A SHORT MEDITATION INTERVENTION AND THE IMPACT ON GENERATION Z COLLEGE STUDENTS' ANXIETY AND ACADEMIC RESILIENCE

By

Alexandra Campbell

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

School of Behavioral Sciences

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APPROVED BY:

Pamela Moore, Ph.D., Committee Chair

Christopher Wheelus, Ph.D., Committee Member

ABSTRACT

This quantitative pretest-post-test evaluated the impact of a virtual guided meditation on anxiety and academic resilience levels in undergraduate, Generation Z students. A sample of 14 undergraduate males and females participated in the study. Participants used The Mindfulness App at a location and time of their choice; they meditated five minutes daily for five weeks. Participants were recruited through an accredited university and social media. Participants qualified if they were between the ages of 18-26 and were currently enrolled in undergraduate studies. The pre and post-test included the Beck Anxiety Inventory (BAI) to assess anxiety and the Academic Resilience Scale (ARS-6) to assess academic resilience. Participants completed five weeks of virtual guided meditation to evaluate the change. The purpose of the study was to examine the impact of virtual and short-duration guided meditation on anxiety and academic resilience. A paired sample *t*-test was run, and the results indicate there is statistical evidence that brief and virtual meditation can decrease anxiety and increase academic resilience.

Keywords: Generation Z, The Mindfulness App, Meditation, Anxiety, Academic Resilience

Dedication

This manuscript is dedicated to my daughter, my mom, and my husband. Darlene Louise Campbell, my Darla Lou, may you always chase dreams that bring joy to your life. You were in my womb, a newborn, and a toddler during the rigorous, yet rewarding, dissertation phase. I felt your kicks from within during late-night writing sessions; I listened to your newborn sounds from the bassinet as I researched; I heard your laughter and playfulness as I reached the finish line. I loved watching you grow throughout this adventure. My mom, Darlene Frances, for your guidance from heaven. Finally, my husband, Matthew, for your endless support that provided the ability to finish this degree. I am beyond grateful.

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Thank you to all who supported my completion of this manuscript. Dr. Moore, I could not have done it without your endless encouragement and advice. I would also like to acknowledge all of my family who made this possible; thank you for everything from helping complete chores to assisting with childcare as I navigated this rigorous writing process. Lastly, a special recognition to all participants, editors, readers, website designers, and more who made this entire work possible.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

ACHA – American College Health Association

ARS-6 – Academic Resilience Scale-6g

BAI – Beck Anxiety Inventory

CAM – Contrast Avoidance Model

DBT – Dialectical Behavioral Therapy

GAD – Generalized Anxiety Disorder

GAD-7 – General Anxiety Disorder-7

MBCT – Mindfulness Based Cognitive Theory

MBI – Mindfulness Based Interventions

MMT - Mindfulness-to-meaning Theory

MBSR – Mindfulness Based Stress Reduction

PD – Panic Disorders

SA – Social Anxiety

SepAD – Separation Anxiety Disorder

SP – Specific Phobias

YTC – Yogic Theory of Consciousness

CHAPTER ONE: INTRODUCTION

Overview

Extant research has shown the enduring, proven impact of mindfulness practice (Howarth et al., 2019). Mindfulness is defined as turning attention and awareness nonjudgmentally to the present moment, and can be achieved through the practice of meditation, grounding oneself in the present moment, and quieting the mind in order to enhance the mind-body connection (Kabat-Zinn, 2003b; Van der Kolk, 2014). Mindfulness has Buddhist roots; however, researchers have also addressed its contemporary function as a secular practice (Howarth et al., 2019). In this study, I address the effect of mindfulness practices among a college student population. Generation Z college students (born between 1995 and 2010) have specific academic, occupational, and social demands present in their lives (Western Governors University, 2021). In this chapter, I discuss the present anxiety and academic resilience rates in this population. The purpose of this study is to investigate the impact short, self-led meditations on The Mindfulness App have on Generation Z college students. I aim to examine whether or not these meditations—that realistically fit Generation Z's needs—can decrease anxiety and improve academic resilience.

Background

Generation Z individuals' childhoods ran parallel to a period of booming technology (Budiman & Franky, 2021). Indeed, they are stereotyped as narcissistic (Wood et al., 2021), less attentive to their environment and each other than members of previous generations, and more consumed by their smartphones, televisions, and computer screens (Budiman & Franky, 2021). Such stereotypes of Generation Z can create a negative bias. However, Camfield et al. (2020) emphasized the importance of addressing how members of Generation Z can also use their access to technology to foster their academic resilience and decrease anxiety levels.

Generation Z college students are facing an increasing demand to balance academics, work, and social lives while trying to maintain their mental health and enjoy emerging adulthood (Park et al., 2020; Seemiller & Grace, 2016). They must attempt to cultivate this balance while also adjusting to life away from home and experiencing what may be their first moments of independence (Arnett, 2000). College presents new stressors for young adults that can interfere with day-to-day life and may lead to increased anxiety and challenges with academic resilience (Acharya et al., 2018; Baumgartner & Schneider, 2021).

The Mindfulness App is a meditation application available through the application store on Androids and iPhones (Buchholz, 2020). It offers a limited free version (The Mindfulness App, 2022), which is important in the context of this study because Generation Z individuals, who grew up in a recessionary period, are often price-conscious consumers (Gabrielova & Buchko, 2021; Priporas et al., 2017). For example, Barbosa et al. (2022) found that 14% of Generation Z individuals are price sensitive compared to 3% of persons aged 56 and older (p. 8). Limited research studies have evaluated the helpfulness of these types of free virtual meditation methods. While Generation Z students desire low cost and quick results, there is a gap in literature surrounding the impact that short-interval, virtual, free meditation apps—such as The Mindfulness App—have on anxiety and academic resilience (Budiman & Franky, 2021).

Historical Context

Meditation practices have been documented as early as 1500 BCE; however, historians believe it may date back even earlier, to 3000 BCE (Mead, 2019). In 1982, Willard Johnson, professor emeritus at Massachusetts Institute of Technology suggested that meditation may have begun at the same time as fire was domesticated, which demonstrates the ancient lineage of the practice (Afonso et al., 2020). Meditation practices were described in the Vedas, one of the oldest extant manuscripts of humankind (Mead, 2019). Latin in its roots, *meditatum* means “to

ponder." The term *meditatum* was coined in the 12th century AD by Monk Guigo, and the term later evolved to "meditation" (Chow, 2023). Meditation practice has a longstanding history as a way to improve mindfulness; religions including Hinduism, Buddhism and Christianity address meditation as a pathway to spiritual clarity. Thousands of years later, meditation practices continue to play an essential role, but in a secular way detached from its original roots (Giraldi, 2019). In its contemporary secular iteration, meditation is the art of remaining in the present moment and being one with the mind, body, and spirit (Mead, 2019).

Before making its way to the Western world, meditation spread through the East. The earliest references to meditation in 1500–3000 BCE link to India and Hinduism (Chow, 2023). Around 500 BCE, other meditation forms were practiced in Taoist China and Buddhist India, allowing practitioners to improve concentration, knowledge, and inner freedom (Chow, 2023). Meditation continued to grow in popularity and practice in India and the far East between 400–100 BCE, when *The Yoga Sutras of Patanjali* was compiled (Bhide et al., 2023; Chow, 2023). It outlined the eight limbs of yoga (Chow, 2023), a concept still pertinent in yoga and meditation teacher training and practices. Additionally, the text founded yogic philosophy that connected the movement of the body with the calmness of the mind despite daily challenges during life (Bhide et al., 2023). At the same time, the *Bhagavad Gita* was written to explain the philosophy of yoga, meditation, and how to follow a spiritual life path (Chow, 2023).

