voluntarily. The instructor posted weekly videos modeling how to practice the meditation of the week. After learning how to do the meditation by watching the video and then practicing it on his own, James (less experienced) taught his wife how to do a formal seated meditation. After he explained to her how to do the meditation, they practiced it together. When they did the meditation together, he became aware his thoughts were more

centered around how he had taught his wife to do the meditation than on being in tune with his own breath during the seated meditation. He noticed the difference between how the meditation felt while doing it with his wife compared to doing it alone. Rather than criticizing himself for having a harder time focusing on his own meditation when they did it together, he embraced the experience for how it was different than usual, and he did that non-judgmentally—an essential part of practicing mindfulness, according to Jon Kabat-Zinn (1997).

In Week 2, the course introduced informal meditation to the class, and their assignment was to practice mindfulness while doing the dishes. Candra (experienced) taught her daughter how to do this type of meditation. She explained to her daughter that if she did not practice mindfulness while doing the dishes, it was possible to break the dishes. Candra asked her daughter to be more aware of how to put the dishes in and take the dishes out of the sink as an awareness practice. After these simple instructions, she allowed her daughter to experience and discover for herself what she noticed about the texture of the dishes, feeling of the soap, temperature of the water, and when her mind wandered. Based on the experiences shared by these two participants, asking students to teach meditation to a family member or friend would be a valuable activity for the next iteration of the course.

Social Persuasion

There are two ways that social persuasion can lead to improved efficacy. First, through social persuasion learners feel they have what it takes to succeed (Bandura, 2003). When they feel success is attainable, they tend to focus less on their doubts when problems arise. In this case, the meditation teacher acted as a social persuader who instilled confidence in the participants by sharing anecdotes that many participants related to. However, a space was created during the virtual sessions for the participants to act as social persuaders as well. By acting as

social persuaders, the participants created a community that was encouraging and made participants feel they could be successful. Two participants became social persuaders outside of class by socially persuading family members. Second, as Bandura (2003) explained, "Effective social persuaders do more than convey faith in people's abilities. They arrange things for others in ways that bring success and avoid placing them in situations prematurely where they will fail" (24:05). In relation to this second method for improving efficacy, this study explains how course content was structured in a way to set participants up for success.

Socially Persuading Participants Through Stories

The meditation teacher acted as the primary social persuader by sharing personal anecdotes about what led up to his life-long journey into mindfulness. He explained that as a young academic, who was raising two kids as a single father and running marathons, he began to feel a pain in his chest. After a series of medical tests, the doctors could not find anything wrong physiologically. One doctor diagnosed that the teacher's mind was simply running too fast for his body to catch up and recommended trying mindfulness meditation. Several of the students, who also dealt with similar health related problems, identified with the teacher's story. The meditation teacher also offered encouragement to those participants who shared some of their reasons for being interested in mindfulness, which were often directly related to health issues such as stress and anxiety. Hearing the meditation teacher's and other participants' stories helped participants to feel encouraged to use mindfulness meditation when they experienced health issues throughout the course.

Several participants contracted COVID-19 at some point during the course. As a result, there was a general tendency to lapse in their meditation practice when they got sick simply because they did not feel well enough to do meditation. However, two participants described

experiencing physical pain during the course. These students were able to use some of the meditation practices they learned from the class to work through the pain.

Sophia (first-time) had her tonsils removed during the first week of the course. She stated this was the most pain and physical discomfort she had experienced in her life. In Week 2, the course introduced the mantra meditation, and participants were encouraged to come up with their own words or phrases for the mantra that were meaningful for them. She chose to think "healing" on the in-breath and "relaxing" on the out-breath. She used these words as her mantra specifically because she was still experiencing a lot of pain from her tonsillectomy. She stated this mantra helped her to "focus on healing but also, like, not acknowledging the pain but not letting it overcome me. And, like, relaxing through the pain."

Candra (experienced) had a severe toothache, and the affected tooth was eventually extracted in the middle of the course. The removal was extremely painful. One of the informal meditations was to practice mindfulness while eating. A guided meditation walked students through the process of eating a single raisin mindfully. The practice proved useful after the Candra's tooth was extracted. She ate a lot of smoothies because they were something easy to eat while providing good nutrition. In some sense, she was almost forced to practice mindfulness while eating because she had to think about how to feed herself with the spoon in a way that would not hurt her mouth where the tooth had been extracted. Bringing her attention and awareness on the texture and flavors of the smoothie helped take her mind away from the pain she experienced. Here is how she described her increased awareness as she ate the smoothie:

> I mean, usually if, if I'm not having that, to take the way we just drink, the way we eat, the way we have smoothies, which is okay. Gobble it, glip, glip, right? But having that today, it's, it's, it means something different now. I'm experiencing that, oh, having my

meals more mindfully is actually, what, it's actually quite nice. I mean, I can really taste

how it, how it, how it, how it tastes, I mean, it's sweet, or it's a bit sour today. So that

sensation is more. More that I can feel compared to my other before the meals that I

usually had before I had that toothache or that tooth extraction.

Candra typically used the same ingredients for her smoothies, so her sense of taste was

heightened to the extent she noticed how ripe the bananas or other fruits were based on the

sweetness and the subtle differences in the fruits' flavors from day to day. The informal practice

of eating mindfully helped her to get through the days right after her tooth was extracted when

her mouth was especially in a lot of pain.

A space was created during the virtual sessions for the participants to act as social

persuaders to one another by sharing their interests, concerns, and experiences in mindfulness

meditation. Almost all the students mentioned how important it was to go through the course

as a group with other participants. Just seeing the other participants' faces virtually made them

feel like they were part of a community as opposed to participating in the course alone. The

opportunity to listen to other students and hear about their own struggles with mindfulness

meditation was helpful. According to Ameerah (less experienced), listening to the other

participants' stories was motivating. She explained,

It gives you a feeling like, okay, we are in it all together. And I am not the only one who

is in trouble. There are people out there who have their own story and own trouble. So,

things will pass eventually. So yeah, hearing about those stories of the people. It was also

something that is really helpful.

In listening to other people share their experiences, there were two key takeaways that

several participants mentioned they learned:

1. Everyone struggles with the fundamental aspect of meditation practice, which is to bring one's attention to the present moment using the breath.

2. The importance of practicing compassion towards oneself.

Ameerah (less experienced) said that before the course, "I was very much concentrated too much in my own bubble and expected a lot from me. And maybe that expectation changes like, it's okay, everyone goes through this." By listening to other participants voice their interests and even concerns about mindfulness meditation, she could easily identify and felt she was not alone.

According to Brown and Inouye (1978), watching others who are believed to be of the same level of competence fail lowers the observers' judgments of their own capability. But based on the many participants who felt encouraged by hearing the other participants' struggles and vulnerabilities, this theory did not stand true when applied to mindfulness meditation practice.

Mindfully Persuading Family Members to Try Mindfulness

Not only did participants act as social persuaders for one another, but two participants voluntarily acted as social persuaders outside of class by mindfully introducing family members to learn about or try practicing mindfulness meditation. Sophia (first-time) found several mindfulness books that were recommended in the syllabus to be helpful. She thought her sister, who experienced multiple mental health issues, would also benefit from the books. An important concept of mindfulness is to become more aware of yourself and your emotions and thoughts. The student recognized that she was often opinionated. However, rather than forcing her own opinions about what she discovered to be beneficial about practicing mindfulness on her sister, the participant took a less forceful, more gentle approach by sharing with her sister that the books she read were helpful for her and then sent them to her sister, who resides in another state.

She left it up to her sister if she wanted to read them without having an attachment to any particular outcome. By introducing her sister to mindfulness meditation in this way, the participant put into practice several lessons that can be learned through mindfulness meditation.

In Week 5, the participants were asked to participate in one of the 30-minute live group guided meditations offered through the UCLA Mindfulness Awareness Research Center. Ameerah (less experienced) found this group session to be so helpful that she shared this resource, which contains all the recordings from previous guided meditation sessions, with her family back in her home country of Pakistan. She encouraged her family to take some time to review the resources on the website. She also shared how mindfulness meditation had helped her, and she said she would probably share it with her classmates as well. Even if her family was unable to take the Bells of Mindfulness course, they could still benefit from some of the shared resources. These two participants unexpectedly demonstrated that social persuasion can be extended beyond the confines of the class.

Course Structure

As mentioned towards the beginning of this section on social persuasion, social persuaders do more than offer encouragement; they help to arrange things in a way to set up participants on a path most likely to lead to success. The need for course structure was obvious, yet surprising to this researcher was how many students specifically called out the structure of the course as influential to their meditation practice. James (less experienced) said that, without the structure offered by the course, he would not be practicing mindfulness meditation. Candra (experienced) said,

> Well, something I like about the course is it is so systematic. I mean, you put the module
> in such a very clear, clear, I mean, they're very clear. So first module, seated meditation

and this is how we are going to do it. And then the second one is the mantra meditation. So now we're in the third week. Let's practice loving-kindness, metta meditation, and you also mentioned about the chores meditations, the informal meditations. It seems that they are very neat, neatly prepared. So even those who are, let's say, new to meditations, if they have that willingness, I think it's very easy to follow.

Mia (less experienced) said that having a structured course where the types of meditations were decided in advance eliminated the "barrier of choice." In other words, participants did not need to use their own time searching for and choosing a meditation from a mobile app or YouTube. The structure of the course, including the meditation schedule, incremental increase in meditation time, and virtual teaching sessions, all helped to set participants up for success.

Improving Physical and Emotional States

Finally, Bandura's fourth recommendation to improve self-efficacy is to improve one's physical or emotional states. In order to bring the participants' awareness on how practicing mindfulness meditation affected their emotional states, the meditation log had columns to record their stress levels before and after their meditation practice. The graph in Figure 9 shows not only did their average stress levels decrease right after practicing meditation, but their stress levels both before and after their meditation practice incrementally decreased each week throughout the 5 weeks.

Figure 11

Average Participant Stress Level Before and After Meditation
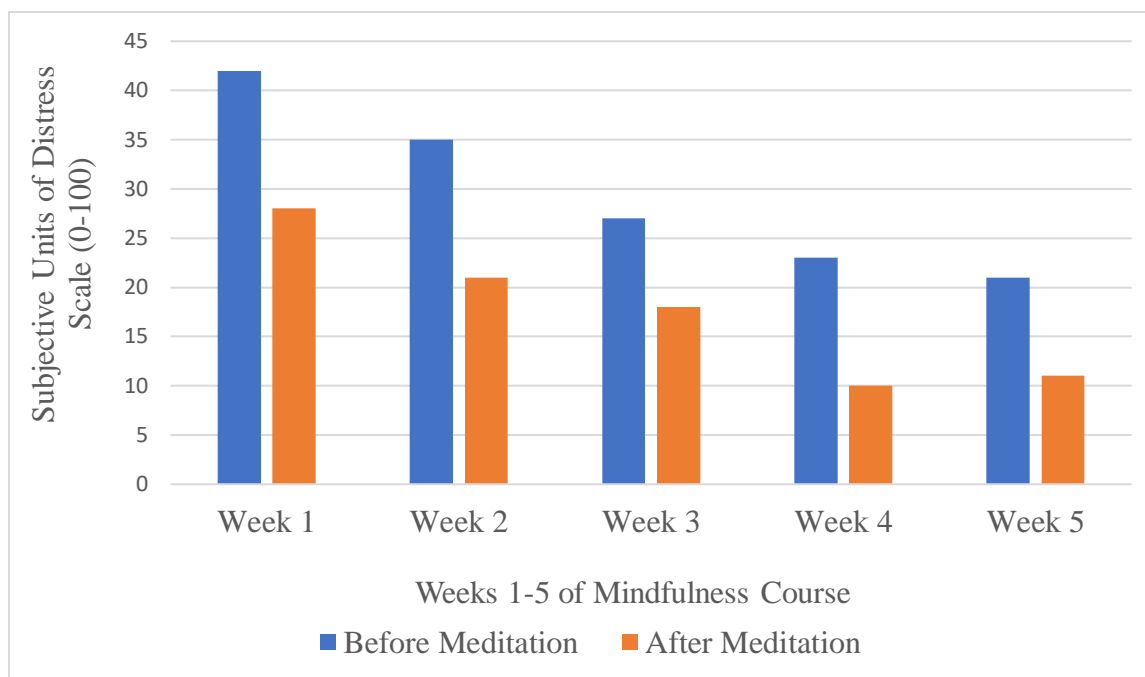
Several participants mentioned that recording their stress levels helped them to get in touch with how they were feeling. Here is how Ameerah (less experienced) described the process:

It was helpful because it's in the past. I've just done it to, to be calm, right? And to be mindful, to relax, but now it made me think about it with how was I feeling, what was my anxiety level, even though if we did the, I just put, like, the level from 100 to whatever the meter is. But on another level, it made me think about why I was, let's say a 50 and why I was at 20, or maybe at a 40 after the session. I had never thought about the meditation retrospectively, like what I gained out of it. Again, I was using it as a medicine. Like okay, I'm good now. And then I will move on to whatever I'm doing. And that really helped, like, it's a good thing to reflect. I really liked that thing.

As she mentioned, the purpose of recording the stress levels went beyond just recording the

stress levels and verifying they decreased from before to after the meditation. By taking the time

to record her stress level, she also took time to ask herself why she was feeling the way she was.

This brief daily exercise brought about an awareness as to how the meditation practice was

affecting her mood. Another participant started with a stress level of 90 before the first

meditation in Week 1 and recorded a stress level of 50 after practicing the seated meditation.

There were a couple spikes when her stress levels went back up during the course, but overall,

her stress levels decreased throughout the course.

Some students mentioned that by taking the time to check in with how they were feeling

before and after the meditation in order to record their stress levels, they were more likely to

check in with themselves throughout the day, even if they were not necessarily practicing

meditation. Furthermore, participants observed and noticed both emotional and physical changes

in their body when they practiced meditation. In addition to noticing the effect of mindfulness

meditation on their stress levels, participants mentioned other ways they became aware of how

their emotional and physical states changed. Table 5 describes the emotional and physical states

that participants observed in themselves at various times throughout the course.

Table 8

Participants Describe Meditation Benefits

Emotional or physical benefit	Exact verbiage
Clear mind	I just feel different when I practice, in the sense that I feel like my, my mind is clear.
Relaxed chest	I don't feel so, like, my chest isn't so tight. It's easier to breathe.
Broader perspective	I think it helps to give me perspective too that things are bigger than, like, these tasks that I have to get done today.

Calming the mind	… classifying if this is something I can control or not control and really reminding myself, you know, the things that are out of your control, you should focus less on so your mind doesn't just run a thousand miles an hour.
Being in the present moment	And just helps me to be more in the present moment instead of worrying about other things. So that indirectly makes me feel better, because I'm not worried about other things. And I'm not in my anxieties, worries. I'm in the present moment. So it's more enjoyable, in general.
Connection to a higher power	It seems like it helps me to be … more in tune with the Divine.
Awareness of self	It helps me to be more in tune with myself.
Being patient	I think it helps me to be more, more and more patient.
Feeling calm	The thing that, the level of calmness that I get after the meditation—that, that, that leads me to do more meditation.

Reactive to Preventative Meditation Practice

Before the course, participants who had some familiarity with mindfulness meditation would often use it in response to dealing with high stress levels, feeling down, or losing the ability to concentrate. Mia (less experienced) described it as,

It was more of a response to anxiety or stress. So, if I was feeling anxious, and quite anxious, like a severe amount of anxiety, then I would say, okay, I should go do a, a guided meditation on YouTube. And it was, I wanted it to be something that I developed into a preventative practice. But it was, it was very, it's very much more, like, kind of like a treatment for anxiety.

Since taking the course, she viewed mindfulness meditation more as a preventative measure. She said that sometimes it could be hard to get herself to do it for the sake of prevention, but by

noticing the benefits of her practice, she was able to practice meditation more proactively before reaching a highly anxious state.

Ameerah (less experienced) said that before she began the class, when her anxiety level reached 100 (based on the stress scale used in the meditation log), and nothing else she did to deal with the stress worked, as a last resort she practiced meditation. When the course began, she set the goal to not allow herself to reach a stress level of 100. She often kept emotions inside, which was culturally acceptable or even expected where she was from, but this caused her to feel as if she were physically "imploding" when she felt high levels of anxiety. When her doctor recommended she take anti-anxiety medicine, she took this recommendation as a wake-up call to do something else that prevented her from becoming dependent on medication.