Individuals, historically and today, use meditation to help access nirvana. The state of nirvana is defined as the highest state one can achieve, which is free of worldly suffering, such as desire, hatred, jealousy, and ignorance, and eventually leads to a form of spiritual rebirth. Traditionally, Buddhists believe that the mind can live past the death of the physical body; this concept of rebirth includes the life of the mind, and meditation is one way to strengthen it (H. L. Lim, 2022). A rebirth is when one experiences nirvana when they are in a state that is absent of

suffering while interlocking the body, mind, and spirit (H. L. Lim, 2022). Individuals seeking to achieve nirvana often practice meditation and yoga as mind training activities to work toward the goal of spiritual rebirth (H. L. Lim, 2022).

Christian Meditation

Christian Meditation dates to the Desert Fathers in the first century and evolved throughout the years to present day (see Figure 1). Notably, Ignatian Meditation in the 16th century was a style of meditation method uses visualization and imagination based on the prayer that St Ignatius of Loyola utilized during spiritual exercises ("Ignatian Meditation", 2020; O'Brien, 2023). Saint Ignatius founded the Jesuit order of the priests and taught that the imagination can help one connect with Jesus. This style of prayer meditation encourages sitting upright and feet grounded to the floor while maintaining a relaxed body, a common position observed in secular meditation. It instructs breathing in calmly to empty the mind and let go of distracting thoughts, another similarity to traditional meditation practiced today. Lastly, there is a mantra such as "Maranatha" or "Speak to me, Word of God" or a unique one chosen by the person in prayer. The involvement of visualization, imagination, and mantra repetition was evident centuries ago and continues to play a role in religious practices ("Ignatian Meditation", 2020).

The Christian Meditation Movement began in 1975 and was led by Anglo-Irish Benedictine monks; while a small group, it was not condemned, but it has received criticism. One of the major spiritual teachers, John Main, traveled to the East and studied priesthood. He was an advocate for meditation within Christian prayer demonstrated by his use of a mantra while in deep prayer. Main began organizing meditation groups and overtime it grew into a movement that held interfaith, Christian-Buddhist, meetings. The intertwining of multiple religions received and continues to receive criticism (Slaby, 2019).

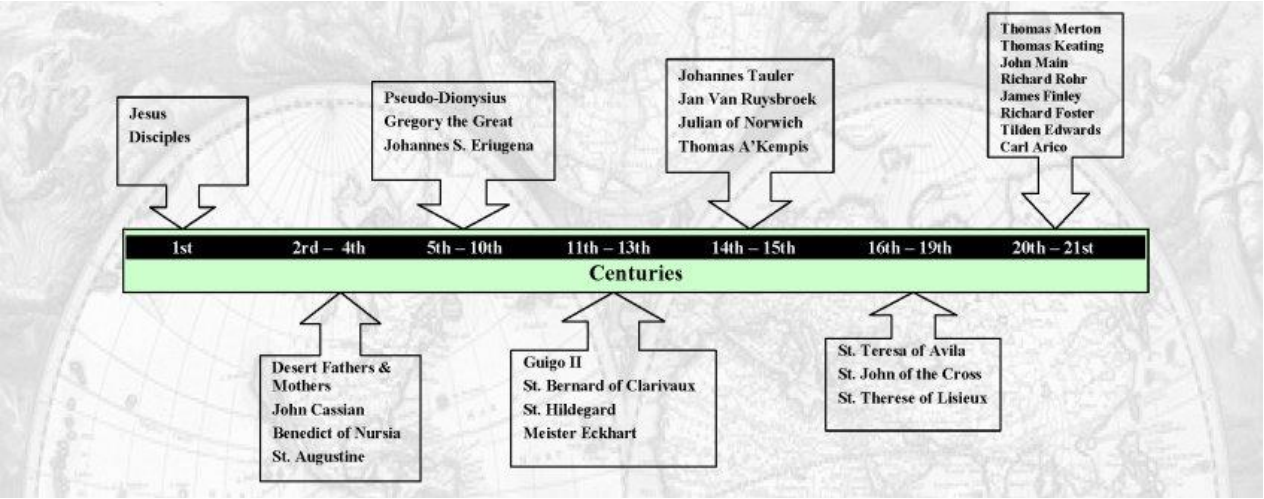
The movement encourages deep prayer, and while involving prayer and meditation, the message remains consistent. The movement pushes to rediscover tradition and embrace it, no matter if it involves multiple bodies of beliefs. During both prayer and meditation, it is evident that one withdraws from the world around them and sits quietly in peace. For example, in the Gospel, according to Matthew, it states that one

should enter their inner room to speak to God (New International Version). Furthermore, it instructs one to sit upright and still; these characteristics are seen in classic meditation. Secular and Christian meditation both emphasize the importance of the breath; for Christians, it is to inhale the breath of God and exhale God back into the world. God created humanity with the Divine Breath (Benner, 2020). Ultimately, the movement aims to demonstrate that prayer, like meditation, does not strive to make something happen but strives to bring individuals closer to Jesus through loving and becoming their true inner self (Slaby, 2019).

Meditation within the Christian faith may bring "alarm bells" (Slaby, 2019, p. 431) because of its potential intermingling of mantras and prayer; the fear of breaking boundaries and blending religions is seen by some as a threat. Slaby (2019) describes the potential fear that can come when mixing Tibetan bells and deep prayer; however, she emphasizes, "Breathing in and out helps still and focus the mind and reminds us of the life given to us by God, and helps us abandon ourselves to Him," (p. 431). With a strong religious home base that provides fulfilment, meditation within prayer can already serve as a way to connect to God (Slaby, 2019). Meditation is present in the Bible, and Christians can focus on these prayers to find inner peace and love.

Figure 1

Important People in Christian Meditation



Hatha Yoga

Ancient Hatha yoga practiced in India is likely the origin of many yogic and meditation practices (Mead, 2019). Hatha yoga developed as a meditative practice meant to deepen the spiritual being by cultivating holistic focus on ethics, diet, breathing, and meditation (Burley, 2000). Historically, Hatha yoga was a deep and intentional meditation used to interlock aspects of the body and mind (Shearer, 2022). Hatha yoga revolved around the meditative final resting pose, savasana. Ancient yoga tradition did not include the same focus on formal asana movements (physical yoga postures) as is typical in much of contemporary yoga practice. Instead, ancient yoga included long periods of savasana (Shearer, 2022). However, yoga classes have evolved over time, and most now only include 2–5 minutes of resting pose to conclude the class (Stephens, 2010). This demonstrates a decrease in the focus on the final meditation, which was a priority for ancient Hatha styles, and an increase of the physical asanas (Singleton, 2021).

Buddha's Teachings

For centuries, meditation practices spread through the East. Around 500 BCE, Siddhartha Gautama founded Buddhism when he decided to follow a life of poverty and spirituality. Buddha

included meditation practices into teachings to achieve inner peace and enlightenment; he taught that freedom and the halt of suffering comes once an individual develops the ability to detach from desire and live in the present moment (Anālayo, 2021; Laurent et al., 2021). These teachings included helping individuals learn to unlock the mind and body connection: for example, by noticing if the teeth are clenched and the tongue is stuck to the roof of the mouth, which can be somatic symptoms of stress. To change this physical aspect, Buddha taught that one must be mindful and engage in the practice of meditation. Modern instructors still encourage this practice of unclenching the body as a meditative practice to relax the mind (Seldman & Seldman, 2008). The teachings of Buddha, which stemmed from ancient Hatha practice, continued to spread and eventually migrated to the West (Gindin, 2022).

Meditation Practice in Psychology

As it became more prominent in Western culture, meditation emerged as part of psychological practice (McGee, 2008). More specifically, meditation gained secular popularity as a means to improve overall wellbeing (Singleton, 2021). There is a strong similarity between historical meditation and secular meditation, and the practice continues to benefit a wider, more culturally diverse audience (Swaminathan & Rathnasabapathy, 2023). For example, historical meditation practice was used to improve mindfulness: that is, to gain awareness of surroundings and the present moment. Similarly, in 1979, Dr. Jon Kabat-Zinn created mindfulness-based stress reduction (MSBR) to help individuals struggling with stress-related issues (Kabat-Zinn, 2003a). Kabat-Zinn (2003a) utilized meditative practice to improve mindfulness in patients. Meditative practices used by Kabat-Zinn included sitting meditations, body scanning, mindful movements, and mindful tasks. He conducted the first research study that examined the brain's responses to MSBR and used imaging to prove its helpfulness in brain chemistry and thus improving levels of stress (Kabat-Zinn, 2003a).

Also in the 1970s, Marsha Linehan created dialectical behavioral therapy (DBT)—an approach that uses meditative practice in the treatment of "character pathology" (McGee, 2008, p. 30). In the 1990s, psychologists developed mindfulness based cognitive theory (MBCT) using the MBSR practice as a foundation. The emergence of MBCT was significant as it created a practical incorporation of meditation into clinical practice settings (Kabat-Zinn, 2003a; Segal et al., 2004). With these methods, clinicians used meditation to help treat patients with mental health issues for the first time in the late 20th century (Segal et al., 2004).

In Christian psychology, meditation is practiced within clinical settings. Meditation that focuses on what is already in scripture instead of "Christianizing" Buddhist meditation is encouraged to seek healing from mental health ailments and daily struggles (Knabb et al., 2020). Christian psychology can channel the already present Christian roots as opposed to using the traditional Eastern method. Studies have begun to emerge examining the impact of Christian meditation within clinical settings; one study conducted by Dr. Joshua Knapp, a leading Christian Psychologist, found a medium-large effect on daily stress after an intervention that involved reciting the Jesus Prayer. There is a need for further research in Christian meditation and psychology that focuses solely on meditative prayer that originated in the words of the Bible (Knabb et al., 2020).

The Evolution of Meditation and Yoga

Despite the incorporation of meditation into modern psychology practice, today's $25 billion yoga industry includes many classes geared toward individuals whose only or primary goal is to change their physical appearance. Therefore, yoga teachers have incorporated interval-type training into classes, while shifting away from the moving meditation for which yoga was originally intended (Shearer, 2022). When yoga and meditation made their way to the western world, many individuals focused on its physical benefits (Wei, 2016). Wei (2016) conducted a

survey to study why more people have not tried yoga and found that many see it as a pastime for women, specifically those who are already athletic. This type of stereotype of yoga and its practitioners has contributed to yoga becoming increasingly popular as a physical activity, rather than as a meditative practice to improve mindfulness (Cagas et al., 2020).

The evolution of yoga and meditation practice has included the creation of online meditation tools (Wilson, 2014). Meditation applications—designed to allow users to access resources from the ease of their chosen comfortable location—have become increasingly prevalent since 2013 (Gal et al., 2021). Since 2015, the number of meditation applications available has increased from around 700 to 2,500 (Mani et al., 2015; Singh, 2022). The projected total revenue for meditation applications is $180 million by the year 2032 (Market Research Company, 2022).

Social Context

Wilson (2014) observed the shift in the historical purpose and methods of mindfulness and explored how meditation has developed to fit America's needs. While Wilson (2014) noted that the shift away from the religious realm and original reasons for meditation may not be harmful, it is necessary to explore this evolution to understand the prevalence of mindfulness-related applications. It was only around 1970 when the term mindfulness was a distant and ambiguous principle to many individuals in the West. As meditation practice and mindfulness developed in the West, principles were adapted from Buddhism and its religious roots. For example, rather than being primarily a religious observance, meditation practice and mindfulness are now considered significant in many life domains: work, education, personal life, parenting, and more. This adaptation led to an influx in commercial meditation and mindfulness products and services such as smartphone applications (Wilson, 2014).

Today, the demographic practicing meditation is predominantly middle-class, Caucasian individuals who explore meditation to relieve personal problems such as self-image, finances, stress, insomnia, relationships, and more (Wilson, 2014). Furthermore, yoga practice with the combination of meditation has evolved to be primarily a physical activity for many participants (Cagas et al., 2020). As the previous sections have addressed, meditation and its purpose have evolved throughout the years; the purpose of this study is to consider how it continues to evolve for Generation Z individuals who were brought up immersed in technology.

Generation Z and Meditation

Negative stereotypes about Generation Z individuals include excessive electronic use, being protected, and being privileged (Camfield et al., 2020). However, researchers have also found members of this generation to have the ability to work independently and individually (Cora, 2019). Generation Z individuals are also quick to stop using a product or service if it is not engaging, reliable, or intuitive (Shay, 2017). Therefore, it is important to examine the effectiveness of meditation applications to study Generation Z individuals' interest in them. Further research is necessary discern whether the virtual method of meditation is better aligned with the Generation Z lifestyle, which includes many daily routines to balance, than traditional meditation practices (Bamber & Morpeth, 2019; Champion et al., 2018; Gal et al., 2021). Considering Generation Z's ability to perform independently, desire for quick results, and preference for utilizing technology, it is essential to study the impact of online meditation sessions conducted in short intervals (Champion et al., 2018; Kirby et al., 2020).

Generation Z and Anxiety

Anxiety is a state or condition that causes an unpleasant emotion and presents as either an experience, behavior, or physical arousal with a low probability of occurrence (Daviu et al., 2019). College students face daily challenges that can influence anxiety levels, including

balancing multiple assignments and tasks (Ahmed & Julius, 2015). A 2016 survey found that although 61% of college students reported anxiety levels, only 19% received professional help (American College Health Association, 2017). While anxiety is a natural experience when temporary, prolonged anxiety should be avoided as it can cause mental illness and an interruption to everyday life (Daviu et al., 2019). When anxiety levels are high, college students report having difficulty focusing or completing their academic work (American College Health Association, 2017).

Generation Z and Academic Resilience

Academic resilience is an individual's ability to overcome academic challenges that could influence their education (Cassidy, 2016). According to Van Breda (2018), there are three interconnected aspects of resilience: adversity, mediating process, and outcome. Resilience theory describes individual, social, or environmental components that make up one's ability to be resilient (Van Breda, 2018). Qualities of academic resilience include intrinsic values such as focus on the future, drive, and sense of belonging (Azmitia et al., 2018; Bailey, 2020). When individuals experience anxiety, resilience levels decrease (Ahmed & Julius, 2015; Flett et al., 2020); thus, it is necessary to consider how short-interval meditation sessions can decrease anxiety and improve academic resilience. Flett et al. (2020) concluded that self-paced virtual meditation can benefit college students' anxiety and academic resilience; however, they concluded that there is a need for further literature.