Throughout the course, participants became more in tune with how practicing mindfulness meditation made them feel. The benefits they felt motivated them to practice as a way to prevent themselves from reaching stress levels that negatively affected them physically, mentally, and academically. Sophia (first-time) said that practicing meditation helped her realize the patterns and triggers leading to her increased stress and anxiety. By being more conscious of those triggers, she prevented herself from automatically reacting when something negative happened.

Mia (less experienced) said she felt she had a better grasp of mindfulness meditation than before the class, which enabled her to use it as a coping mechanism for handling stress. She also found herself thinking about it more than she had previously, leading her to use it more than she did before the class. She felt that through the course she acquired mindfulness meditation as a tool she could use without the need to search on YouTube to find a guided meditation—now she

was knowledgeable of several different types of mindfulness meditations she could access at any moment.

Participants used other coping mechanisms for stress, including exercise or talking to someone. Another coping mechanism, which did not address the underlying issue, was to "throw myself into my PhD related work and research." Mindfulness meditation gave students an additional tool to cope with stress more effectively while simultaneously continuing to use coping mechanisms already in place, like exercise or talking to someone.

Practicing Mindfulness to Manage Emotions as PhD Students

Several students shared examples of how they felt practicing mindfulness helped them navigate and deal with challenging situations they faced as doctoral students. Sejun (first-time) was working on his PhD in plant sciences. Still early in his program, a lot of his work involved growing ornamental plants on the university's research farm before he would begin collecting data on those plants in his second year. He was responsible for growing 80 plants. In one week towards the end of the summer, shortly after completing the course, 20 plants died. Despite the high mortality rate and shock from losing so many plants so quickly, he felt that overall, he effectively dealt with the situation. He proactively described what happened to his adviser and came up with a plan to find plants from other greenhouses and migrate them over to his farm. At the time of the interview, which was more than a month after the incident happened, he was still working on replacing the plants. However, he felt optimistic he could get the replacement plants he needed. Compared to some of his classmates who also lost plants, he was handling the situation without getting too overwhelmed.

Dhriti (less experienced) gave an example of a challenging time when she used the techniques from mindfulness meditation to get herself refocused on her research. She had spent

a lot of time and effort working on another paper not directly related to her primary research in computer science. When it was time to resume working on her own research, it was difficult to get back on track. As she tried to get back into the groove of focusing on her own research, she felt a lot of negative emotions coming up and even questioned her decision to do a PhD:

> I couldn't focus because of that paper. I was feeling that I'm lagging in my research and those kinds of feelings coming up. So, after meditating, like, I had almost, like, the breakdown for a day. Like, I felt like I should just give up and those kind of feelings were even coming up. So, then I, what I did was, like, I go for a walk. And just, I did nothing that day. And, like, the next day, I just, like, breathe in and breathe out a lot. And I was, like, practicing that informal meditation, which I tell you about, like, earlier as well, like, how I do it two to three times a day. That was a particular day, where I was, like, the next day after my breakdown, like, I was breathing in and breathing out a lot. And, like, I started working. I started making small changes. And then I, like, break down my work into, like, different parts so that it feels more doable. And I, like, I started with something that is easier. So, I feel, like, okay, I think completed, and I'm doing it better. So that's how I just, like, overcome it.

By using her breathing technique, allowing herself some time to do nothing for a day, and giving herself the space to reflect, she was able to rejuvenate so she could begin tackling small tasks to get back to work on her research again.

Similarly, Isabella (experienced) also used the informal breathing technique she learned in the course to deal with stress. She said she often noticed herself feeling stressed from the work on her research or an upcoming paper deadline. This led to her inability to concentrate and feeling as though she was not being productive. Now when she notices herself beginning to feel

stressed, she does an informal meditation by simply taking the time to concentrate on a few breaths, several times throughout the day. This helps her to relax, which leads her to being able to focus, which then positively impacts her productivity.

Responding Rather than Reacting to Emotions

The lessons participants learned about mindfulness meditation and the practice itself often complemented areas they were already working on as part of their personal development. For example, one important aspect of mindfulness meditation is to recognize emotions as they arise without reacting immediately. For Mia (less experienced), working on this aspect of mindfulness meditation paired well with something she and her husband were working on together—how to effectively deal with emotional flooding. This phenomenon can occur when one is in a heated argument with someone, and one feels one is not thinking straight, to the point that one can easily say hurtful things to the other person that one does not necessarily mean. In this situation, it is recommended for one to let the other person know a break is needed until one feels ready to continue having a conversation when not feeling so overwhelmed. To do that effectively, the first step is to recognize one's emotions—a skill developed through consistent mindfulness meditation practice. The next step is to acknowledge the best action to take based on one's emotions and current situation. The participant felt practicing meditation helped her to recognize her emotions more quickly even when she experienced emotional flooding.

Other Findings

Participants in the class who identified with a religion found aspects of mindfulness to be similar or at least fitting with their already existing religious practices. For example, Mia (less experienced), who identified as Catholic, said when she listened to the meditation teacher talk about mindfulness, it reminded her of prayer growing up. For instance, the Rosary, which is a

prayer she sometimes practiced saying to herself while walking to school, involves a lot of repetitive breathing in tandem with saying a prayer. According to this participant, there is a specific breathing rate one is forced to follow, particularly when these prayers are voiced out loud. As she reflected on what she learned about mindfulness meditation in the class, she concluded those prayers she already practiced as a Catholic before starting the class were types of mindfulness meditations.

As mentioned previously, Dhriti (less experienced) used the words "om" and "namo" for the mantra meditation. She was a practicing Hindu who worshipped Lord Shiva. Practicing with these Sanskrit words, she said it was like worshipping at the same time as meditating.

James (less experienced), who identified as Christian, explained that practicing being in open awareness of his thoughts through mindfulness worked well with his existing religious practices. Working towards his PhD in engineering, he often referred to articles written several decades ago that did not always make adequate explanations that he sought for his research. His research also involved writing complex computer codes. When he was stuck on his research, he often turned to God for guidance. For example, one time he could not figure out what was wrong with the code he was writing. After asking God for help in prayer, he quickly received inspiration to check a certain line of code where he found a typo. Fixing the typo was the solution he needed to continue his work. James felt what he learned about mindfulness meditation in terms of being in open awareness was helpful to him because in this state he felt he was more receptive to listening to guidance from God.

Asking participants what they would tell or teach someone else about the course revealed the parts of the class they valued the most. Some of these statements could even be shared with

future participants of the mindfulness course to socially persuade them to stick to the course.

Table 6 lists their responses.

Table 9

One Thing Participants Would Teach Someone About the Class

Question: What is one thing you would you tell or teach someone else about this class?
Response:
• Hear stories from others that will help motivate you.
• I would just tell them how it helps me.
• Learn about mindfulness meditation beyond seated and body scan meditations.
• Helps you to be more in tune with yourself.
• Helps cushion some of the difficulties that can be brought up when you're pursuing a PhD.
• Mindfulness meditation does not have to be complicated. It doesn't have to be for a long time. It can just be for a few moments or a few breaths.
• Mindfulness is not like having control of your thoughts. It's more so to be accepting of yourself.
• I'd probably just teach them how to do a simple walking meditation.
• I'll definitely teach them how to do a walking meditation because most people walk around. They just need to focus on the mind. They don't need to change their schedule.
• Just try focusing on the breath and be non-judgmental in your efforts.
• On how to manage emotion, so I like to tell my friends, this too shall pass. Yeah. So yeah, I like to tell my friends that this, whatever is happening now is, no matter how hectic it is, how challenging it is, it will pass.

Summary

This chapter presents the results for the two research questions presented in this dissertation study. The first half of the chapter addressed research question 1 and was divided into five sections:

1. Pre-course meditation practice (divided participants into 3 groups—experienced meditators, less experienced meditators, and first-time meditators).

2. Weekly meditation practice based on participants' meditation logs.

3. Comparison of pre- and post-course meditation practice.

4. Self-efficacy to practice mindfulness meditation based on the self-efficacy survey results and interviews.

5. Change in participants' meditation practice.

The second half of the chapter addressed research question 2 and was divided into four sections corresponding to principles of self-efficacy theory: mastery experience, social modeling, social persuasion, and improving emotional states. There were several sub-topics under each section to explain the elements of the course that were incorporated based on an understanding of each respective factor that is thought to lead to self-efficacy.

Course design elements leading to mastery experience were:

1. Incrementally increased practice time by 5 minutes each week.

2. Introduced a variety of mindfulness meditations to participants.

3. Instructed participants to record their practice and experiences in a meditation log.

Course design elements for social modeling included:

1. Choosing a meditation teacher and mentors who were relatable social models.

2. Social modelers conveyed information about mindfulness meditation, including its benefits.

3. Meditation teacher and mentors modeled mindfulness behavior.

Course design elements allowing social persuasion to occur were:

1. Telling personal stories about the effects of regularly practicing mindfulness meditation.

2. Space in class for participants to be social persuaders for one another.

3. Course activities were structured to lead participants to success.

The course design included one feature to bring participants awareness of the effect practicing mindfulness meditation had on their emotional states. The participants recorded their stress levels before and after each formal meditation. As a result, participants became aware throughout the class that practicing mindfulness meditation helped them prevent unmanageable stress, manage their emotions better as PhD students, and respond rather than react to their emotions.

CHAPTER VI

DISCUSSION AND CONCLUSION

Graduate students experience high levels of stress and anxiety (Evans et al., 2018), which are often directly related to academic pressures of higher education (Allen et al., 2020). The present study set out to explore the benefits of providing a mindfulness meditation course to PhD students by finding out how the course changed their meditation practice and the elements of the course design that influenced that change. Mindfulness meditation, which has its roots in the Buddhist tradition as a practice to deepen insight into the human experience and help relieve human suffering, also happens to be an effective way to manage and reduce stress (Kabat-Zinn, 1982; Breedvelt et al., 2019; Sommers-Spijkerman et al., 2021).

Based on prior research that found a regular mindfulness routine is necessary (Banerjee, 2016) and that helping graduate students find time in their busy schedule to meditate is a challenge (Franco, 2020), the present study applied self-efficacy theory to the design of the course. Using self-efficacy theory offered a new approach to thinking about effective ways to support PhD students in sustaining a mindfulness meditation practice. It focused less on outcomes, such as stress reduction, and more on the participants' relationship with mindfulness meditation and how they were able to experience it in myriad ways through formal and informal practice. Furthermore, the present study sought to fill a gap in the literature on mindfulness meditation—an underrepresentation of PhD students despite the higher-than-normal stress levels PhD students reported.

The following sections present the summary of findings and discussion for each research question, then overall implications and recommendations are offered for course design, research, and mindfulness meditation practice specifically for PhD students, and limitations of the study.

Summary of Findings and Discussion

Research Question One

The first aim of the present study was to understand how, if at all, an online mindfulness meditation course would affect participants' mindfulness meditation practice. Bells of Mindfulness: Mindfulness Meditation for PhD Students, the course designed and used for the present study, impacted participants' mindfulness meditation practice in ways expected based on previous studies. Overall, the majority of the nine participants who completed the 5-week course practiced more frequently and for longer duration both during the course and 4 weeks post-course compared to their meditation practice before the course began. Before the course started, only one participant, an experienced meditator, had a regular mindfulness meditation practice. The remaining participants either practiced irregularly or never tried practicing mindfulness meditation. Participants in the course tended to stick to the recommended schedule. However, there was more variability in how closely they followed the schedule in Weeks 4 and 5, which was similar to other studies that found participants began lapsing in their meditation practice after week three of the respective program (Moore et al., 2020).

Four weeks after the course, six of the nine participants were still practicing mindfulness meditation regularly. There were two participants evenly distributed from each group—experienced meditators, less experienced meditators, and first-time meditators. This post-course retention rate of 67% is comparable to other studies. A narrative synthesis found that follow-up

periods ranged from 4 to 36 weeks after intervention, and after intervention most (14/19, 74%) studies had over 70% retention (Winter et al., 2022).

The present study contributed to the body of literature on mindfulness meditation that tries to understand the ideal amount of time a meditation program can realistically expect of participants, especially PhD students who are busy and may have limited amount of time available to dedicate to practicing mindfulness meditation. Some studies (Chang et al., 2004; Shapiro et al., 2005) reported high 8-week Mindfulness-Based Stress Reduction (MBSR) attrition rates of 35% and 44%, respectively. Furthermore, participants in a previous study did not regularly meditate for the prescribed amount of time (Carmody and Baer, 2008). The amount of time demanded from participants for the course designed for the present study was less than other mindfulness-based interventions, such as traditional MBSR. The course for the present study aimed to demand enough time from participants to practice meditation long enough to experience its benefits, without causing participants to feel overwhelmed by the time commitment which may have resulted in fewer participants. One study which dramatically reduced the amount of time compared to a traditional MBSR course was an 8-week program for medical students in which students practiced 5-minutes daily (Moore et al., 2020). By Week 8 of that study, the median frequency of mindfulness practice was once per week. By comparison, 4 weeks after the 5-week course ended, the participants in the present study reported practicing 2 to 7 times per week for 5 to 15 minutes per meditation. This amount of time may be considered realistic for other mindfulness courses specifically targeting PhD students.

The present study reinforced the few existing studies targeting PhD students that also found it a challenge to get PhD students to practice mindfulness meditation and to sustain their practice long term. The participants who were not practicing regularly 4-weeks post-course

completion reported the reason for not practicing related to their increasingly busy schedules as a result of the start of the fall semester. Other studies targeting graduate students also found time management, or the inability to prioritize competing tasks, as reasons for not being able to sustain meditation long-term (Franco, 2020). How the next iteration of the course can address this issue is discussed in the Implications and Recommendations section.

Self-Efficacy for Mindfulness Meditation Practice Survey

The present study was one of the first studies to use the recently developed Self-Efficacy for Mindfulness Meditation Practice (SEMMP) survey (Birdee et al., 2020). SEMMP was developed to assess the ability to perform mindfulness meditation. One of the reasons to create an instrument measuring self-efficacy directly related to mindfulness meditation practice was to test variability among different types of meditation (Birdee et al., 2020). There was not an easy comparison with other studies measuring self-efficacy for mindfulness meditation because the present study used a scale that was only published in 2020 and, based on current knowledge, there have not been any studies published at the time of this writing using the same self-efficacy scale. Other surveys measuring self-efficacy for practicing mindfulness meditation are quite different. For example, the 22-item MSES-R, a revised version of the original Mindfulness-Based Self-Efficacy Scale (MSES), has statements to measure emotion regulation, social skills, equanimity, distress tolerance, taking responsibility, and interpersonal effectiveness, which are related to outcomes of practicing mindfulness (Calhoun et al., 2022). The scale used for the present study measured three key skills used during meditation practice—attention, emotion, and self-kindness.

There is evidence that higher levels of self-efficacy correlate to greater probability of sticking with a health-related routine (Bandura, 1988), and there is a better chance of staying

engaged in the healthy behavior long term (Schwarzer and Luszczynska, 2007). Since the present study was interested in supporting PhD students in developing a habit of practicing a healthy behavior—mindfulness meditation—over time, it was also interested to determine if the course helped them to improve their self-efficacy in practicing mindfulness meditation. I conjectured that if participants improved their self-efficacy in practicing mindfulness meditation, it could be expected they would be more likely to continue their practice even after the completion of the course.

All the participants in the present study reported positive growth in their self-efficacy for mindfulness meditation practice after participating in the course. Participants improved their self-efficacy in each category—attention, emotion, and self-kindness. These findings align with previous studies that found mindfulness helps improve attention (Sumantry & Stewart, 2021), emotion regulation (Garland et al., 2009), and self-compassion (Reilly & Stuyvenberg, 2022). The participants made the most improvement between the pre- and mid-course surveys compared to the mid- and post-course surveys. As one of the first studies to use SEMMP, the results from the present study may serve as a baseline for comparison for future studies measuring self-efficacy for mindfulness practice using SEMMP.

The present study found self-kindness was the area participants scored the lowest in self-efficacy of the three categories, but it was also where participants improved the most. Participants practiced loving-kindness meditation, which involves sending feelings of kindness to oneself and others (Hofmann et al., 2011), the same week they took the mid-course surveys in week three, which could explain why they improved the most in self-kindness. Similar to this finding, one meta-analysis found loving-kindness meditation had an overall moderate positive effect (Hedge's g=0.44) on self-compassion using the Self-Compassion Scale (Reilly &

Stuyvenberg, 2022). Although kindness is more focused on creating happiness, whereas compassion involves alleviating another's suffering, self-kindness and self-compassion are similar, and they both promote wellbeing (Gilbert et al., 2019).