Few researchers have explored the impact of meditation practice on anxiety and academic resilience. It is understood that anxiety levels directly impact a student's ability to self-regulate which is essential when presented with a perceived challenge (Raymo et al., 2018). Research has shown that as anxiety levels increase, academic resilience decreases (M.L. Lim & Chue, 2023).

Furthermore, resilience can serve as a tool to decrease anxiety (Shen, 2022). More studies are necessary to explore the relationship between the two.

Conceptual/Theoretical Context

Anxiety

According to the American Psychological Association (2017), anxiety is an emotion that involves tension, worry, and physical alterations as a response to a situation or potential threat. Anxiety is a common human experience, and is often an appropriate and rational response. While the emotion of anxiety is omnipresent, anxiety disorders are distinctly different; those with an anxiety disorder experience increasingly severe worry and fear for long periods of time (Kenwood et al., 2022). The distinction between normal and disordered anxiety is whether the symptoms are an unnecessary reaction to a normal aspect of life. There are many anxiety disorders, such as separation anxiety disorder (SepAD), social anxiety (SA), general anxiety disorder (GAD), panic disorders (PD) or specific phobias (SP); the diagnosis depends on the focus of the anxiety (Silverman & van Schalkwyk, 2019). Anxiety, normal or dysfunctional, is a treatable emotion individuals can manage in order to achieve success in everyday life.

Symptoms of anxiety, whether normal or pathological, have commonalities. Symptoms can include excessive worrying about situations, such as the outcome of a problem. It can include uncontrolled mental or physical reactions, such as feelings of dread, sweating, or a racing heart (Silverman & van Schalkwyk, 2019; Xi, 2020). Anxiety can manifest in uncertainty, such as worries about the future and excessive focus on “what if” statements. Anxiety symptoms can improve if they are detected early and the individual attempts to deal with them (Xi, 2020) through means such as relaxation techniques and psychoeducation (Rith-Najarian et al., 2019). When anxiety symptoms do not improve over time or begin to worsen, a mental health provider may diagnose an anxiety disorder (Xi, 2020). Universal anxiety and anxiety disorders share

many symptoms (Silverman & van Schalkwyk, 2019), and individuals experiencing anxiety can benefit from a range of treatments or techniques (Rith-Najarian et al., 2019; Silverman & van Schalkwyk, 2019).

Academic Resilience

Academic resilience refers to an individual's ability to overcome hardship and adversity and maintain academic perseverance (Hunsu et al., 2023). Academic resilience levels include the ability of a student to cope with adverse situations that present significant stress (Hunsu et al., 2023). There are certain risk factors and protective factors associated with academic resilience. Risk factors are categorized into individual, familial, and institutional categories. Individual risk factors can include major illnesses, behavioral challenges, and individual personality traits; familial risk factors can include socioeconomics, domestic violence, and conflicts (Hunsu et al., 2023; Tudor & Spray, 2017). Conversely, protective factors can support a student's academic resilience. These factors are similarly categorized and include parent involvement, peer relationships, self-efficacy, perseverance, and faith (Hunsu et al., 2023). External sources of academic resilience include school climate and culture, societal policies, and demographics (Hunsu et al., 2023). Many risk factors and protective factors can impact a student's academic resilience (Hunsu et al., 2023; Tudor & Spray, 2017).

Mindfulness

Mindfulness has been adapted as a secular practice that utilizes the body beyond the physical realm; it is the work to connect the body, mind, and spirit. Mindfulness practices include techniques and strategies to alleviate negative feelings that cause ailments such as stress and anxiety (Fumero et al., 2020). Mindfulness is becoming aware of the present moment and focusing without judgment; when one is not actively in the present moment and only focusing on the past or future, it emphasizes the depths of the senses to cultivate moment awareness without

judgment or criticism (Seema & Säre, 2019). Mindfulness based interventions (MBIs) are increasingly prevalent in research (Fumero et al., 2020; Zhang et al., 2021). Mindfulness based interventions include breathing techniques, body scanning, sitting meditation, and silent reflection to help the mind become calm and present. Mindfulness activities are continuing to increase in popularity and offer benefits for individuals who participate (Zhang et al., 2021).

Mindfulness-to-Meaning Theory

Eric Garland et al. (2015b) developed mindfulness-to-meaning theory (MMT) as a novel model in 2015; the model focuses on positive emotion regulation that promotes health and resilience. It builds on the field of mindfulness that typically focuses on reducing negative emotions, habits, or reactions. Garland et al. (2015b) claimed that MMT is intended to fill this gap by focusing on mindfulness to build positive experiences and engagement. Mindfulness-to-meaning theory aims to promote the regulation of emotions and development of new perspectives. Disengagement from negative reactions is not necessarily sufficient to promote well-being in isolation; MMT theorizes that mindfulness can promote self-transformation, such as resilience (Garland et al., 2015a).

Mindfulness-to-meaning theory is similar to other meditation models, but there are some key differences. Mindfulness-to-meaning theory follows other mindfulness models because it is focused on having the meditator decenter from stress; however, it also encourages the practitioner to move into a metacognitive place of awareness. This state of awareness helps lead to a wider perspective that helps the meditator adjust to life circumstances (Garland et al., 2015a). Mindfulness-to-meaning theory teaches that mindfulness is more than a state of emotionlessness; rather, mindfulness enables the practitioner to generate cognitive function to help work through adversity and appreciate the positives in life. Garland et al. (2015b) developed MMT to maintain the practice of mindfulness and facilitate a broad form of introspection that

helps individuals create meaning and thoughtful involvement with life. The theory is based on the practice of viewing life as a whole and gaining new perspectives on negative or adverse situations. Considering this broad awareness of situations and life, it reduces the search for meaning, allowing meaning to be detected. Additionally, the theory states that changing how one attends to mindfulness can promote emotional regulation and resilience (Garland et al., 2015b).

Problem Statement

Meditation practices are proven to help individuals self-regulate, focus attention, and calm the stress responses that are triggered in the brain (Schonert-Reichl & Roeser, 2017). Modern meditation embodies traditional meditation practices and incorporates physical yoga (Tiwari et al., 2023). Through these meditation practices, individuals can improve mindfulness and become aware of the present moment. Meditation modalities have evolved throughout history (Chow, 2023); today, more people are meditating virtually to gain benefits within the needs of their daily life (Xu et al., 2022). More research must be conducted on whether current prevalent self-led and short-interval meditations through The Mindfulness App decrease anxiety and improve academic resilience.

No studies have addressed how short-interval and virtual meditation—specifically The Mindfulness App—affect Generation Z college-aged students' anxiety and academic resilience levels. While some studies have included examinations of the impact of other mindfulness applications (Duraimani, 2019; Huberty et al., 2019), the need remains for further study on the free application, The Mindfulness App, and its impact on anxiety and academic resilience for Generation Z college students emerging into independent adulthood. These previous studies involved applications that require payment and thus create a financial obstacle for Generation Z participants. The problem is that there is a lack of research discussing anxiety and academic resilience among Generation Z students who use a free meditation application, such as The

Mindfulness App, which provides the ability to meditate with few financial or time constraints (Huberty et al., 2019; Saul & Fish, 2019).