Research Question Two

The present study attempted to understand which features of the course informed by factors of self-efficacy—mastery experience, social modeling, social persuasion, and changing emotional states—were most meaningful or effective for participants by relying on the mid- and post-course interviews. Figure 10 outlines how sources of self-efficacy were operationalized into design features of the course, including activities, approach to meditation practice, people involved with teaching the course, and virtual class characteristics.

Figure 12

Sources of Self-Efficacy Operationalized into Course Design Elements

Sources of Self-Efficacy (Bandura, 1977; 1997)	Operationalized Through →	Course Design Elements
Mastery Experience	→	• Limited guided audio meditations • Practiced various types of meditation • Incrementally increased practice time • Clear understanding of mindfulness • Recorded experiences in meditation log • Made meditation personally meaningful
Social Modeling	→	• Included mentors as relatable social models • Mentors and teacher demonstrated mindfulness behavior during virtual sessions • Assignment around practicing modeled behavior • Mentors shared strategies for practicing meditation
Social Persuasion	→	• Mentors and teacher conveyed benefits of practicing meditation • Participants acted as social persuaders through group discussion • Mentors and teacher offered encouragement
Emotional States	→	• Participants recorded stress levels before and after practicing meditation

Mastery Experience

Mastery experiences are the most influential source of efficacy information because they provide the best evidence as to whether one has what it takes to succeed (Bandura, 1997). There were several ways the course was designed to promote participants' mastery experience. These strategies included practicing meditation without listening to guided audio, introducing participants to a variety of meditation practices, incrementally increasing the amount of practice time each week, helping participants to develop a clear understanding of mindfulness, and making meditation personally meaningful for participants.

The design of the course intentionally limited guided meditations to only a few, including loving-kindness, eating, and group meditations to build participants' efficacy to practice meditation without listening to guided audio. All participants who had at least some experience practicing meditation before the course reported using guided meditation from a mobile app or YouTube. Practicing meditation without audio was a challenge for Ameerah (less experienced), who had grown accustomed to listening to music while practicing meditation. Mia (less experienced) reported she liked the confidence she developed to practice meditation without relying on guided audio. Developing the confidence to practice meditation without being dependent on an audio guide was an important component to the participants' mastery experience, particularly as they found ways to incorporate informal mindfulness meditation daily.

Participants gained mastery experience by learning to practice a variety of formal meditations, including silent seated meditation, mantra meditation, loving-kindness meditation, walking meditation, and group guided meditation as well as informal meditations. One study comparing mindfulness-based interventions using either formal or informal meditations

concluded using formal meditations may be more effective at cultivating mindfulness (Hindman et al., 2015). This researcher agrees that formal meditations are key to a mindfulness practice. However, including informal meditations was also important to get participants to continue practicing what they learned in the formal meditation during everyday life. Aside from the informal meditations introduced in class, participants described practicing other informal meditations, such as hiking with friends, walking on campus, looking up at the sky, and eating smoothies. Finding ways to incorporate mindfulness meditation into their daily lives gave participants more mastery experience opportunities in informal settings.

Developing a sense of efficacy requires experience in perseverance to overcome obstacles (Bandura, 1997). One obstacle experienced by participants, which was similarly reported in other studies (Baer et al., 2021), was focusing and refocusing their attention on the breath. Focusing attention was a skill that participants struggled with before and during the first 2 weeks of the course. The challenge of focusing attention was not surprising, considering most educational settings do not provide opportunities for students to systematically learn or cultivate focused attention (Shapiro et al., 2011). Some participants reported that prior to the class, they would frequently become so frustrated with their inability to focus that they would leave in the middle of a meditation. These participants struggled to bring their attention to the breath even for the short 5- and 10-minute meditations early on in the course, but they trained themselves to stick with their meditation for the allotted amount of time.

Designing the course for participants to begin practicing meditation for a short duration and then slowly increasing the amount of practice time weekly was helpful for participants who were used to giving up during meditation practice. Participants practiced formal mindfulness meditation the first week for 5 minutes at a time, then increased the amount of time by 5 minutes

each week until they could practice for 25 minutes by Week 5—thus incrementally building their confidence to sustain meditation practice for longer amounts of time throughout the course.

The course used videos and took time during the virtual sessions to explain mindfulness meditation. Having a clearer understanding of mindfulness meditation was another reason participants stuck with their meditation session without giving up in the middle. To illustrate, before the course, James (less experienced) thought mindfulness had to do with controlling the mind or shutting off the mind to prevent thinking from occurring during meditation as opposed to bringing one's awareness to the present moment and accepting whatever the experience might be. Thus, the participants' misguided understanding of mindfulness meditation made the practice feel unattainable before the course, but the practice became much more approachable by having a better understanding. The meditation teacher, mentors from the pilot study who joined the virtual sessions, videos created by the course facilitator, and other outside videos acted as important resources of knowledge to form the participants' understanding of mindfulness.

Finally, the course was designed to promote mastery experience by allowing participants to experience mindfulness meditation in ways that were personally meaningful for them. In the second week, for example, participants were taught how to do a mantra meditation but then encouraged to create their own mantra to use. Dhriti (less experienced) used a mantra that she attributed to getting herself through a major earthquake in her hometown. James (less experienced) made a mantra based on an area of his life he was working to improve which aligned with his religious values. Mia (less experienced), who identified as Catholic, noticed the similarities between the mantra meditation practice and the Rosary—a Catholic prayer that involves synchronizing the breath with the verses of the prayer. Sometimes she would recite the Rosary to herself while walking to campus. Participants also interpreted mindfulness in ways that

were personally meaningful according to their religious beliefs. As a Christian, James (less experienced), acknowledged practicing mindfulness could easily be incorporated into his existing religious practice because being aware of the present helped him to be receptive to God's message. Making mindfulness personally meaningful according to participants' life experiences and religious practices/beliefs deepened their mastery experience.

Social Modeling

People do not rely solely on mastery experience as the only source of information about their capabilities. Social modeling, vicariously experiencing something through modeled behavior, also serves as another tool for promoting a sense of personal efficacy (Bandura, 1997). Watching others perform successfully can increase efficacy expectations in observers, who then think they are also capable of performing the same activity (Bandura, 1983, p. 126).

An important part of the course design was to include a meditation teacher and mentors with whom the participants could relate to model the behavior. Early studies on modeling emphasized the importance of having social modelers who are not only credible and competent but also perceived as similar to those for whom they are modeling the behavior (Bandura & Walters, 1963). Participants said it was easy to relate to the social modelers because they shared a common interest in mindfulness meditation and were PhD students as well. The meditation teacher easily connected with participants because his story about finding mindfulness meditation useful to overcome stress and anxiety resonated with the PhD participants who were interested in taking the course for similar reasons.

Not only was it important for the social modelers to be relatable, but they also needed to be credible and demonstrate mindfulness through their behavior. The meditation teacher, ordained by Thich Nhat Hanh as a Dharma teacher, was not only credible, but because of his

years practicing mindfulness, he could demonstrate being mindful in each interaction he had with participants. Conversations were never rushed. When participants answered a question about mindfulness or shared their experience, the meditation teacher listened mindfully and always responded to ensure participants felt heard, respected, and connected. One of the informal meditation assignments instructed participants to practice being mindfully present during an interaction with another person. The meditation teacher's interactions with the participants provided a model for how to do the assignment.

The mentors modeled the behavior by sharing strategies to maintain a regular mindfulness meditation routine. One mentor encouraged participants to diligently record their practice in the meditation log. This activity gave participants accountability, and it was useful for looking back on one's progress. The other mentor shared his own difficulty keeping up on his meditation practice when he was sick or travelling. He encouraged participants to practice being kind to themselves even when they were not able to practice.

There are studies that espoused the benefits of having a facilitator or meditation teacher because results indicate those courses were more effective in reducing stress and promoting mindfulness (Sommers-Spijkerman et al., 2021; Blanck et al., 2018), greater frequency of mindfulness practice (Karing, 2022), and participant retention (Winter et al., 2022). However, this researcher was unable to find other studies on mindfulness that address the benefit of including mentors for social modeling.

Social Persuasion

Social persuasion makes it easier to sustain a sense of efficacy if others convey faith in one's capabilities, especially when struggling with difficulties (Bandura, 1997). The meditation teacher and the two mentors also acted as social persuaders. They verbally shared information

about the benefits of practicing mindfulness meditation and personal experiences to persuade participants to engage in a mindfulness meditation practice. Also, according to Bandura's social cognitive theory, motivated actions depend on expected positive consequences for performing modeled actions (Bandura & Walters, 1963). These outcome expectancies, which are cognitive beliefs, develop through social interactions between models and observers. Therefore, it was important for the meditation teacher and mentors to share those positive outcomes to help motivate the present study participants. Mia (less experienced) liked hearing from the mentors because the benefits they experienced or highlighted were different. For example, one mentor talked about how his practice helped him to manage stress and be more productive, whereas the other mentor explained how he noticed practicing mindfulness made him more compassionate towards himself and others. The mentors demonstrated multiple ways mindfulness meditation can be beneficial and stressed everyone's experience may be a little different.

The social interactions that participants had with one another during the virtual sessions were also important. Participants were encouraged to hear their peers describe concerns or frustrations they had with mindfulness meditation because they could easily relate. According to self-efficacy theory, learners who observe others fail whom they believe are similar to themselves may experience lower self-efficacy (Bandura, 1986). Contrary to this belief, hearing other's perceived failures, such as an inability to focus on the breath for a sustained amount of time, did not lower observing participants' self-efficacy. Rather, these vulnerabilities served as a source of strength for peers who could relate and realized they were not alone in having similar experiences.

I, who designed the course, also had a responsibility as a social persuader. Effective social persuaders arrange things for others in ways that set them up for success (Bandura, 2003). Mia (less experienced) described how she felt the organization of the course was helpful:

> … you created, like, a safe space for us to practice it, kind of the way that worked with our schedule. And you made it very approachable. And, like, the videos, the, like, Zoom calls that we did, and the course information online. And I think it just gave me more information about it. And I think it helped better my understanding of what mindfulness meditation is.

Social persuasion began subtly even before the course began in the recruitment email sent to every major department in the university, encouraging everyone to participate regardless of physical and/or learning challenges by stating, "Anyone who breathes can practice mindfulness meditation." This theme continued throughout the course. The breath was taught as key to returning one's awareness to the present moment. There were reminders throughout the course, including during the virtual sessions the meditation teacher led that, as long as one is alive, the breath is always available—one only needs the intention to pay attention to it.

Changing Physical and Emotional States

The fourth way to influence efficacy beliefs is to reduce stress levels and negative emotions, enhance physical status, and correct misinterpretation of bodily states (Bandura, 1991). Of the four sources leading to self-efficacy, improving one's emotional state is one of the least explored means to improve self-efficacy (Unrau et al., 2018). The focus of the present study was not on specific outcomes; however, participants did track their stress levels before and after practicing meditation to bring their awareness to how practicing meditation changed their emotional state. Their stress levels not only decreased right before and after practicing

meditation, but they consistently and incrementally decreased overall between Weeks 1 and 5. This finding was consistent with other studies that found mindfulness to decrease perceived stress among nursing students (Alhawatmeh et al., 2022). The present study indicated that participants found it useful to note their stress levels before and after the meditation because it brought their awareness to how the meditation affected their emotional state. That awareness even continued throughout the day.

Asking participants to record their stress levels in their meditation log led to some unexpected positive outcomes. By checking in with their emotional state for the meditation practice, participants were more likely to do the same thing throughout the day even when they were not practicing meditation. This led some students to take the time to ask themselves why their stress was at a certain level. They became more aware of the reasons they reached a certain level of stress, which was the first step in addressing the root cause of the stress. They also liked tracking in the log because they could go back later to look at their log to see how they did with their stress levels throughout the course. The numbers reflecting their stress levels acted as objective data to persuade participants how practicing meditation could change their emotional state in a short amount of time.

Sources of Self-Efficacy Demonstrated by Participants

Design features associated with each of the four sources of self-efficacy were described as helpful by participants in aiding them in developing a mindfulness meditation practice. The participants demonstrated characteristics of the four sources of self-efficacy in their own ways unrelated to any required assignments. They discovered their own paths to mastery experience by bringing principles of mindfulness—allowing events to unfold moment by moment while experiencing those moments non-judgmentally—to their everyday lives. Mindfulness is "more

rightly thought of as a 'Way' than a technique … a Way of walking along the path of life and being in harmony with things as they are" (Kabat-Zinn, 1994, p. 88). The stories participants shared demonstrated how they walked along their own paths, often making changes or taking actions to be in harmony with their experiences.

On the way to mastery experience, participants became acutely aware of how their formal meditation practice influenced how they made decisions and choices throughout the day. Sophia (first-time) described how she gained mastery over her attention and emotions. She noticed the negative impact social media was having on her well-being, so she changed her morning and evening routines to avoid checking her phone the first and last hours of the day. Furthermore, she intentionally used that time doing activities that improved her emotional state, such as practicing mindfulness meditation. For Dhriti (less experienced), the goal to better handle failures as a PhD student motivated her to persist in practicing mindfulness meditation. In the past, she experienced difficulty dealing with failures, such as when her research experiments failed or turned out differently than expected. During the course, there was a time when she was feeling especially discouraged with her research and even questioned her decision to enroll in her PhD program. By using techniques she learned in the class to take time for a few present focused breaths throughout the day, she saw her situation more positively and then began taking the steps she needed to continue making progress on her research. In other words, her meditation practice helped her to become a more resilient student who, according to Egan et al. (2022), maintains high motivational achievement and performance even when faced with stressful events.

Although including social modelers was an intentional design aspect of the course, unexpectedly two participants organically took on their own roles as social modelers outside of class. Bandura's social learning theory emphasized that for observational learning to occur,

individuals must attend to a model, retain what the model did, and produce the modeled behavior (Bandura & Walters, 1963). These participants went one step further by not only producing the modeled behavior but becoming social modelers themselves by teaching the practice to family members. James (less experienced) taught a family member how to do a formal seated meditation, and Candra (experienced) modeled to her daughter how to wash the dishes mindfully as participants learned in the course. Teaching family members what they learned in class provided additional opportunities to apply lessons they were learning by practicing meditation, including patience towards oneself and others, self-kindness, accepting one's experience, being present, and making deep connections with others.

Participants also became social persuaders outside of class by recommending mindfulness meditation to family members. These social persuaders shared some of the resources from class they found especially useful, including mindfulness meditation books and websites. Just as social modelers found the act of teaching others about mindfulness meditation presented opportunities to practice mindfulness skills in everyday life, the same was true for the social persuaders. The participant who shared her mindfulness books with her sister did so thoughtfully—aware that she could have the opposite intended effect if she came across as too pushy or overly opinionated, qualities she recognized in herself that she was working to improve.

<center>**Implications and Recommendations**</center>

Implications and Recommendations for Design

Participants reported there were many positive outcomes by taking Bells of Mindfulness: Mindfulness Meditation for PhD Students. These positive outcomes included trying new types of meditation, gaining a clearer understanding of mindfulness meditation, improving the ability to handle challenging situations as PhD students, changing morning and evening routines to

improve well-being, teaching mindfulness meditation to family members, sharing mindfulness resources with family, incorporating mindfulness throughout the day, practicing self-kindness, and continuing a meditation practice at least 4-weeks after the course ended. The elements of the course supporting these outcomes will remain the same.

Despite all these positive outcomes, participants felt less confident in their ability to sustain a regular meditation practice long term. There were several reasons participants mentioned being less confident in sustaining their meditation practice. When the course ended, participants felt the loss of the structure and group support—important attributes that the course provided—made it more difficult to sustain their meditation routine. The value they placed on the group made sense considering contemplative practices in higher education can lead individuals to having a heightened sense of community and connection with others (Barbezat & Bush, 2013). Losing that connection to the group after the course ended was difficult for participants. Also, participants appreciated the structure the course offered, such as following a schedule which provided the type of meditation to practice, duration, and day of the week. Losing these two key aspects—structure and group support—had a negative impact on some participants' ability to maintain their regular meditation routine after completing the course.

The other major factor that contributed to the participants' difficulty to continue practicing meditation post-course was their inability to prioritize their practice against competing tasks or schoolwork. The participants who were not practicing routinely 4 weeks post-course expressed the main reason as they had already become too busy at the start of the fall semester to make time for their meditation practice. Persuading PhD students to take time out of their already busy schedules to practice meditation when it can be viewed as an unproductive activity is a challenge. This is especially true when one understands that in mindfulness meditation there is

nothing to achieve and nothing to attain (Kabat-Zinn, 2008). This is a challenge the present study aimed to address and did with some level of success. However, there is room for improvement, and there are some recommendations for the next iteration of the course.

The next Bells of Mindfulness course could be improved to better support PhD students in continuing to practice meditation, even during fall and spring semesters, which, for most students, tend to be busier and more hectic than the summer semester. The core course could still be offered during the summer because it is a good time for students to develop the routine and skill of practicing meditation. Extending the course into the fall semester so students would not lose the structure and group support, cited as reasons making it difficult to maintain a meditation practice, could be helpful. The mindfulness course could also include activities to help students get into the habit of setting aside time to plan their weekly schedules to ensure they are prioritizing tasks in line with their goals and values.

The course for the present study brought participant awareness to how meditation changed their emotional state by recording their stress levels right before and after practicing meditation. Similarly, the revised course could do a better job of bringing awareness to how the participants' formal meditation practice affects how they respond to stressors and challenges throughout the day. As mentioned, participants told stories of circumstances in which they thought practicing mindfulness meditation helped them navigate difficult situations encountered as PhD students. An activity in the next iteration of the course could ask participants to reflect and evaluate themselves on how they handled difficult circumstances, stressful situations, or managing competing priorities throughout the day—both on days when they practiced meditation and those days when they did not—and then to compare the similarities or differences in their responses to those circumstances. Based on some of the stories that participants from the

present study shared during interviews, such a reflective activity would likely bring their awareness to the benefits of practicing meditation particularly during difficult and busy times.

When asked what was one thing about the course participants would share with someone else, one participant responded, "[It] helps cushion some of the difficulties that can be brought up when you're pursuing a PhD." This statement suggested the student had a strong recognition of how practicing mindfulness meditation was directly impacting her life as a PhD student. Giving better instructions and guidance on what to pay attention to and what kind of experiences to record in their meditation log could help lead other participants to the same conclusion. As participants deepen their awareness of how practicing mindfulness benefits them, they may be more likely to continue their practice, even amidst competing priorities.

Participants gave their own suggestions on improving the course. Their suggestions included: 1) Have weekly group sessions. The current course offered three virtual group sessions during the 5 weeks. Participants appreciated what they learned during these sessions and, as mentioned, the group support these sessions provided helped participants to feel not as alone on their mindfulness meditation journey. Therefore, these sessions could be increased to every week. 2) Offer group sessions in person. Some participants would have preferred to meet face to face rather than virtually. The meditation teacher who led the virtual sessions did not reside in the same state as the participants, but a locally residing meditation teacher could decide to facilitate the sessions in person. However, one study that surveyed a group of 218 participants about their meditation practice found no significant difference in the frequency of formal mindfulness practice between those who had attended a face-to-face taught course and those who had not (Birtwell et al., 2019). 3) Design a mobile compatible meditation log. The functionality of the Google sheet for the meditation log was reported to be inconvenient because participants

had to be on a computer to access and use it, whereas an application accessible from a mobile device would provide added convenience to easily record meditation activities.

Implications and Recommendations for Research

The present study's use of self-efficacy theory as a framework for both the study and the design of an online mindfulness meditation course is a new approach among research on mindfulness meditation. Furthermore, the present study systematically described the design features of the online mindfulness meditation course based on self-efficacy theory at a level of detail uncommon in most studies on mindfulness meditation. Participant stories demonstrating how practicing mindfulness meditation can benefit PhD students—ability to refocus attention when experiencing frustration related to research, awareness of how one's environment positively/negatively affects emotions which then leads to forming healthy habits, or practicing self-kindness towards oneself when unexpected events occur—are an important contribution to existing research on mindfulness meditation, which lack studies targeting PhD students.

There is still a deficient understanding as to the ideal amount of time to spend practicing mindfulness meditation. There needs to be a balance between amount of time spent meditating, benefits, and what is a realistic time commitment for a group of participants. This course allowed participants to experience practicing meditation 5 to 25 minutes at a time. As the post-course interviews revealed, participants tended to practice formally on their own for 5 to 15 minutes. As one of the participants explained, this amount of time was enough for him to reach a mindful state and feel refreshed by the completion of the practice. This may be considered a reasonable amount of time for populations especially constrained by time, although more research is needed to assess outcomes. Future studies should compare the outcomes based on different frequencies and amount of time spent practicing meditation.

Future research should conduct longitudinal studies following first-year PhD students from the time they enter their graduate programs and throughout their academic careers to better understand how practicing mindfulness meditation affects this smart, highly self-motivated population who are expected to perform under, often times, highly stressful and rigorous academic environments. A longitudinal study would provide deeper insight into the formal and informal meditation practices of PhD students, and how that practice overflows into other aspects of their lives.

The present study only had one post-course follow-up after 4 weeks. Ideally, a study would have several follow-ups over the course of a year or more to better understand how many participants sustained their practice over the long term. Recruiting first-year PhD students to take an online mindfulness meditation course their first semester and then tracking their practice and academic performance throughout their PhD programs would produce useful data unlike any existing studies. Holding additional mindfulness sessions over the course of their PhD time would potentially be beneficial. Such a study could track how participants handle the ups and downs of their tenure as PhD students and compare them to a control group that does not take the mindfulness meditation course. As mentioned, PhD students are underrepresented in studies on mindfulness meditation. A longitudinal study comparing academic outcomes of PhD students who practice mindfulness meditation to PhD students who do not could provide interesting insights as to how, if at all, practicing mindfulness meditation benefits PhD students academically. Based on the present study, I hypothesize it would benefit those students who take the mindfulness meditation course, but a longitudinal study would make this clear.

There are studies demonstrating the positive effect mentors have on developing mentee self-efficacy (Sun & Clarke-Midura, 2022; Sun, 2021). The present study invited two

participants from the pilot study to participate as mentors in the virtual sessions to model mindfulness behavior and persuade participants of the benefits of practicing mindfulness meditation. Future studies may examine the effects on mindfulness meditation self-efficacy and sustaining a meditation practice when a more robust mentorship program than the one used in the present study is incorporated into a mindfulness course.

Implications and Recommendations for Practice

The lessons learned from the present study should provide incentive for graduate programs to offer mindfulness meditation courses to their PhD students to help them manage stress and anxiety and better navigate many challenges they encounter throughout their academic careers by frequently, consciously, and powerfully returning to the power of their breath. In addition, they will build connections with their cohorts, professors, students, and administration through their contemplative practice performed individually and together as a group. As universities make decisions on the most beneficial and appropriate mindfulness meditation programs to implement, they can look to this study as a guide on course length, realistic student time commitment, types of meditations to introduce, and other activities. The course for the present study offers a balanced approach for graduate students to experience the benefits of practicing mindfulness meditation while not overwhelming them with unrealistic time commitment expectations.

Limitations

One possible limitation was that I acted as course designer, instructor, interviewer, and researcher. Even though the course was not graded, the instructor-student relationship may have influenced how participants answered questions, particularly those inquiring about what features of the course, such as design and activities, were most beneficial in helping participants to

practice mindfulness meditation. Additionally, my own enthusiasm for the subject matter could have influenced how the interviewees answered questions. On the other hand, having a relationship with the participants as the course instructor and designer throughout the course may have helped participants feel more at ease during the interviews, leading them to be more open and willing to share their personal stories and experiences with me.

Engaging in the mid- and post-course interviews may have provided an additional incentive for the participants to stick with the course. Interviewees were compensated for their time after completing both interviews. The nine interviewees were also the total number of participants who completed the course. By the end of Week 2, there were nine participants who had neither recorded their meditation practice nor participated in a virtual session. Twelve more participants quit engaging by the end of the course. Therefore, the attrition rate was 70%, and the retention rate was 30%.

The study was also limited by the number of participants who completed the course. Having more participants complete the course would have led to more conclusive evidence of the effectiveness of the course to retain and train its participants to sustain a mindfulness meditation routine. Considering that two-thirds of the students who showed interest in the course by signing the consent form did not commit to practicing past Week 2 is another indication of just how hard it can be for graduate students to integrate a new routine into their already busy schedules.

Another limitation was that it was impossible to compare the results of the Self-Efficacy for Mindfulness Meditation Practice because the survey was only published in 2020 and there are no studies, to my knowledge, which used the same self-efficacy survey.

Conclusion

The aim of the present study was a simple one: to understand how the design of an online mindfulness meditation course could support PhD students in sustaining a regular mindfulness meditation practice. Elements of the design influenced by self-efficacy learning theory seemed to help participants to develop a solid understanding of mindfulness meditation and sustain their own routine practicing mindfulness meditation. Six out of the nine participants who completed the 5-week mindfulness course were still practicing regularly 4 weeks post-course completion compared to only one out of the same nine participants before the course. Despite a rate of sustained practice comparable to other studies, there were still opportunities to improve the design of the course. Particularly, activities that bring participant awareness to how practicing mindfulness meditation positively impacts their lives could be useful.

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Appendix A

Pre-Course Feedback from Design Review 1

Course Title: Mindfulness Meditation for Graduate Students
Evaluation Date: 9/30/2021
Does the content use the appropriate medium for its purpose—such as the videos made by the instructor and links to other resources? Does the instructor add expertise and relevant examples to contextualize the content?
The course is well planned out and has a good progression from easier to more difficult practice concepts. The course has video during the first week and then none for the rest of the course, which feels a little unbalanced. Mindfulness lends itself well to audio, so it would be nice to include some audio elements into the course to walk students through the practice.
Do the videos, documents, pages, and images meet Universal Design standards?
Mostly. The videos don't have closed captions or a transcript, with the exception of the Thich Nhat Hanh video from YouTube. The picture on the syllabus needs alternative text. The rest of the course is just text, so it is accessible.
Was the course content easy to follow? What, if anything, could be changed about the visual design or the content structure to improve the user experience?
On the Week 1 Google sheet, it would be better to provide a link right in the assignment than to have students have to go to the Inbox to find it. You can do a Google sheet sharing link and change the end of the link to /copy to have it create a copy of the sheet for each person who clicks on it. (They will have to have a Google account.) There are no references to the Google sheet through the rest of the class. You might want to remind/encourage students to continue to use it to track their progress. I'm not sure why all of the content is in assignments. Are you intending on having due dates on them? Having them submit a reflection about how their practice is going?
Do the guidelines provide for constructive participation in online discussions? Should any additional information be provided regarding the online community?

I'm not sure why you are introducing discussions and Slack. There is no purpose (or reference) to the discussions after the first week. Pick one and stick with it for simplicity.

Were there any sections of the course you thought were unclear or needed better instructions? If so, which ones?

The instructions for the sections are straightforward and easy to follow.

There are no instructions about how students will be invited to the group/channel. The one link to Slack is a generic link to slack.com. (Since students receive an introduction to Slack they are familiar with it and probably don't require instructions on how to use it.)

On the Mountain Meditation there is a page number reference, but no other citation information.

I would have liked to have the resources integrated more in the course materials. It would be nice for students to know where they can get more information about each topic. I suspect the resource books would provide that additional information.

What, if anything, would you modify about the course?

There are a few typos throughout. I would add some pictures, color, or graphics to the course. It's a little bland.

Please provide any additional feedback about the course.

The course materials are sufficient that students could use only the information in the course to begin to form a mindfulness meditation habit. The Google sheet/log would be a very valuable resource for students.

Appendix B

Pre-Course Feedback from Design Reviewer 2

Course Title: Mindfulness Meditation for Graduate Students
Evaluation Date: 10/08/21
Does the content use the appropriate medium for its purpose—such as the videos made by the instructor and links to other resources? Does the instructor add expertise and relevant examples to contextualize the content?
The videos and text used for the course are appropriate. Many of the pages just include text, I'd consider adding bolded headers and maybe some colors, just to increase the visual interest on some of the more text-heavy pages. I haven't used Slack as a venue for weekly discussions, though I have used it a lot in general. One thing I'd think about is that having the weekly discussion be on canvas can help to focus conversations in a way that might not be as easy on Slack. I'd be curious to hear how this works out, though, since it's a novel idea for me.
Was the course content easy to follow? What, if anything, could be changed about the visual design or the content structure to improve the user experience?
The overall structure of the course was easy to follow. I'd consider making either the modules page or a page with links to each week's assignments the home page. The syllabus page is useful but probably not the main thing a student would be looking for whenever they load the course. Additionally, I'd consider combining the formal practice, informal practice, and slack discussion page into something like a "weekly overview" page, just to keep students from having to load into multiple pages to see what they need to do each week. For the spreadsheet that students will be using, you could add a template accessible somewhere on Canvas, just in case they miss the email from you. On the syllabus you mention that students will be doing introductions on a Canvas board, but I wasn't able to find the discussion board for introductions.
Do the guidelines provide for constructive participation in online discussions? Should any additional information be provided regarding the online community?
The Community section on the syllabus has some info about this. There aren't any specific guidelines listed, but I imagine that's not a big issue for this type of class.
Were there any sections of the course you thought were unclear or needed better instructions? If so, which ones?
As mentioned earlier, I wasn't sure where the introductions were to be done in the Canvas course as it is now. Adding some specific instructions for the weekly discussions would be helpful as a way to encourage participation even without having any grades or "requirements" in the course, especially for those that might not participate much otherwise. Perhaps something like "to get the most out of this course we'd recommend posting at least twice a week in the group Slack chat."

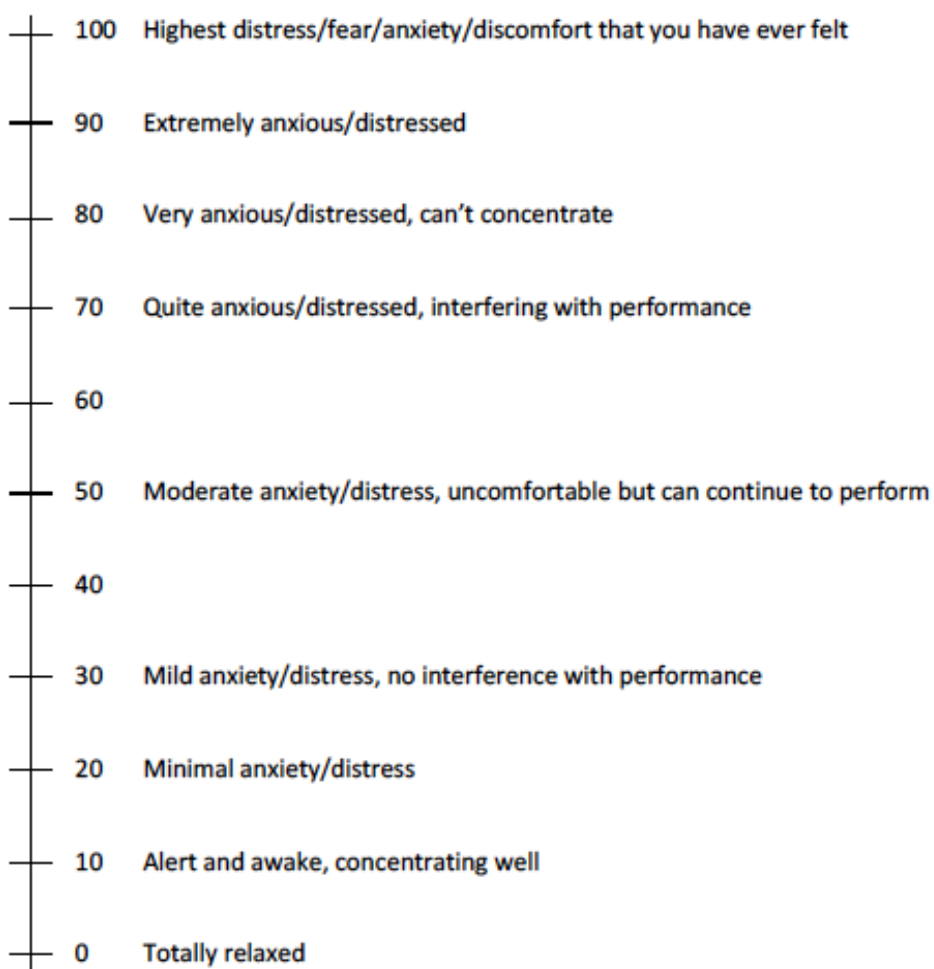| |
|---|
| **What, if anything, would you modify about the course?** |
| |
| **Please provide any additional feedback about the course.** |
| In the section about resources it might be helpful to add a brief summary of the suggested texts so that students can see if they might be of interest. |

Appendix C

Meditation Log

	Recommended Meditation / Duration in minutes	Actual Meditation	Actual Duration	Experience/ Reflections	Stress level before meditation (0-100 scale)	Stress level after meditation (0-100 scale)
Week 1						
Monday	Seated Meditation, 5					
Tuesday						
Wednesday	Seated Meditation, 5					
Thursday						
Friday	Seated Meditation, 5					
Saturday	Reflections					
Sunday	Reflections					
Week 2						
Monday	Mantra Meditation, 10					
Tuesday	Chores Meditation					
Wednesday	Mantra Meditation, 10					
Thursday	Chores Meditation					
Friday	Mantra Meditation, 10					
Saturday	Reflections					
Sunday	Reflections					
Week 3						
Monday	Loving-kindness, 15					
Tuesday	Eating Meditation					
Wednesday	Loving-kindness, 15					
Thursday	Eating Meditation					
Friday	Loving-kindness, 15					
Saturday	Reflections					
Sunday	Reflections					
Week 4						
Monday	Walking Meditation, 20					
Tuesday	Bells of Mindfulness					
Wednesday	Walking Meditation, 20					
Thursday	Bells of Mindfulness					
Friday	Walking Meditation, 20					
Saturday	Reflections					
Sunday	Reflections					
Week 5						
Monday	Group Meditation, 25					
Tuesday	Walking Meditation (informal)					
Wednesday	Group Meditation, 25					
Thursday	Walking Meditation (informal)					
Friday	Group Meditation, 25					

Appendix D

Subjective Units of Distress Scale (SUDS)

The distress thermometer –
Subjective Units of Distress Scale (SUDS)

Try to get used to rating your distress, fear, anxiety or discomfort on a scale of 0-100. Imagine you have a 'distress thermometer' to measure your feelings according to the following scale. Notice how your level of distress and fear changes over time and in different situations.