Additionally, most researchers, such as Huberty et al. (2019) and Saul and Fish (2019), reported that their samples lacked diversity and did not have an even split amongst males and females. These researchers indicated diversity was needed within the sample population in order to study the true benefits of mediation applications (Greif & Kaufman, 2021). Lastly, sample demographics in previous studies did not include specification of Generation Z population characteristics. This is an important omission considering Generation Z is the first generation to grow up with quickly advancing technology and devices (Budiman & Franky, 2021).

Purpose Statement

The purpose of this study is to examine the impact of short-interval meditations guided by The Mindfulness App for Generation Z college students who report high levels of anxiety and difficulty with academic resilience. The experimental group will be Generation Z undergraduate college students who self-report high anxiety and low academic resilience. They will engage with The Mindfulness App at their preferred time and location for 5-minute intervals over 5 weeks. To ensure that the student feels connected with the content, they will be able to choose their own guided meditation topic. Students will self-report again at the conclusion of the study to see if their anxiety levels decreased while their academic resilience increased.

I will include a diverse sample of students to help ensure that the reported data accurately reflects the impact of meditation applications for undergraduate students. Furthermore, I will ideally include roughly 50% female and 50% male students in the study to represent benefits for both sexes. Through this study, I aim to add to the current literature by demonstrating the impact of meditation applications. The results could help undergraduate students be more academically successful while also improving their daily life as they prepare for adulthood after college.

Significance of the Study

This study will augment previous research designed to help current college students lower their anxiety and improve their academic resilience. The study will incorporate a diverse sample of men and women in the Generation Z group to consider the limitations of other recently conducted studies (Greif & Kaufman, 2021; Huberty et al., 2019). The study will help add to the knowledge of how short amounts of mindfulness and meditation can help individuals (Kirby et al., 2020). The use of a free meditation application, The Mindfulness App, will decrease obstacles such as cost, time commitment, and transportation. This will allow me to better understand the benefits of meditation for members of Generation Z, in alignment with their desire for quick results, their use of technology, and desire to spend less money (Budiman & Franky, 2021).

I will also aim to demonstrate the impact that meditation can have when it is conducted in a comfortable place, chosen by the participant, at a time that fits their busy lifestyle. Generation Z students often have shorter attention spans and a need for more instantaneous gratification (Budiman & Franky, 2021); this study will consider these factors as it is designed to be short and yield fast results. Not only can this study add to the literature by demonstrating how short periods of meditation have benefits, but the study can help undergraduates prepare for adulthood after college by building a connection between mind and body. Meditation is proven to increase self-awareness and improve self-regulation; students will carry these benefits forward beyond academics to post-graduation life (Van der Kolk, 2014).

Research Questions

This study will help add to the literature on how short-interval meditation can be beneficial for Generation Z undergraduate students. The proposed research questions are as follows:

RQ1: Do short, virtual meditation sessions decrease anxiety in Generation Z undergraduate students?

RQ2: Do short, virtual meditation sessions increase academic resilience in Generation Z undergraduate students?

Definitions

1. *Academic resilience:* an ability to demonstrate persistence, grit, cognitive flexibility, agency, adaptation, learning from failure and success, and overcoming adversity within the framework of college studies (Baumgartner & Schneider, 2021).
2. *Anxiety*: A state or condition that causes an unpleasant emotion and presents as either an experience, behavior, or physical arousal with a low probability of occurrence (Daviu et al., 2019).
3. *Emerging adulthood*: The period of time during which young adults transition from adolescence to independence, typically between 18 and 29 years old (Nelson et al., 2008).
4. *Generation Z:* Individuals born between 1995 and 2010 who were raised as technology quickly advanced (Budiman & Franky, 2021).
5. *Meditation:* The practice of grounding oneself in the present moment and allowing the mind to quiet while enhancing the mind and body connection (Van der Kolk, 2014).
6. *Mindfulness*: The ability to be in the present moment in a non-judgmental state and aware of one's emotions, experiences, and thoughts (Van der Kolk, 2014).
7. *Mindfulness-Based Stress Reduction (MBSR):* A meditation-based therapy that was originally developed for stress but is now also used to aid other health issues such as anxiety, depression, chronic pain, etc. (Niazi & Niazi, 2011).

8. *Nirvana:* In meditation, nirvana refers to ceasing worldly suffering or desires by achieving the highest self or state of enlightenment; in Buddhism, it is the highest state an individual can obtain (Shearer, 2022).
9. *Vedas:* An ancient Indian manuscript, considered the oldest sacred text in the universe, written in Sanskrit and containing hymns, philosophy, and guidance (Lopez, 2020).

Summary

College students face many challenges as they experience the independence of emerging adulthood. Compared to other generations, they experience higher levels of anxiety and report a lower ability to cope positively with these levels (Lemay et al., 2019). College students have reported that anxiety can cause other negative characteristics that can also impact their ability to navigate adulthood.

Generation Z students who report these difficulties need a tool that fits their lifestyle and personality needs to positively impact their anxiety levels. Such a tool could help improve academic resilience and overall well-being. This study will consider previous studies' limitations to offer a tool for building a mind and body connection that could help students achieve more in their academic and personal lives. The study will examine the impact of The Mindfulness App on participants' self-reported anxiety and academic resilience levels. It will add to the growing meditation research today as meditation practice methods, for example being virtual and brief, significantly evolves from a historical standpoint.

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter two discusses the conceptual and theoretical framework, related literature and gaps within current research. Related literature illustrates the greater need for research regarding a short meditation intervention using The Mindfulness App on Generation Z's anxiety and academic resilience levels to match the characteristics and qualities of the generational population. Gaps within the current literature are discussed throughout the chapter.

Conceptual/Theoretical Framework

Anxiety

Anxiety, a stress response, is normal for everyone to experience occasionally. It is the way for the brain to alert of potential danger through fight-or-flight. The brain's limbic system, composed of the hippocampus, amygdala, hypothalamus and, thalamus, is responsible for emotional processing and sends signals for a physiological reaction. The amygdala identifies a threat and tells the hypothalamus to initiate the fight-or-flight response. The brain releases cortisol when the potential physical or mental threat appears (Daviu et al., 2019). Physical symptoms can appear such as sweating, rapid heartbeat, and feelings of tension or dread as part of this reaction. These anxious reactions, while normal to experience intermittently, are still typically unpleasant emotions and can be helped through means such as meditation practices (Bamber & Morpeth, 2019). Even the emotion of anxiety in normal amounts is found to interrupt daily function and quality of life through its consumption of cognitive functioning (Xu et al., 2019). Anxious experiences or personality traits increase the risk of ultimately forming an anxiety disorder (Sep et al., 2019).

Anxiety disorders, different than the general emotion of anxiety, are the most common mental health diagnoses, impacting 39% of college students (Liu et al., 2023). People who are diagnosed with an anxiety disorder are found to have heightened activity in the brain's limbic system (Daviu et al., 2019); this heightened activity utilizes cognitive power and negatively impacts the quality of life (Xu et al., 2019). There are many treatment options for anxiety disorders such as Cognitive Behavioral Therapy (CBT) or medication. Anxiety disorders often co-occur with other anxiety disorders, personality disorders, mood disorders and substance abuse disorders (Bandelow & Wedekind, 2022).

Anxiety symptoms and anxiety disorders have been on the rise for Generation Z college students, especially since the Covid-19 pandemic. College students, who are already experiencing major transitions in from adolescence to adulthood, were met with increased pressure, social isolation, and loneliness (Liu et al., 2023). When these anxiety disorders are left untreated for college students it can lead to co-occurring mental health illnesses, substance abuse, academic performance decrease and strained relationships ultimately hindering their well-being during the college years (Guan et al., 2021; Liu et al., 2023). The increase of anxiety symptoms and disorders must be addressed on college campuses to ensure students have their mental health needs met (Liu et al., 2023).