100	Highest distress/fear/anxiety/discomfort that you have ever felt
90	Extremely anxious/distressed
80	Very anxious/distressed, can't concentrate
70	Quite anxious/distressed, interfering with performance
60	
50	Moderate anxiety/distress, uncomfortable but can continue to perform
40	
30	Mild anxiety/distress, no interference with performance
20	Minimal anxiety/distress
10	Alert and awake, concentrating well
0	Totally relaxed

Appendix E

Items in Self-Efficacy for Mindfulness Meditation Practice Survey

Table 2. Rotated matrix after principal components analysis.

"During my practice of mindfulness meditation…"	Attention	Self-kindness	Emotions
1. I am able to be mindful of my breath	0.782		
*2. I am able to notice thoughts as they arise	0.823		
*3. When I set the intention, I am able to be in open awareness of my thoughts	0.739		
*4. I am able to notice when my mind wanders	0.764		
*5. I am able to be compassionate with myself when my mind wanders		0.809	
6. I am able to notice a thought arise without following it	0.579	0.518	
*7. I am able to be aware of my thoughts without judgment		0.820	
8. I am able to refocus my attention to the present moment when my mind wanders	0.500	0.514	
9. I am able to observe my impulses arise and choose how to respond	0.432	0.443	0.550
10. I am able to hold physical pain or discomfort with compassion		0.568	0.540
*11. I am able to notice emotions as they arise	0.404		0.773
*12. I am able to observe my emotions without responding immediately		0.400	0.689
*13. I am able to relate physical sensations in my body to my emotions			0.821
*14. I am able to maintain compassion toward myself		0.813	

Rotation method used was Varimax with Kaiser normalization. A principal axis factoring analyses with Oblimin rotation resulted in the same factors.
*Included in final 9-item scale.

Table from (Birdee et al., 2020)

Appendix F

Mid-Course Interview Protocol: Present Study

RQ 1: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

4. How do you describe your mindfulness meditation practice before the course began?

5. How do you describe your current mindfulness meditation practice?

6. How do you feel about your current mindfulness meditation practice?
    a. (probe) Do you feel like it's going well? If not, why?
    b. (probe) What aspects of your practice are going well?

7. How confident are you in your ability to effectively practice mindfulness meditation?
    a. (probe if not confident) What is it that makes you not feel confident?

    b. What would help you develop the confidence to practice mindfulness meditation?

8. How confident are you in your ability to sustain a regular mindfulness meditation practice long term?

9. Do you feel confident to meditate for the recommended amount of time each week? How has it been for you to increase the amount of time spent in meditation by adding 5 minutes each week?

RQ2: What factors, if any, contributed to participants' change in their meditation practice?

10. What do you think has been most influential in helping you to practice mindfulness meditation?

11. What aspects, if any, about the course do you think have helped you to practice mindfulness meditation?

12. Has the meditation log been helpful for your meditation practice?
    a. What about the meditation log has been the most helpful?

13. Were the Zoom sessions useful for your meditation practice?
    a. If so, what part of the sessions did you find the most useful?

14. During the Zoom sessions, did you share anything about your meditation practice? If so, did you felt encouraged by the instructor or other participants?

15. Participants who previously completed the 5-week program shared their experiences with meditation. Was it helpful to hear their stories? If so, what about their stories did you find most helpful?

Appendix G

Post-Course Interview Protocol: Present Study

RQ 1A: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

1. Has your practice changed since participating in the course? How so?

2. How do you describe your current mindfulness meditation practice? Is this different from the beginning of the course? How so?

3. How do you feel about your current mindfulness meditation practice?
    a. (probe) Do you feel like it's going well? If not, why?
    b. (probe) What aspects of your practice are going well?

4. Has participating in the course affected your confidence to practice mindfulness meditation? In what ways? How—can you give me an example?

5. Do you remember how confident you were at the beginning of the course? Has that changed? Why do you think it changed?

6. How confident are you in your ability to effectively practice mindfulness meditation today?
    a. (probe if not confident) What is it that makes you not feel confident?

    b. What would help you develop the confidence to practice mindfulness meditation? Group meditation

7. How confident are you in your ability to sustain a regular mindfulness meditation practice long term?
    a. What if this course were offered for two semesters—would you take it? Do you think it would help to sustain your practice?

8. Did you feel confident to meditate for the recommended amount of time of 20 and 25 minutes in the last 2 weeks of the course?

9. Self-efficacy survey related question example:

    a. In the survey you took it asked you to fill out about your ability to be in open awareness of your thoughts when you set the intention. Your ability to be in open awareness of your thoughts changed over the course. At the beginning of the course, you said rarely, but by the middle and end, you answered usually—why do you think your ability changed? Probe—can you give me an example of how you noticed this during the course?

RQ2: What factors, if any, contributed to participants' change in their meditation practice?

    10. Do you think participating in the course changed your mediation practice? How so? Do you have an example of how it did? Probe to get at factors.

    11. What motivates you to practice mindfulness meditation?

    12. Were there specific aspects in the course that helped you to practice mindfulness meditation? Probe as to what they were.

    13. Would you recommend this course to other PhD students? Why or why not? What would you tell them about the course?

    14. If there's only one thing you could teach someone else about this course, what would it be?

Appendix H

Interview Protocol: Pilot Study

Getting to know the participant:
1. Do you work? If so, what kind of work do you do?
2. Do you have a family? If so, how many kids do you have?
3. What activities are you involved with outside of work?
4. How has it been managing your work and family responsibilities in midst of the pandemic?
   a. Did the pandemic affect your work in any way?
5. How has it been managing your work and family responsibilities while pursuing a master's degree?
6. What has been the most challenging part so far in pursuing your graduate degree?
7. Why were you interested to participate in this mindfulness meditation course?
   a. Have you practiced mindfulness meditation before?

Research Question 1: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

1. How often did you practice meditation during the course? (probe: each week, over the last 2 weeks)
2. How do you feel about your participation? (probe)
3. How did participating in the course affect your participation?
   a. Was it helpful? Why or why not?
   b. Were there aspects of the course you found helpful?
4. How closely have you followed the recommended mindfulness meditation practice schedule?
   a. (If they have followed the schedule closely): Why do you think you have been able follow the schedule?
   b. (If they have not followed the schedule closely): Why are you not able to follow the schedule? Probe: Are you experiencing anything that is interfering with your ability to meditate? How so?
   c. What are your biggest challenges to practicing mindfulness meditation each day?
5. If you did not have the opportunity to participate in this online course, would you have pursued practicing mindfulness meditation anyway?
   a. If so, how would you have pursued it? For example, by reading books, finding another course to participate in, or drawing on your previous knowledge of meditation?
6. Do you think you will continue to meditate after the course? Why or why not?

Research Question 2: How do participants describe their experience of practicing mindfulness meditation?

1. What has it been like practicing mindfulness meditation these past couple of weeks?
2. Have you noticed anything different in your life since you began practicing mindfulness meditation?
   a. For example, at work or with family relationships?

      b.   Benefits?

3. Where do you usually practice mindfulness meditation? Why did you choose that place?
4. Do you have any favorite mindfulness meditation practices? What are they or why not?
5. Do you think practicing mindfulness meditation has helped you to better handle stress?
    a. If so, can you give me an example?
6. Do you know what awareness is?
7. Do you think practicing mindfulness meditation has helped you have more awareness?
    a. If so, can you give me an example?
8. Do you think practicing mindfulness meditation has helped with your creativity?
    a. If so, can you give me an example?
9. Is there anything that you like about practicing mindfulness meditation? What do you like or why not?
10. Is there anything that you dislike about practicing mindfulness meditation? What or why not?

Research Question 3: How, if at all, does social support influence their participation in mindfulness meditation?

1. Do you participate in the mindfulness meditation Slack channel?
2. How often do you check the channel?
    a. How often do you post to the channel?
3. How do you feel about the online discussion?
    a. Has it been helpful in developing your mindfulness practice? Why or why not?
       If yes, can you give an example?
       If not, is there something that you think would have been helpful?
4. Are there things that you like about the Slack channel? If yes, what? What do you like most?
5. What, if anything, do you dislike about the Slack channel? Probe.
6. Have any of your fellow practitioners shared anything on the Slack channel that you felt was especially helpful?
    a. If so, what was it that they shared? Why did you find it helpful?
7. Do you wish there was anything different about the Slack channel?
8. Is there anything that could make the Slack channel more helpful for you?

Interview Questions (post-course completion)

Research Question 1: How, if at all, does participating in an online mindfulness meditation course affect participants' meditation practice?

1. How often did you practice meditation during the course? (probe: each week, over the 5 weeks)
2. Have you continued to meditate? Why or why not?
3. Do you think the 5-week online mindfulness meditation course was effective in helping you to create a habit of practicing mindfulness meditation?
    a. If so, in what way?
    b. If not, why was it not effective?

4. Do you plan to continue to practice mindfulness meditation?
    a. If so, how often do you plan to practice?
        i. Do you think it will be easy to maintain your intended practice schedule? What, if anything, will make it difficult to maintain a regular practice?
    b. If not, why?
5. What, if anything, was the most useful thing you learned from the online course?
6. What, if anything, was the most useful thing you learned from the online course which will help you to maintain a habit of practicing mindfulness meditation?
7. In our first interview, you mentioned (blank) was a challenge in practicing meditation. Did you find that challenge became easier to handle over time? How did you manage this particular challenge?
8. What other challenges, if any, did you experience during or after the course in regards to your meditation practice?

Research Question 2: How do participants describe their experience of practicing mindfulness meditation?

1. What has it been like practicing mindfulness meditation since our first interview together during Week 4?
2. Have you noticed anything different in your life since our last interview?
    a. For example, at work or with family relationships?
    b. Benefits?
3. I asked you this before, but have you noticed anything different? Do you think practicing mindfulness meditation has helped you to better handle stress?
    a. If so, can you give me an example?
4. Do you think practicing mindfulness meditation has helped you have more awareness?
    a. If so, can you give me an example?
5. Do you think practicing mindfulness meditation has helped with your creativity?
    a. If so, can you give me an example?
6. What do you like most about practicing mindfulness meditation?
7. What, if anything, do you dislike about practicing mindfulness meditation?

Question 3: How interested are participants to return to model behavior and share their experiences with participants in the course when it is offered for the second time?

1. Would you be interested in participating as an "old-timer"/mentor for new participants who take the course in 2022?
2. How would you change the class? What would you do differently?

Appendix I

Pilot Study Comprehensive Findings

Table 10

Pilot Study—Data Collection & Analysis

Research question	Data source	Analysis
RQ1: How effective, if at all, was the course in helping students reduce stress and anxiety?	Pre- and post-course Perceived Stress Scale (PSS) self-assessment.	Due to small sample size, I conducted descriptive statistics for the pre-post surveys and looked for change. An average score for the group was calculated for both pre-post surveys and compared to determine change, if any.
	Participants recorded their pre-post meditation levels of stress on their meditation logs.	I conducted descriptive statistics for the pre-post meditation stress levels and looked for change.
	Participants were asked about how they were able to handle stress during the pre- and post-course interviews.	This qualitative data was developed into codes which were grouped into themes, and the data from the themes was then interpreted.
RQ2: How effective, if at all, was the course in helping students to increase mindfulness?	Pre-post Mindful Attention Awareness Scale (MAAS) self-assessment.	Due to small sample size, I conducted descriptive statistics for the pre-post surveys and looked for change. An average score for the group was calculated for both pre-post surveys and compared to determine change, if any.
	Participants were asked about their mindful awareness during the pre- and post-course interviews.	This qualitative data was developed into codes which were grouped into themes, and the data from the themes was then interpreted.
RQ3: How effective, if at all, is a 5-week mindfulness meditation course in helping students to	Participants recorded daily the type of meditation practice and duration in their meditation log.	Each week the average number of times and duration of time practiced were compared to the recommended schedule.

| form a habit of regularly practicing mindfulness meditation?		
	Participants were interviewed about their habits of practicing mindfulness meditation.	This qualitative data was developed into codes which were grouped into themes, and the data from the themes was then interpreted.
RQ4: How do participants describe their experience of practicing mindfulness meditation?	Participants were asked to write their reflections/experiences each week on their meditation log.	This qualitative data was developed into codes which were grouped into themes, and the data from the themes was then interpreted.
	Participants were interviewed about their experience practicing mindfulness meditation.	This qualitative data was developed into codes which were grouped into themes, and the data from the themes was then interpreted.
RQ5: How can the 5-week mindfulness meditation course for graduate students be improved?	Two instructional designers were asked to review and provide feedback on the design of the course. Two professors who research/teach mindfulness meditation were asked to review and provide feedback on the course content.	The feedback was used to modify the course before participants enrolled.
	Participants were asked in the interviews how the course could be improved.	This data is used to modify the course in the current study.

RQ1: How effective, if at all, was the course in helping students reduce stress and anxiety?

Participants took pre-post Perceived Stress Scale (PSS) self-assessments. A higher score indicates higher stress levels. The class average for the pre-course score was 26.75, whereas the post-course was 17.5, thus decreasing somewhat. All four participants (one participant who completed the course took the pre-course assessment but not the post-course assessment and so was not included) had lower stress levels when they took the post-course survey.

Table 11

*Comparison of Pre-Post Perceived Stress Scale (PSS) Results*
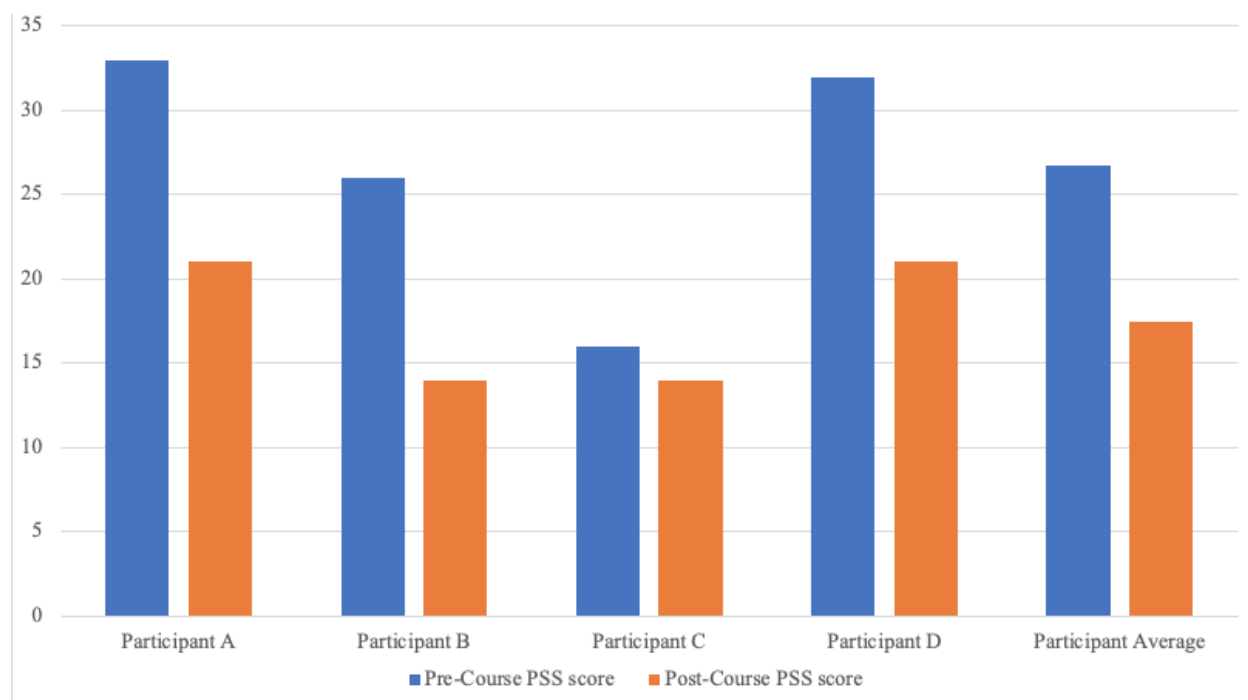
In addition to taking pre-post PSS assessments, from Week 2 the participants recorded their stress level on a scale of 0-100 (low to high stress levels) directly before and after each meditation practice. Usually there was a trend among all participants to have a lower stress level after meditation but not always. For example, on one occasion a participant recorded a slightly higher stress level after meditation than before. Under the reflections section of his meditation

log, the participant described being exhausted, having trouble focusing and ending up worrying about the upcoming week, which explains why his stress level was even higher after the meditation.