Academic Resilience

Academic resilience is the student's positive adaption with known challenges or difficulties, either minor, such as receiving a poor grade, forgetting to study for a test or social conflict, or major, such as instability at home or economic hardship (Anderson et al., 2020). These challenges experienced by the student allow for academic resilience to emerge; the study of academic resilience focuses on how a student maintains to achieve their goals while experiencing hardship (Agasisti et al., 2018; Anderson et al., 2020). Academic resilience is a

combination of a student's awareness, self-regulation, and social support. Research has evolved to examine academic resilience from a personal, school and systemic level (Anderson et al., 2020).

Self-awareness is a key component in academic resilience; it is critical for the learner to have the skills necessary to reflect, accept, and adapt (Anderson et al., 2020). According to Anderson et al. (2020), emotion regulation and coping mechanisms are critical for improving academic resilience. These practices help decrease anxiety and refocus the student on problem-solving and rebounding. Emotion-focused coping paired with meaning-focused coping is one way for the learner to regulate stress and challenging situations by focusing on the potentially positive outcome after facing adversity (Anderson et al., 2020; Meneghel et al., 2019). Metacognition of self-regulation strategies are essential for the learner to cope with negative situations and persevere in the classroom; Reframing negative situations is pertinent for academic resilience (Anderson et al., 2020).

Mindfulness

Mindfulness, originally a Buddhist tradition, is now practiced in a secular domain in many areas such as healthcare, education, and the workplace. Some Buddhists have criticized the way mindfulness and meditation have shifted into Western mainstream practice due to the distance from the spiritual sector (Karl & Fischer, 2022). As mindfulness Westernized, it lost focus of the spiritual realm and began to shift into many different versions, leading to inconsistent definitions and practices today (Phan-Le et al., 2022). While the study of mindfulness has increased in recent years, there lacks a consistent definition or ethical basis for what constitutes mindfulness. For the purpose of this study, the definition of mindfulness is the ability to be in the present moment in a non-judgmental state and aware of one's emotions, experiences, and thoughts (Van der Kolk, 2014).

MBIs have been introduced within recent decades and serve as a way to promote the benefits of mindfulness; the first MBI, Mindfulness Based Stress Reduction (MBSR), was introduced in the late 70s by Kabat-Zinn (Vibe et al., 2017). Since then, more MBIs have been introduced and they continue to differ in operational definition and use (Phan-Le et al., 2022). There are many tools to measure mindfulness such as the Mindfulness Attention Awareness Scale, the Five Facet Mindfulness Questionnaire, the Toronto Mindfulness Scale, and others; the numerous measures demonstrate the lack of consistency and shared agreement of mindfulness. These many options within mindfulness lead to problems creating consistent studies that are replicable. It is important for mindfulness research to use an explicit definition to help guide research to more concrete and operational definitions of how mindfulness is explained within the given study (Phan-Le et al., 2022).

Mindfulness Based Interventions vary in effectiveness, it is hard to tell if mindfulness practices that are stand alone are as effective because most of the research includes psychoeducation or group/social support (Zhang et al., 2021). Additionally, the research involved many different definitions of mindfulness (Phan-Le et al., 2022). Increasing mindfulness through practices such as MBIs is a way to improve overall mental and physical health (Creswell et al., 2019; TedX Talks, 2019). Mindfulness is the basis of meditation practice; the end goal. Mindfulness through the practice of meditation is proven to help depression, anxiety, emotional tolerance and burnout; it also improves negative thought and rumination (Maddock & Blair, 2021; Tran et al., 2022). Despite the use of different definitions and intervention types, benefits have been observed in a variety of MBI methods such as Mindfulness to Meaning Theory (MMT).

Mindfulness-to-Meaning Theory

MMT can help those experiencing adversity to believe in themself and think more positively about a situation with perhaps a more controlled reaction (Sgherza et al., 2022). Regular mindfulness practice is thought to increase the natural ability to be mindful in other moments of the day by gaining awareness of the mind. The MMT intervention focuses on utilizing mindfulness practice and meditation to move through four mechanisms: decentering, reappraisal, positive affect, and savoring. The MMT method actively attunes to thoughts and allows them to pass, such as prompts during a guided meditation. During decentering, the brain avoids automatic negative cognitive schemas. The act of decentering through MMT then helps the individual become aware of negative thought patterns and reframes thinking that can break habitual or previously uncontrolled reactions by broadening attention internally (Sgherza et al., 2022). The next phase, reappraisal, helps the individual view a negative thought as benign; it aims to teach a growth mindset when presented with negative stimuli. Reappraisal promotes more positive emotional experiences through repetition of decentering (Hanley et al., 2021; Sgherza et al., 2022); it leads to an individual being able to savor, the last key part of the MBI. Savoring involves cherishing positive stimuli and emotions that come with decentering from negative emotions. Mindfulness practices allow psychological distancing when practiced during guided meditation and through interventions such as MMT (Sgherza et al., 2022). MBIs such as MMT that promote an awareness to thought and positive reappraisal provide the individual the cogntitive ability to approach situations with a positive growth mindset that can impact resilience and anxiety levels (Fullerton et al., 2021; Mohammadi Bytamar et al., 2020).

Related Literature

Meditation

Meditation and mindfulness are two popular areas of research in psychology and neuroscience (Heppner & Shirk, 2018; Sedlmeier et al., 2016). Meditation and mindfulness have

different definitions, although they are often used interchangeably (Behan, 2020). Mindfulness is being aware of the present moment while meditation is the practice of remaining in the present (Behan, 2020). They each play a differing role in research. Meditation includes the practice of breathing and mind clearing exercises often included with mantras or phrases of which to concentrate (Behan, 2020). There is a need within research to clarify between mindfulness and meditation as well as the different types of practices offered to gain benefits (Sedlmeier et al., 2016).

Meditation is a practice that has transcended through centuries, including different cultures, religions and generations. Meditation has continued to hold a profound space in human experience; helping individuals to focus on the present moment and release feelings that may include negative emotions (Lindsay et al., 2018). Behan (2020) concludes that meditation is proven to help reduce anxiety (Montero-Marin et al., 2019). The first step to meditation is to focus on the inner self and senses that are occurring within the body; self-awareness is key throughout the process (Van der Kolk, 2014). Learning to observe the physical sensations of anxiety, stress, avoidance, and other emotions that can impact daily life function is where the change occurs; meditation helps by calming the sympathetic nervous system and thus avoids the fight-or-flight state (Ganguly et al., 2020; Van der Kolk, 2014). The practice of meditation and the act of being mindful

A study concluded that MBSR based practice provides benefits to college students and their academic resilience Baumgartner & Schneider, 2021). One study predicted that there is a relationship between the practice of meditation and improvements on anxiety levels and in turn a positive influence on resilience due to the increased ability to regulate emotions and recover from stressful situations (Diedrich et al., 2014). Meditation provides these benefits to anxiety and academic resilience (Baumgartner & Schneider, 2021; Montero-Marin et al., 2019); however,

more literature is needed to examine the virtual and brief meditation benefits for Generation Z (Champion et al., 2018; Kirby et al., 2020). MBSR is proven effective (Querstret et al., 2020; Vibe et al., 2017), but it is an eight week long course that includes twenty-six hours worth of sessions (Querstret et al., 2020); more research is necessary to understand the benefits of shorter time spent on meditation to help students balancing their academics, transitional phase to college, and the other demands of a fast-paced Z life.