Figure 13

Stress Level Directly Before & After Meditation
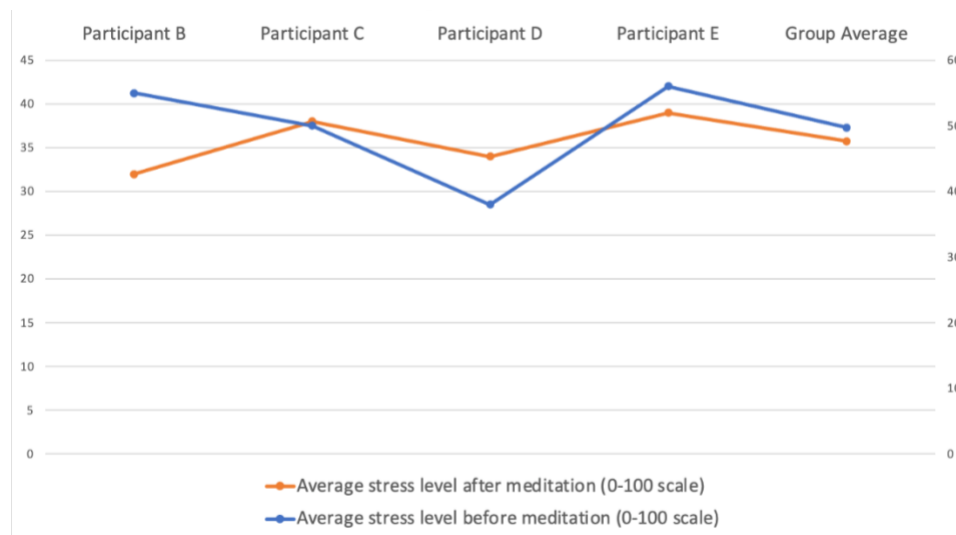
During the interviews, I asked participants if they thought practicing mindfulness meditation helped them to better handle stress. The answers were mixed. A couple participants said they thought it did, but because stressors in their lives were constantly changing, it made it difficult to determine if there was a relief in stressors or if they were indeed better able to handle stress because of practicing mindfulness meditation. There were two participants, however, who were confident that practicing mindfulness meditation had helped them to better handle stress. One of the participants shared a difficult time during the pandemic and how he recognized, during the course, the benefit from practicing meditation:

> I was going through my [master's] program, especially when the pandemic hit, it hit right when my coursework finished up. And so I lost, like, all of my external motivating factors, at the same time as everything shut down. And so it was a very, very isolating

experience for me. And I just found myself getting caught up in a lot of, like, getting, falling behind on my work, and then getting overwhelmed because I'm behind on my work, and getting very, like, berating myself for getting behind on my work, which just would use up all of my mental stamina, which made it impossible to do the work, which then starts the cycle over again.

And being able to pull myself out of that and into the present moment to actually be able to evaluate what I am truly feeling. Not in my head, not what I'm perceiving as this, like, huge thing on my plate that I just can't tackle. But actually putting myself in the moment like—Where am I at? What am I feeling? What can I do right now? [That] was really helpful to kind of get out of that loop and get things started, to actually bite off a little piece and not feel overwhelmed and not end up spending more energy, just worrying about the things I have to do instead of just doing them.

Another participant said that even though he still felt stress and discouragement at times, he felt the state of mind facilitated through practicing mindfulness meditation had helped him to have a better perspective on how to approach challenging times. For example, his practice helped him to be in much better straits during circumstances that would normally have made him feel more discouraged or pessimistic.

RQ2: How effective, if at all, is a 5-week mindfulness meditation course in helping students to increase mindfulness?

To answer the second research question, the participants took pre-post Mindfulness Attention Awareness Scale (MAAS) assessments. The MAAS is a 15-item questionnaire designed to assess a core characteristic of mindfulness—a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present, simply observes

what is taking place (Brown & Ryan, 2003). The assessment contains a collection of statements about one's everyday experience. The participants were asked to indicate how frequently or infrequently they currently had each experience by using a 1-6 (almost always to almost never) scale. To score the scale, I computed the mean of the 15 question items. Higher scores reflect higher levels of dispositional mindfulness.

As a group, the overall mean increased slightly, but the results of the 4 participants were mixed. One participant's score increased dramatically from pre-course (1.3) to post-course (3.3). One other participant's score slightly increased, whereas two participants' scores slightly decreased.

Figure 14

Mindfulness Attention Awareness Scale (MAAS) Pre- and Post-Course Results
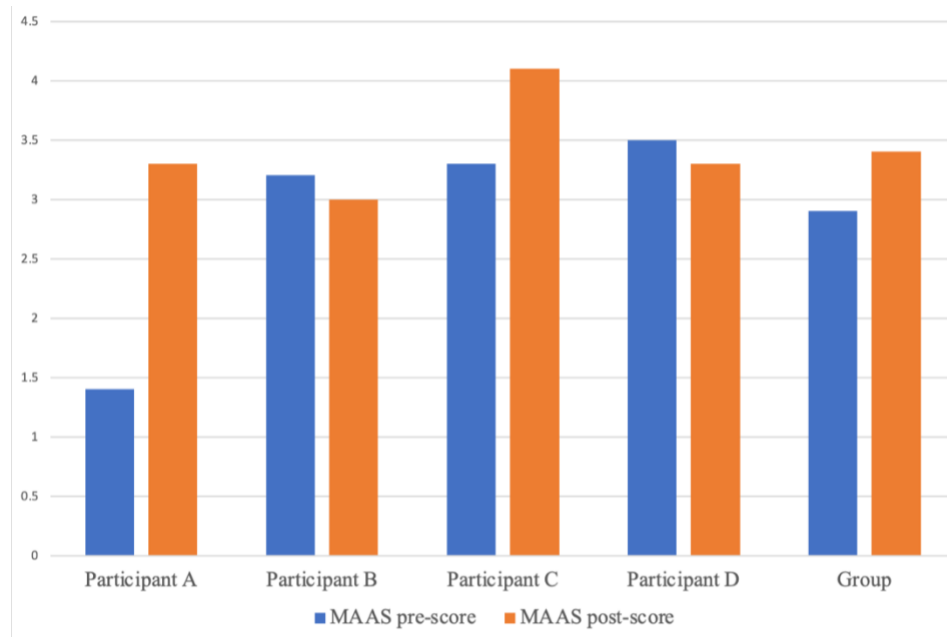
During the interviews, the participants indicated they felt their present moment awareness had increased. One participant compared his transformation through mindfulness to a college course he had taken on birds of prey as an undergraduate. This intense 2-week course taught students to identify birds of prey. He said that while he cannot always identify the birds in the

sky, ever since taking that course, he always gazes up at the sky to see what birds might be flying above. Similarly, he felt that since taking the mindfulness course, he will always have an awareness of mindfulness and take opportunities, whether walking or other daily activities, to bring awareness to the present moment. He said,

> A class like this has helped me with … changing my perspective and reminding me to be mindful and to take time to be mindful even when it seems counterintuitive. So even if I don't remember all the techniques or don't end up in a strong routine that I do it all the time, I will always take with me that bit where I continue to be mindful when I can and look for ways to be mindful.

Participant A said she noticed herself being more mindful in regular situations. During everyday tasks, she noticed herself being more mindful and not being in a "constant thought stage." When she did have those "constant thoughts," she was able to recognize them and not be consumed by them. Another participant, who works in HR, said she noticed at work how often when she talked to employees and other people, her thinking jumped ahead of the conversation taking place. She became intentional to be present with the person standing in front of her and to be in the moment by paying attention to what she was hearing and listening to rather than thinking of the next thing to say.

RQ3: How effective, if at all, is a 5-week mindfulness meditation course in helping students to form a habit of regularly practicing mindfulness meditation?

Pre-Course Meditation Practice

To begin answering the third question, I wanted to understand what the participants' meditation practice was like before the course began and their interest in meditation. Several participants said that they previously had an interest in practicing mindfulness meditation or had

even practiced it some on their own, but they did not have an established routine. To them this study sounded like a good opportunity to learn more and build a habit of practicing mindfulness meditation. They felt taking the course gave them accountability, which then helped them to stay motivated and compelled them to continue practicing. One participant used to practice Tai Chi, which involves practicing mindfulness while doing various physical poses and stretching. He noted that meditation was encouraged by his religion. He distinguished that Eastern mindfulness practices were more about the connection between body and breath, whereas meditation in his religion involved an informal "intellectual sort of just spiritual pondering."

Another participant answered that in her psychology program, they always talked about meditation and how beneficial it can be. As a proponent of it, she felt like a hypocrite for espousing its benefits without practicing it herself. She also experienced a lot of chronic pain issues, and doctors had recommended meditation to her in the past. She saw participating in the course as a good opportunity for herself to develop a skill that she could eventually use to help her clients in the future.

One participant, who is a musician, previously had a French horn teacher who was into meditation for breathing and taught the participant breathing techniques that made him aware of controlling his breath to become a better French horn player. Another reason this participant was interested in mindfulness meditation was that over the last few years, he noticed he experienced seasonal affective disorder around late fall, though he had not been formally diagnosed with it by a doctor. He expressed that he would prefer not to take medications for the disorder and hoped that meditation could make the difference.

Weekly Recorded Meditation Practice

I asked the participants to record their type of meditation practice and duration for each individual session they did throughout the week in their meditation logs. The recommended schedule was to practice three formal meditations, defined by either a seated or walking meditation, and two informal meditations, defined by practicing mindfulness while simultaneously doing another activity, such as a chore. The first week began with a 5-minute meditation, and each subsequent week the duration was increased by 5 minutes. By Week 5, they were to practice for a total of 25 minutes for each formal practice. Here are the results of the data the participants recorded in their meditation logs.

The bar graph below depicts the number of times practicing formal meditation each week. The number of times on average peaked at Week 3 and then decreased to a low in Week 5. Only one participant consistently practiced a formal meditation the recommended 3 times per week throughout the 5 weeks.

Figure 15

*Number of Times Practicing Formal Meditation Each Week*
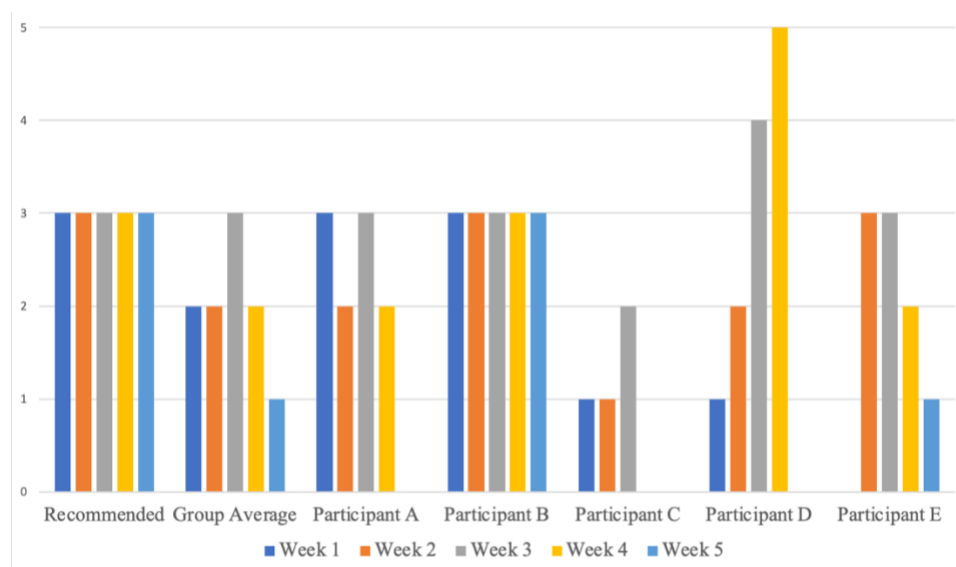
During the interviews, four out of the five participants mentioned that they had gotten sick at some point during the course, which of course impacted their practice. Three of the four

came down with physical illnesses, and one participant dealt with a mental illness in the form of depression. Most of these participants got sick towards the end of the course, which could partly explain why the number of times they practiced each week decreased in the last 2 weeks of the course. Participant E did not practice at all for the week that he was sick because he was sleeping most of the day, and meditation was not "front of mind." But as he recovered, he re-introduced his practice. He wishes he had practiced during the week he was sick because he thinks practicing meditation might have helped him to get better.

The next bar graph shows the average number of minutes participants practiced during a single meditation session for each of the 5 weeks. Like the weekly frequency of practicing meditation displayed in the bar graph above, as a group the average number of minutes per session peeked in Week 3, whereas the recommended practice was to continue increasing by 5-minute increments each week through Week 5.

Figure 16

*Average Number of Minutes for Each Formal Meditation Practice Each Week*
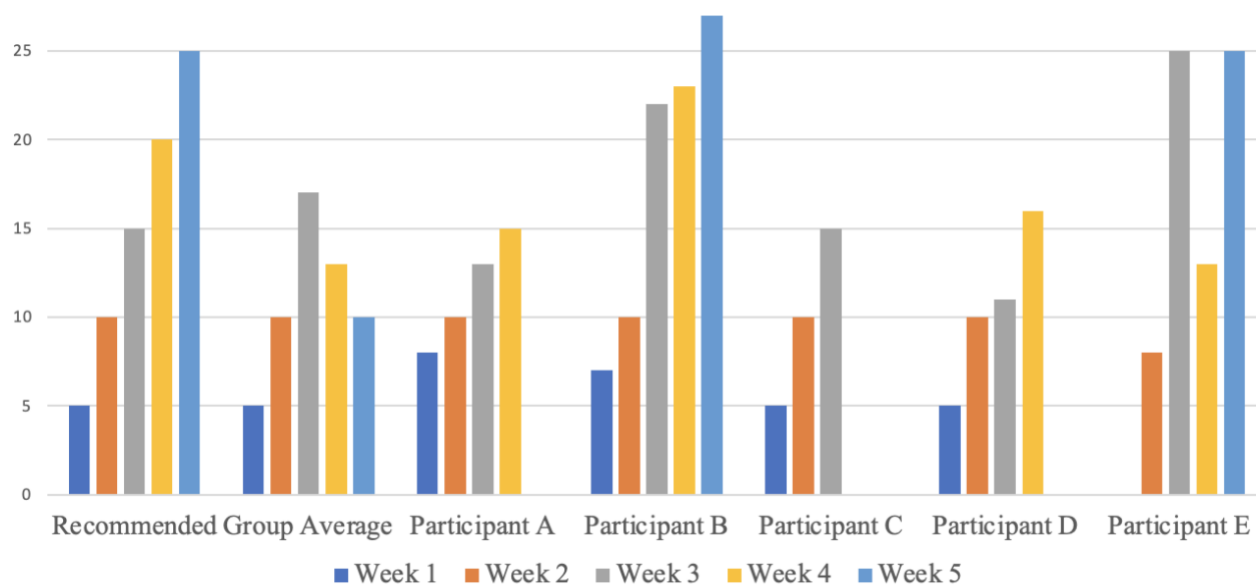
The graph below shows how many total minutes the participants practiced formal meditation each week. Once again, the total minutes of meditation practice should have steadily increased each week; however, after increasing the first 3 weeks, the average time as a group dropped during Weeks 4 and 5. Again, the participants who were physically or mentally ill during the last 2 weeks of the course were likely impacted by how much they were able or willing to practice.

Figure 17

Total Minutes of Formal Meditation Practice Weekly
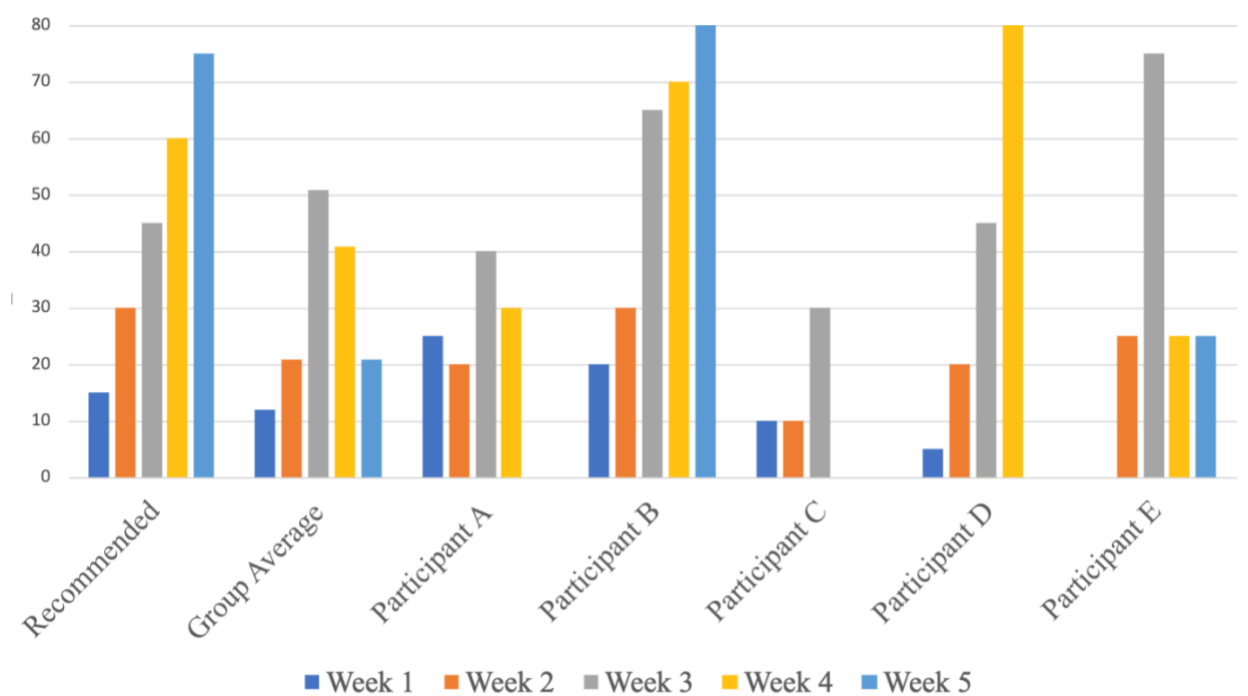
Sticking with a Habit of Meditation

When asked what, if anything, was the most useful thing they learned from the course which will help them to maintain a habit of practicing mindfulness meditation, several participants mentioned being exposed to several different types of meditation. For example, Participant D mentioned that by learning about different types of meditation other than just a

seated formal meditation, he felt he had more options to practice meditation on those atypical, busy days in which he may have missed a formal seated meditation in the morning. He could practice mindfulness in the evening while doing the dishes and still get that practice which he felt would help him to maintain the frequency that he was aiming for after the course.

Participant B felt that being introduced to the walking meditation was motivating because in addition to practicing mindfulness, he was also able to get some physical activity, which is something he needed as well. He said,

I feel like I have noticed, I mean, just the realization that the mindfulness is something, it's important to me that I do take that time, that even though it's counterintuitive, it's valuable. Whereas before, I mean, occasionally, every once in a while, you know, I've always enjoyed like being out in the wild places and stuff like that, but as far as making it any sort of routine, never been something I've done.

He also added that developing a routine of practicing mindfulness became easier with time.

When asked what would motivate them to continue practicing mindfulness meditation, several participants mentioned the awareness of the benefits themselves. Participant A answered, "The realization of the benefit itself. It made me feel more calm, and I felt like I handled stressful situations better throughout the day." Participant D said,

Having some sort of experience to back up this desire of, like, I want to get better at meditating, I want to have a more regular practice—and I know what it feels like to have that. I feel like that was, for me, that is kind of the most effective type of method of motivation.

The same participant also explained that one of the most important benefits that he became aware of was in his ability to focus his attention after getting distracted. For example, he may

have set aside time to do schoolwork, but then he would get distracted by feeling overwhelmed

by his workload, interruptions, or other low-priority tasks on his to-do-list. When those types of

distractions happened, he found himself being more capable of coming back to the original task

that he wanted to be working on rather than letting other distractions pull him too far off course.

He was able to refocus his attention by doing an in-the-moment meditative practice of

recentering and focusing on his breath as a kind of reorienting back to his original task.

Participant B described practicing meditation this way:

> I have enjoyed it. It's not one of those things, where I'm, like, looking forward to it. But
>
> like so many things, you know, we have all these stimulus and, and pressures. But when
>
> we actually take time to do something that seems like it's wasteful, it actually is fruitful
>
> instead, you know, exercise—perfect example. It's hard and makes a busy schedule to set
>
> aside time to do things like running, walking, exercising, but once you do that, you're,
>
> like, oh, yeah, why don't I do this all the time? Yeah. It's the same with the meditation.

Noticing these benefits helped the participants to continue practicing mindfulness meditation.

Challenges to Practicing Meditation

The most common reason for the participants, both those who completed the 5-week

course and for those who dropped out at some point, to not meditate came down to time

management. Participant D explained, "I'm very bad at establishing routines. And that's, that has

been the largest challenge for me is trying to consistently find a time that, that works, especially

because my schedule day to day is just very erratic." Yet there was a realization, as Participant E

put it,

> If I don't give myself time to quiet my mind, it will never just quiet itself. And I think that
>
> being purposeful and intentional in doing that really helps. So that's kind of why I've

decided to set that time aside to do it… . [I]t feels like in the world I live in today, the last

thing people want to do is be alone with their thoughts. I think it actually should be the

first thing to do.

Participant C reiterated the importance of setting an intention for the practice, explaining,

For me it's, like, the intentionality of it, that's what I've come to realize, like, this

course and the exercises, that I have to be very intentional in setting the time, and then

even in, like, the informal practice of it, realize that it's an intentional, informal moment.

In the post-course interview, the participants were asked what, if anything, would make it

difficult to maintain a regular practice. Similarly, their answers had to do with planning ahead

and the intention to schedule the time to meditate into their schedules. One participant said, "I

think the biggest thing that will make it difficult will be a lack of, like, planning ahead." He

realized that he had not made meditation a priority compared to other things that he had to do.

However, after falling into a depression during the final week of the course, he realized just how

important it was to prioritize the time to practice meditation. During the interview 2 weeks post-

course, he explained,

These last few weeks have really shown me that not only is it very, very helpful to

recontextualize meditation as one of the highest priority items that should be coming

before other tasks … but also that I am capable of doing so.

I sent an email to the six participants who dropped out of the course asking what made

them decide to quit. There were three participants who responded. One participant said that she

was already busy because of full-time work, school, and family. She had meditated before and

wanted to participate in the course but making the time to do that was stressful, so she dropped

out for her "mental sanity." She felt herself getting behind early in the course and did not think it

would be possible to catch up. Another participant said that remembering to meditate added more stress to an already busy schedule. The third participant travelled out of state to attend a family member's funeral in the second week, during which she did not have time to sit and meditate. By the time she returned, she felt like she was too far behind in the class to catch up.

A couple of participants mentioned that the duration of the meditations was difficult. One participant suggested that increasing 5 minutes each week was too much of a jump and that it might be better to suggest an increase in the amount of time for meditation but to emphasize that it is better to do some meditation than none. However, another participant said that even practicing for 15 minutes was difficult, and she appreciated that I had mentioned that if anyone cannot do it, that it is okay and to just do as much as one can.

Most of the participants agreed that informal meditation was more difficult than formal meditation. For Participant B, it was easy to fit the formal meditation into his day in the morning because he would get to his office early where it was quiet, and he planned time during the day to take a few minutes to practice. Eating meditation, on the other hand, was difficult to do for him because he always ate meals with his family, including his young kids. During the focus group, Participant A asked for clarification on how to do informal meditations. Participant C said that informal meditations were the hardest ones to remember to do since one assignment was to do chores meditation, and a lot of times, she did not end up doing chores because she was spending time doing homework. This gave the instructor an idea to change one of the informal meditations to be a homework meditation.

One student expressed frustration in not knowing for sure if she was doing the mindfulness meditation practice as she was supposed to. I encouraged this student to fully experience these feelings of uncertainty because sitting with those uncomfortable feelings of

doubt, fear, anger, or, whatever the "negative emotion" may be is a perfect opportunity to practice mindfulness meditation. There is a misconception that mindfulness is about clearing the mind or even liberating oneself from negative emotions, but, quite the contrary, it is more about fully experiencing the whole range of human emotions or, as Jon Kabat-Zinn puts it in the title of his book, "full catastrophe living."

Participant A struggled with having an idea of what meditation should look like and then judging herself or her meditation when it did not turn out the way she thought it was supposed to. She explained, "I've had a lot of that judgment come in … like angry with myself for not being able to just stop thinking and be calm." But then she also said that it has been an everyday process she has been working through and that it has been getting better. Additionally, she thought the TED talk on judgment was helpful because she could relate to the same frustrations described in the talk.

Post-Course Intentions to Practice Meditation

All five students who completed the course indicated in interviews conducted 2 weeks after the course completed that they intended to continue practicing mindfulness meditation. Participant E had been practicing about two days per week since the course ended. He also had gotten sick towards the end of the course and was just starting to feel well enough to resume his practice. He intended to practice 2 to 3 days a week for 10 to 15 minutes. Another participant was also just getting back into practicing after having fallen into a depression the last week of the course. He intended to practice 4 to 5 times per week and felt confident that he could maintain a regular practice because he had proven to himself throughout the course that he could. Participant A had been practicing 3 to 4 times per week since the end of the course and intended to practice every day for about 10 minutes. Participant C did not specify how often she intended

to practice but replied, "I don't know how consistently, but I hope that I can be a little bit more intentional in the effort."

RQ4: How do participants describe their experience of practicing mindfulness meditation?

Meditation Preferences

Throughout the 5-week course, the participants were exposed to numerous formal and informal meditations. Participants tended to gravitate towards one to two types of meditations meaningful for them. Two participants preferred the walking meditation. Participant B described,

> It's movement. It's a certain amount of newness, but it's almost like a white noise, to just cut out everything else…the walking can sort of form that way, a little bit of motion through the world, but you're not paying attention to any particular thing. Instead, you're paying attention to your breathing.

His approach to hiking completely changed. Instead of letting his mind wander or always thinking about the goal of hiking, he would focus on his breathing and being in the moment— being where he was at the time instead of concentrating on where he was going. Participant E also preferred practicing the walking meditation which he incorporated into his existing routine of walking to and from work for an hour usually 3 times a week. Before the course, he typically would do a lot of pondering, problem solving, and mind wandering on those walks, but the class introduced him to being aware of the breath, body, and mental state while walking. Here is how another participant described doing the walking meditation for the first time:

> This was my first walking meditation. I did "in, 2, 3, 4" and "out, 2, 3, 4." I found it to be enjoyable and relaxing to be outside; however, I noticed my mind wander quite frequently with the external stimuli. When this happened, I tried to first reorient myself

through the breath, then becoming aware of my senses, such as the feeling of my feet on the ground.

One participant, who was a swimmer, enjoyed the seated meditation, which helped her become very aware of her breath and its relation to her lungs. She wrote in her meditation log:

Don't insects move wings and legs by breathing? What am I moving? I wonder if the inside surface of our lungs is like looking at our tongues. I know there is an incredible amount of surface area. I am also realizing that air has so much more particles than I thought. It is the only way breathing works! We don't have to gasp and hold our breaths to take advantage of the oxygen/carbon dioxide exchange. We can breathe naturally.

Several participants mentioned they appreciated the switch to the loving-kindness guided meditation in Week 3, and the practice was even emotional for them. Participant E described loving-kindness meditation as "wonderful," adding,

I found that when I do it, it's usually not the concentration part that's a problem. For me, it's more of trying to internalize and understand where energy is coming in and out of my body and how I'm expressing it. And so those mantra things are super helpful for me. I mean, you know, I was, like, near tears this morning, just trying to do it. It was good being aware of those things and just trying to give yourself a break, especially during these times.

Another participant wrote, "I found the loving-kindness meditation very powerful, even getting emotional. Felt an overwhelming sense of love, kindness, and gratitude." Nonetheless, not all the participants enjoyed the loving-kindness meditation. One participant noted that the prompts during this guided meditation spurred thoughts and tangents that made it difficult to focus. This participant preferred meditating in silence or with a white-noise track, such as running water.

Frustrations with Meditating

The challenges of practicing meditation itself varied among the participants and were noted at different times throughout the course. The most notable frustrations expressed were maintaining focus on the breath, practicing non-judgment, and physical discomfort. One participant noted in the meditation log in Week 1, she had trouble focusing on her breath the very first meditation. Another participant, who did a formal sitting meditation during Week 3 at the end of a stressful day, said, "The anxiousness of the tasks that I didn't accomplish kept presenting themselves repeatedly, making it hard to focus on the moment." He went on to say he thought if he had practiced meditation earlier in the day, he would have been more relaxed and productive throughout the day.

Although maintaining focus on the breath was challenging for several participants, these same participants also felt that practicing meditation helped to improve their ability to refocus during the day after getting distracted. Here is how one participant described his ability to refocus his attention when he had scheduled time to work on his thesis or another task but found himself being overwhelmed, looking for a distraction, or getting distracted by interruptions or lower priority tasks on his to-do-list:

> When those kinds of distractions would happen, I found myself being just a little bit more capable of coming back to the original task of being able to recognize what I wanted to be working on and to not let those other things pull me away. And usually that was through some sort of, even just in the moment meditative practice of just recentering, you know, kind of setting everything down for a second, taking a moment, focusing on my breath, and kind of reorienting, like, a little reset, so that I could come back to my original tasks.

Another challenge for some of the participants was practicing non-judgment. In the third formal meditation of the first week, one participant wrote she was trying not to judge her thoughts, but she had a difficult time with it. One emotion that kept coming up was a feeling of self-doubt as to whether she was practicing the meditation correctly. During the interview, she also mentioned dealing with judgment as a frustration but said that she felt like she was improving in this aspect. She felt the TedTalk by Dr. Shauna Shapiro which addressed dealing with feelings of judgment was helpful.

Physical discomfort was another challenge experienced by one participant in the first week. He said he had trouble finding a comfortable position because of tightness in his hip flexors and mid-back which distracted him from the practice. During the next formal meditation, he sat on a pillow, which made it easier to get into a comfortable position.

Most of the participants felt that the informal meditations were more difficult than the formal meditations. One participant wrote that when she was doing the chore meditation, her attention would be focused on the task or other thoughts, which made it hard to concentrate on the breath while doing the chore. Participants found they needed to practice the informal meditations during activities that made sense for them. For example, one participant who had young children did not practice the eating meditation because meals were a time to focus on his family. Another participant said that she was usually busier doing schoolwork than having time to do chores for the chores meditation. One participant described doing an informal meditation while waiting for the bus to arrive:

> There was a soft breeze, which was helpful to bring my attention to my body in the
>
> moment. I looked around at the many trees, flowers, bushes, and buildings that I usually
>
> filter out. It was incredible to see how much detail there was, how much I was able to

observe just from that one small spot. I paid attention to the sounds of the cars as they

passed by, seeing if I could differentiate the sound of the rubber tires along the road from

the mechanical noise of the engine. It was a very enlightening experience.

This was an excellent example of how a student applied the concept of informal meditation to an

activity that was not necessarily suggested in the course.

Creativity

All the participants thought practicing mindfulness meditation would help one to be more

creative; however, only one participant felt he had creative outlets currently in his life to verify.

The participant who felt he had creative outlets due to his profession explained that getting into a

state of mind that is less judgmental, which one purposefully practices as part of meditation, is

essential for one's creativity to thrive.

You eventually … critique things that you've iterated but not being judgmental in a

personal way towards your work and what you're doing, … and that's what lets your

creativity flow. Like, to think iteratively, it's all about overcoming, like, inhibitions,

and … it's more of an improv state of mind than a structured and constrained state of

mind.