Brief Meditation

Meditation is the control, harmonization and attention to thoughts and judgements (Sampaio et al., 2017). Studying the effectiveness of brief meditation has increased in recent years (Edwards & Loprinzi, 2018; Heppner & Shirk, 2018). While it is proven to work in many studies (Wu et al., 2019; Zhu et al., 2019), there are overall conflicted results of how long it takes to reap the benefits of brief meditation (Norris et al., 2018). Researchers vary their conclusion of how long the session should last and how often (Norris et al., 2018). For example, Wu et al. (2019) described in their study that there are conflicting time durations for meditation and its benefits on mental health areas such as anxiety. Part of this conflictive reporting includes the lack of organization for meditation practices and the duration and frequency of the practices (Zhu et al., 2019). Students in this study would use the Mindfulness App. Students would be practicing attentional mindfulness meditation which is one of the categories of meditation that research is striving to formally diversify (Sedlmeier et al., 2016). Overall, more research is needed to conclude the specific effectiveness of brief meditation sessions for a specific amount of time.

Short duration meditation sessions have yet to be as thoroughly studied (Zhu et al., 2019). A five-minute brief meditation session could not only fit the typical characteristics of Generation Z undergraduates but can also help lower the adverse effects for those who struggle with mental

health issues (Zhu et al., 2019). This research could additionally benefit trauma informed care (Zhu et al., 2019), which is important considering the high number of mental health issues within Generation Z and their vulnerability due to circumstances such as the Covid-19 pandemic (Colvin, 2023; Grelle et al., 2023; Kaplan-Rakowski, 2020). A standard duration of meditation is not specified, and more studies are needed (Zhu et al., 2019). This study could help add to the limited literature regarding the effectiveness of brief meditation sessions and its impact on anxiety and academic resilience.

There is also a need for studies on brief meditation for individuals who have limited time (Wu et al., 2019) such as Generation Z students. Classic meditation that is in-person and guided by a live teacher has limited beneficiaries due to fewer teachers, expensive cost and the time commitment (Wu et al., 2019). Studies conducted by researchers such as Basso et al. (2019) and Flett et al. (2020) examined what time duration truly is considered brief meditation that has lasting benefits. Basso et al. concluded that a thirteen-minute daily meditation for eight weeks was beneficial for mood, emotional regulation and memory. Flett et al. (2020) found that ten minutes over ten days reaped benefits. Other studies such as Acabchuk et al. (2021) conclude that meditating for ten minutes over the course of one month has benefits. Brief meditation that is a short duration has been proven to help individuals, but there is no consensus on the duration of time that is necessary for benefits.

Mindfulness-Based Stress Reduction (MBSR)

MBSR was introduced in 1979 as meditation began to play a larger role in psychology; leading theorist Jon Kabat-Zinn used the principles of Buddhism to create simpler practices for individuals to lower stress levels (Kabat-Zinn, 2003a). MBSR is a meditation framework that includes evidence-based practices to help practitioners lower stress, anxiety, and depression levels while improving resilience and overall well-being (Center for Mindfulness in Medicine,

Health Care, and Society, 2017). MBSR strategies include sitting meditation, body scanning, mindful movements, and mindful tasks (Vibe et al., 2017). Researchers have studied how to seamlessly integrate MBSR with everyday life in a way that is simple and cost-effective (Vibe et al., 2017). In previous literature, MBSR studies have mostly had a female-dominant population; however, both men and women have significant results (Brown et al., 2021; Chin et al., 2019). More studies are needed to include a more equal balance of gender in the sample (Brown et al., 2021).

MBSR practices are beneficial for all ages of adults and have been for many generations (Vibe et al., 2017). Today, phone applications can guide individuals through MBSR activities (such as guided meditations) as a way to increase awareness and lower stress and anxiety (Xu et al., 2022). However, more studies are needed to determine if they are effective. Studies encourage starting with a five-minute meditation practice and increasing each day to reach 15 to 20 minutes to gain benefits (Xu et al., 2022). Studying the impact of a five-minute MBSR-style mindfulness practice through virtual applications can help researchers better understand Generation Z young adults who lead busy lives and who prefer cost effective, simple tasks that yield quick results (Budiman & Franky, 2021).

MBCT

Mindfulness Based Cognitive Theory (MBCT) focuses on acceptance and awareness of thoughts (Xu et al., 2022); the method involves meditation but differs in the original Buddhist roots embodying mindfulness practice in a secular fashion (Lao et al., 2016). Statistics Canada reported that 45% of people over the age of 15 have a smart phone and on average their phone is checked at least once every 30 minutes (Xu et al., 2022). MBCT has virtual offerings for clients to offer individuals an accessible avenue for meditation practice; these virtual offerings have proven effective (Hudlicka, 2017; Xu et al., 2022).

MBCT has been studied to measure the effectiveness when providing a virtual coach to observe the benefits. This option allows users to have a lower cost and remove the barrier of transportation and obstacles that in person sessions require (Hudlicka, 2017). This mixed approach provides individuals with the opportunity to meet face-to-face with virtual meetings in-between. Offering face-to-face and virtual sessions helped individuals establish a more regular mindfulness practice routine (Hudlicka, 2017).

A study conducted by Sylvia et al. (2022) compared the impact of 8 MBCT web-based sessions and 3 non-MBCT brief meditation sessions for adult undergraduate students. Both groups showed improvements in overall well-being despite the difference in an organized MBCT curriculum and the frequency of sessions. Results demonstrated a lack of superiority for the MBCT 8-week session (Sylvia et al., 2022). MBCT, like other therapy modalities, is continuing to shift to an online presence as society evolves to a more technology-based culture (Xu et al., 2022).

The Brain and Meditation

Meditation practices are receiving more attention from the scientific community, including how meditation impacts the brain (De Filippi et al., 2022; Lardone et al., 2018). More scientists are asking how meditation works on a physical and internal level. Researchers have focused on brain morphology as well as the structural features of the brain such as shape and composition (Madan, 2017; C.C. Yang et al., 2019). Results show that meditation alters high engagement and functioning brain regions that are consistent across samples from different studies (De Filippi et al., 2022; Lopez, 2020).

Researchers have also discussed benefits of meditation on the brain (Afonso et al., 2020; Pascoe et al., 2021). Because meditation helps strengthen the prefrontal cortex, people who meditate are more likely to have better memory function than nonmeditators of the same age

(Lardone et al., 2018). When an individual practices meditation over time, they can strengthen the brain's function; neuroplasticity defines the brain's ability to change and grow over time (C.C. Yang et al., 2019). Meditation also strengthens the hippocampus, the part of the brain responsible for memory, as well as its spatial abilities and long term memory (Lardone et al., 2018). Contrary to previous beliefs, the brain is not set in stone from a young age. Instead, it can continue to develop throughout years (Lardone et al., 2018). Meditation fosters this growth by strengthening not only in the prefrontal cortex, but also the amygdala. The amygdala is the brain area that is responsible for the flight, fight, or freeze response in humans (Kral et al., 2018). Meditation and the practice of mindfulness has proven to shrink the amygdala and help calm an individual's responses to stimuli (Kral et al., 2018). Afonso et al. (2020) discuss that the attentional practice of meditation aids the shrinking of the amygdala that allows individuals to react more consciously to an outside stimuli. The amygdala, a primal portion of the brain, is reactive; when the amgydala shrinks, the prefontal cortex becomes thicker. The prefrontal cortex is responsible for clear decision making, awareness and concentration (Afonso et al.., 2020). Meditation benefits the individual and this is evident through the changes found in the brain structure.