In other words, by practicing non-judgment towards oneself, a person is better able to observe,

understand, and make judgments of how things are—but not necessarily what bearing that has on

one's character.

Empathy

A couple of participants mentioned that the practice had made them more empathetic

towards other people. Participant E explained that the practice had helped him have more

empathy for himself. According to him, when caught up in a frustrating situation and falling into

the trap of self-pity, one ends up focusing on the pain rather than trying to analyze and understand how and why one is feeling a certain way. The practice of mindfulness allows practitioners to accept themselves and their feelings just the way they are, which then opens a space for finding solutions. Just as the practice helped him to be more empathetic with himself, it helped him to be more empathetic with others.

In the post-course interview, this participant expanded more on how practicing mindfulness meditation had helped him gain more empathy for others. He said that in the past year, he would often find himself in complex thought patterns in which he would begin by trying to mentally solve problems that were sources of stress in his life, which would then lead to thinking about choices he had made in the past, mistakes from the past, and negative interactions with others from the past, all of which became difficult not to negatively affect his self-esteem and cause him to become "inward criticizing." He said, "Whenever I find that my interactions with others are less empathetic, or less charitable, that usually is a sign that I'm not being very empathetic or charitable with myself in that moment." But, for him, practicing mindfulness created a self-awareness that was intentional and self-caring. Increasing awareness of the self, which made him more aware of his needs and what he needed to do to address them, also made him more empathetic. Eventually he concluded that one of the most important reasons why he practices meditation is "trying to help you play a better role in the world, and one of the ways you do that is by playing a better role within your own self."

RQ5: How can the 5-week mindfulness meditation course for graduate students be improved?

Course Design

In this section, I will describe some of the original course feedback I received before starting the course from four people I requested to review the course—two people from a design

perspective and two people from a content perspective. Then, in the following chapter sub-section, I will discuss how I plan to modify the course for the current study based on feedback and experience from the pilot study. The 5-week course titled Mindfulness Meditation for Graduate Students was designed in Canvas. The design of the course went through two phases. In Phase 1, I asked two students in ITLS, one in the master's program and the other in the PhD program, to review the course in Canvas and to provide me feedback mostly on the design of the course. In Phase 2, I asked two professors well-versed in mindfulness meditation to review the course content. The first professor viewed the content from a researcher's perspective since he researches mindfulness meditation himself, whereas the second professor viewed the content more from a teaching perspective since he taught mindfulness meditation for many years. The two students who reviewed the course in Phase 1 provided me with written feedback by answering seven questions related to the content, meeting Universal Design standards, navigation, online discussion, and recommended modifications.

Design Reviewer 1—Feedback

The first reviewer said, "The course is well planned out and has a good progression from easier to more difficult practice concepts." She noted that there were videos in the first week of the course but none after that, which felt "a little unbalanced." I ended up making weekly instructor videos to explain the practice and key concepts for the week. Also, I added a few TedTalk videos on important topics related to mindfulness to help facilitate discussion. The first reviewer also recommended including some audio guided meditations to help walk students through the practice.

The videos, documents, pages, and images mostly met Universal Design standards; however, the reviewer pointed out that only one of the videos, which was from YouTube, had

closed captions, and the picture on the syllabus needed alternative text. When I recruited students for this study, I added a question on the consent form asking if they had any auditory or visual impairments requiring modification of the course in some way, such as closed captions or alternative text. It turned out none of the participants requested course modifications for such impairments. If there had been a student who made this request, I would have modified the course to accommodate their needs.

At the time of the review, there were no instructions on how to access the Slack channel, but those instructions were added later. Additionally, while I had provided some references in the syllabus, this reviewer suggested to integrate the resources throughout the course materials so that students knew where to obtain more information about each topic. Furthermore, the reviewer encouraged me to add more pictures and graphics to the course since it was "a little bland." The reviewer thought the meditation log would be "a very valuable resource for students."

Design Reviewer 2—Feedback

As the first iteration was somewhat text heavy, the second reviewer recommended adding bolded headers and some colors to increase the visual appeal of the pages. This reviewer thought that Canvas discussions may be better than Slack discussions because it would be easier to focus the discussion topics. The reviewer also suggested having a "weekly overview" page combining the formal practice, informal practice, and Slack discussion page so students would not have to go to multiple pages to see what they needed to do each week. Another helpful suggestion was to add specific instructions for the weekly discussions, such as "to get the most out of this course we'd recommend posting at least twice a week in the group Slack chat" to encourage participation since the course did not necessarily have any grades or requirements.

The syllabus was originally displayed on the homepage. The reviewer mentioned the learners might not necessarily want to see the syllabus each time they go to the homepage. Reviewing some Canvas video tutorials which were available from USU's Center for Innovative Design and Instruction was helpful since this was the first course I had developed on Canvas. I also had a consulting session with one of the Center's instructional designers, which helped to improve the visual appeal and navigation from the homepage.

After revising the design of the course based on feedback from the first two reviewers, I asked two more people to review and provide feedback on the content. The first content reviewer is a professor of psychology who researches mindfulness and practices mindfulness meditation. The second content reviewer of the course is a retired professor of psychology who taught mindfulness meditation classes at a university and published several books on mindfulness meditation. Instead of gathering written feedback as I did with the first two reviewers, I met with each of them individually on a call and discussed the content of the course.

Content Reviewer 1—Feedback

The first content reviewer suggested including some audio guided meditations. He personally preferred practicing mindfulness meditation in silence, but he described using guided meditations kind of like "training wheels" for beginning mindfulness meditation practitioners. Also, this would provide an option for participants who preferred guided meditations to practicing in silence. He also recommended checking the UCLA Mindful Awareness Research Center online, which was a helpful resource with free and easily accessible guided meditations which ranged from 3 to 19 minutes in duration. This Center also offers guided group meditations twice a week. I included these group meditations as an option in Week 5 when the participants

practiced meditation for up to 25 minutes. The first content reviewer thought the course had good content and found the navigation easy.

This reviewer recommended asking the participants to mark down their stress level right before and after practicing meditation and then to compare. This exercise helps practitioners to realize "mindfulness does more than just help me to be more mindful; it can also change my wellbeing in other ways in the moment." As a result, I added two columns to their motivations log so they could record their stress levels on a scale of 0 (totally relaxed) to 100 (most distressed you have ever felt). This scale is based on Subjective Units of Distress Scale (SUDS), which is a common tool used within psychology treatment literature when having a session with a client to provide them with immediate feedback on how a certain practice, or corrective experience, is affecting them. By recording before and after stress levels, participants can quantitatively see the difference in how they feel in an objective way. The reviewer mentioned that typically as someone gains greater fluency in the practice, there are more notable changes in their wellbeing as they practice mindfulness longer and longer. It can be useful to show the practitioner in the form of a graph or other visual how their wellbeing changed over time. While I did not review the logs with the participants for the pilot study, that is something I will add as a component to the course in the next iteration.

Content Reviewer 2—Feedback

The second content reviewer who was experienced teaching mindfulness to college students had several recommendations for the course. One recommendation was to include a loving-kindness guided meditation, which I included in Week 3. One of the participants wrote in his reflections log, "really needed that." He explained during the interview that right around the time he did the loving-kindness meditation, he was having a difficult time with a friend, and the

meditation helped him to work through some difficult interactions. Including this guided meditation turned out to be a good recommendation based on participants' feedback.

The reviewer, who had gone on several months-long retreats practicing mindfulness at Plum Village with Thich Nhat Hanh, liked that the curriculum included both formal and informal meditations. In his experience on mindfulness meditation retreats, out of the entire day only 40 minutes were dedicated to formal seated meditations, while most of the day was spent doing informal meditation—cutting the carrot meditation, washing the dishes meditation, mopping the floor meditation, etc. There were several mindfulness-related concepts he introduced me to that I was able to integrate into the curriculum. One concept was "bells of mindfulness." A bell refers to anything that acts as a reminder to return awareness to the present moment, whether it be a phone ringing or the "coo coo" of a cuckoo clock. In Week 3, I created an activity in which the participants would think of each interaction or encounter with a person as a "bell of mindfulness," or reminder to be fully present with that person.

The reviewer coached me on emphasizing to the students the importance of using breath to ground oneself in the present moment, whether it be a formal or informal mindfulness meditation. In Week 2, the course introduces a formal meditation in which the practitioner focuses on a word or phrase on each in-breath and each out-breath. He taught me a Thich Nhat Hanh mantra in which each line is repeated to oneself, alternating between the in-breath and the out-breath: "I have arrived" (in-breath), "I am home" (out-breath). This mantra can be used throughout a formal seated meditation, or it can be used for a few breaths at any time during the day to calm oneself.

Course Feedback from Participants

When asked what the most useful thing was they learned from class, several participants mentioned being more aware of the breath or using the breath to return to the present moment. Participant E, who favored the walking meditation, said, "To get in the habit of taking the time of walking as a time to, instead of bouncing from topic [to] topic, instead to be mindful and focus on breathing." They also appreciated the realization that mindfulness is something that can be practiced just about anywhere, at any time—it does not always have to be a seated meditation, which is what many people envision when they hear "mindfulness meditation." The realization that mindfulness can be practiced while doing chores, driving, or other activities was eye-opening. Participant B explained that he realized, "Meditation is not just a task in and of itself, but rather being something you can do while doing other things, I think was one of the more helpful aspects." Participant E added that he already was doing a lot of the activities recommended in the course for the informal meditation, but he did not do them with presence of mind. In other words, they were integrated into his routine, but not integrated as a practice of mindfulness. He realized how easy and accessible it can be to practice mindfulness with the activities he was already doing regularly. Based on this positive feedback, the basic structure of the weekly modules will remain the same, introducing a new type of formal and informal meditation each week.

Several participants mentioned that tracking their activity and progress in the meditation log was a useful way to monitor themselves. Specifically, measuring their stress levels directly before and after each meditation practice proved to be valuable. Participant D said,

> I like that you've included the, the stress scale, to kind of be introspective on how you're
>
> feeling before and after, cause I think that really puts me in the moment and that has me

focused on, like, how is this actually affecting me right now in the present and seeing

how helpful it has been at managing stress.

For Participant C, rating her stress level was something she had never done before, and she was

unsure of how to do it accurately. After contemplating her level of stress, she found it useful to

ask herself questions like, "Am I functioning?" and "Am I feeling stress?" She realized she had

never acknowledged her level of stress before, which made it an insightful exercise for her.

One participant said that measuring progress acted as a motivator to prioritize meditation.

Another participant said the meditation log was helpful to have a visual representation of what

was achieved and provided some accountability. Participant A also thought having accountability

helped her to begin the habit of practicing mindfulness meditation. She explained,

Before I always felt, like, I was doing it wrong, or I was never going to be able to figure

it out, but I feel like, you know, through the logs and your videos and explanations, I've

been able to really figure it out and just get going.

As shown previously under the findings of the pilot study, participants' stress levels almost

always decreased when comparing right before and after practicing meditation. Considering

students found recording their stress levels before and after meditation motivating, this exercise

will continue in the course for the current study.

A couple participants said that it was helpful to have someone in their life who already

practiced mindfulness meditation and could offer them encouragement. For example, Participant

D's wife practiced meditation, which is one reason he was interested in pursuing a formal

routine. Similarly, I invited the participants who completed the 5-week course to join the Zoom

discussions with the new group of participants to share their experiences and offer

encouragement to the newcomers in the next course. All the participants who would be back in

school in 2022 (there was one participant who graduated from her program end of 2021) expressed interest in participating as models to newcomers. Having participants who already completed the course available to answer questions, validate the efficacy of the 5-week program, and offer support should be helpful for the new participants.

Feedback on Using Slack Channel

The Slack channel was created for the pilot study as a space for participants to share their experiences, thoughts related to weekly discussion topics, and offer support to one another—in other words, it was set up as one of the primary social learning components of the course. However, there was minimum engagement through the Slack channel; only two participants posted comments throughout the entire 5 weeks. Participants gave various reasons to explain their lack of engagement. When participants were asked about how comfortable they were using the Slack channel, Participant B said, "I personally am just getting back into having a digital self. I mean, so I've never been much of a digital person. So things like Slack, for me, are not super useful." The same participant suggested I post the weekly video in Slack at the beginning of the week to see if people would comment on it or ask questions about the content covered in the video. I did try that one week, but it did not drive any more engagement in the channel than the previous weeks.

One participant said that he did not have time to post to Slack because he had been busy with schoolwork, but he also did not use Slack for anything else, making it difficult to get in a habit of checking it regularly. Another participant had tried to get on the channel but, for some reason, was unable to. He said he was able to enter the ITLS workspace, then tried searching for the #bellsofmindfulness channel for the class but could not find it. There were similar platforms, such as Microsoft Teams and Discord, that some of the participants used and preferred. Another

person mentioned she did not have a problem with Slack but felt somewhat uncomfortable using social media in general, particularly with people she had never met before. Another participant added that his preferred socializing method was meeting on live calls like Zoom. He used discussion boards so much for his own classes he was teaching that he felt burned out by it.

> Another point made was that a discussion board (like Slack) misses out on what the core of that socializing aspect would be, which is kind of this being able to share your experience with others and have them be able to react in real time and actually engage and discuss with you so that you can kind of construct an experience together.

While an asynchronous discussion board allows people to participate any time that is convenient for them, from a social learning aspect it is easier to feel present in organic, developing conversations. One person explained, "When I don't know the people … not that it's impossible to connect with them, it's just harder." Due to the lack of engagement and responses from the participants on Slack, there will be no online discussion via Canvas or Slack in the next iteration of the course with the exception perhaps of asking students to introduce themselves on the Canvas discussion board in Week 1. In place of Slack, there will be three Zoom sessions over the 5 weeks.

In regard to communicating with students, one observation I made during the course was that I would often post the same message through multiple platforms—including Canvas announcements, Canvas email, my USU email, and Slack—to ensure the students were getting announcements and information about the class that they needed. As this was my first time using Canvas as an instructor, I did not realize the messages sent from Canvas could also be linked to a

student's personal email account. For the next study, I plan to rely only on the Canvas announcements feature to send out alerts and important information.

Limitations

One limitation to this study was the small number (n = 5) of participants who completed the course. This made it difficult to make any definitive conclusions regarding how effective the course was to help students form a habit of practicing mindfulness meditation; improvements, if any, of mindfulness attention as measured by the Mindfulness Attention Awareness Scale survey; and decreases, if any, of stress based on the Perceived Stress Scale survey pre- and post-course. Another limitation was that I acted as both instructor for the course as well as interviewer. Even though the course was not graded, the instructor-student relationship may have influenced how the participants answered certain questions, particularly those inquiring about course structure and activities. Additionally, my own enthusiasm for the subject matter may also have influenced how the interviewees answered questions.

CURRICULUM VITAE

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EDUCATION

- Ph.D., Instructional Technology & Learning Sciences (2023)
  Utah State University, Emma Eccles Jones College of Education and Human Services
  *Bells of Mindfulness: An Online Mindfulness Meditation Course to Promote Mindfulness
  Meditation Practice for PhD Students*

- M.Ed., Instructional Technology & Learning Sciences (2016)
  Utah State University, Emma Eccles Jones College of Education and Human Services

- M.A., International Studies (2007)
  University of Washington, Jackson School of International Studies
  Civil Society in Japan's Environmental Policy

- B.A., East Asian Studies (2001)
  Lewis & Clark College
  Supporting the Homeless of Kamagasaki in Midst of a Neglectful Japan

WORK EXPERIENCE

- Learning Consultant, Senior Instructional Designer, Instructional Designer (2013-2023)
  American Express, Salt Lake City, Utah

- Japanese Instructor (2010-2012)
  Utah Valley University, Orem, Utah / Salt Lake Community College, SLC, Utah

- Japanese Speaking Guide (2007-2009)
  America & Pacific Tours, Anchorage, Alaska

OVERSEAS EXPERIENCE

- Certified, Advanced Japanese Language Proficiency (2005)
  Inter-University Center for Japanese Language Studies, Yokohama, Japan

- English Teacher (2003-2004)
  AEON, Tokyo, Japan

- Certified, Intermediate Mandarin Chinese Language Proficiency (2002)
  Guangxi Normal University, Guilin, China

- Zorig Fellow (2002)
  Zorig Foundation, Ulaanbaatar, Mongolia

- Certified, Intermediate Japanese Language Proficiency (1999)
  Kansai Gaidai University, Osaka, Japan

CONFERENCES

- Learning Sciences Graduate Student Conference (2021)
  University of Illinois at Urbana-Champaign, Virtual
  Presented "Making a Habit of Mindfulness Meditation for Working Graduate Students"

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