Meditation has been proven to change the brain and offer benefits to long term participants (Afonso et al., 2020; Behan, 2020). Neuroscientists have proven that different parts of the brain are activated during meditation, but few studies have explored the activation with different types, leading to the need for more organization (Fox et al., 2016; Tomasino et al., 2014). Sedlmeier et al. (2016) describe that it is important for meditative studies to diversify categories and types of meditation practices to lead to a sound theory of meditation.

The study of brief meditation and the brain is new and requires more in depth research; Wu et al. (2019) conclude that there is a link between brief meditation and the emotional

benefits, and this improvement may be attributed to the hypothalamus–pituitary–adrenal (HPA) axis. It is thought that emotional improvement occurs due to a greater cortisol recovery, cortisol being the stress hormone, after a triggering emotional stimuli (Wu et al., 2019). Additionally, it proves to increase the gray matter in the brain by reducing the response of the right amygdala (Wu et al., 2019). Longer meditation sessions are shown to help regulate neurotransmitters related to dopamine and serotonin; brief meditation studies have yet to be conducted to test similar results (Afonso et al., 2020; Wu et al., 2019).

The brain is wired to create connections with each other, whether positive or negative. Negative connections, or rumination, can negatively impact emotions such as anxiety, stress and resilience. During meditation, an individual can strengthen the desired connections and weaken others. Novice practitioners have more brain activity during meditation than more experienced individuals, which is expected due to the brain learning a new activity and making new neural connections and riding of old habits (Headspace, 2020).

Three brain areas are especially important during meditation: the Caudette, Entorhinal Cortex and the Medial Prefrontal Cortex (Headspace, 2020). The Caudette is the area of the brain that is responsible for acknowledging and consciously letting go of thoughts (Headspace, 2020), something that is often cued during meditation or yoga sessions. The entorhinal cortex drives the control of mind wandering during activities such as meditation. Lastly, the medial prefrontal cortex supports self-awareness and leads to the benefits that meditation offers. With these functional brain areas that are manipulated during meditation, they work to increase gray matter that researchers know declines as age progresses. These processes impact the prefrontal cortex that controls the ability to concentrate, make decisions and actively resist distractions (Headspace, 2020).

Meditation practices have also been proven to shrink the amygdala; an area of the brain often referred to as the fear center. The amygdala is responsible for the fight-or-flight response (Kral et al., 2018). As the amygdala shrinks during meditation practices, the prefrontal cortex, the area of the brain responsible for higher order thinking and decision making, becomes thicker. Additionally, the functional connectivity between the amygdala and the prefrontal cortex also changes. The connections responsible for concentration and attention become stronger (Rathore et al., 2022). By shrinking the amygdala and thickening the prefrontal cortex individuals can better control their reactions to stress stimuli. By doing this, the overall levels of anxiety can decrease (Kral et al., 2018; Rathore et al., 2022).

Emerging Adulthood

Emerging adulthood is a developmental phrase coined by Jeffrey Arnett, PhD at Clark University, in 2000. Since then, much of his research centered around individuals in the emerging adulthood phase who are aged 18-29 going through large transitions such as leaving home, beginning college, becoming financially independent, getting married, finding employment and more ("What is Emerging Adulthood?", 2023). Emerging adulthood is a challenging time for individuals due to the several large changes from adolescence. Arnett coined this phase of life and declared it a new developmental milestone since the 1970's when there were societal changes such as the technology revolution (Arnett, 2000). Due to this revolution and others such as the sexual revolution and the Women's movement, full-blown adulthood was beginning to be delayed ("What is Emerging Adulthood?", 2023).

The transition to adulthood has continued to be delayed as technology has continued to increase for those who were raised as Generation Z children. This cohort of the population have experienced an increase of mental health symptoms such as depression, anxiety and eating disorders; simultaneously there has been an increase in the desire for mental health help ("What

is Emerging Adulthood?", 2023). Barriers are present for college-aged students to seek help such as the busy lifestyle and academic demands (Lattie et al., 2019). Mental health professionals are investigating these challenges and acknowledge that there is a mental health crisis. Some of these mental health issues that have currently increased are thought to be due to the increase of technology use and social media. However, studies have shown that it depends on how technology such as the smart phone is being utilized. Studies have found that college students using their smartphone for mental health help find an improvement in overall well-being; the smartphone allows positive technology use for those emerging into adulthood (Lattie et al., 2019).

Generation Z Characteristics

Individuals who are a part of Generation Z are currently entering adulthood. Generation Z persons were born between 1995 and 2010, when technology was booming (Budiman & Franky, 2021). Because they grew up in the age of technology, Generation Z differs from previous generations in many ways. Generation Z individuals have higher phone and internet usage rates, desire more instant results, have lower attention spans, and interact in person with other humans less frequently than with their perceived friends on social media platforms (Budiman & Franky, 2021). These friends or followers scattered around the world take the individual's attention away from in-person contact like those in prior generations (Budiman & Franky, 2021). Perceived consequences for this generation include a higher level of narcissism (Twenge, 2013; Wood et al., 2021) and impatience and loneliness (Camfield et al., 2020). However, more studies are examining these stereotypes and the perceived advantages of Generation Z, such as the ability to multitask, be flexible, advocate, or seek help regarding mental health (Mahapatra et al., 2022).

Generation Z has witnessed a global recession, global climate crisis, the attacks of September 11, 2001, a boom of technology and a global pandemic (Rothman, 2016). They have

grown up with technology in a way that sets them apart from other generations. Generation Z's reported attention span is shorter than generations before; they often search for the quick answer rather than the long one that requires problem solving. The access to technology has been reported as one reason their attention span may be shorter and thus their learning and focus is better in smaller time durations (Rothman, 2016).

According to a survey in 2022, 42% of Generation Z individuals reported having a mental health diagnosis (Colvin, 2023). However, Generation Z students who acknowledge they need mental health help, claim they do not have adequate time in their schedule (Huberty et al., 2019), stressing the need for a time-conscious aid. The four most common mental heal diagnoses were anxiety, attention-deficit/hyperactivity disorder (ADHD), and post-traumatic stress disorder (PTSD) (Colvin, 2023). Generation Z individuals more commonly report problems with mental health than generations prior (Colvin, 2023; Grelle et al., 2023). 27% of Generation Z responders reported their mental health being in poor condition, which is a 13% increase from Millennials (those born 1981 and 1994) (Colvin, 2023). Generation Z individuals are known for being open to mental health aid and speaking up about their experiences (Colvin, 2023), making them strong candidates for a meditation intervention. Furthermore, this generation is severely at risk for developing more mental health problems because of their developmental stage during the crisis of the global Covid-19 pandemic (Grelle et al., 2023) making their mental health a priority (Kaplan-Rakowski, 2020).

Generation Z check their phone multiple times a day and their main avenue for information is videos, watching on average 70 videos a week; they are strong multitaskers (Rothman, 2016). They prioritize having technology that is user-friendly and that has strong ratings and the ability to review. They spend four hours on average on their phone throughout the day, making applications an easy way to access content (Lattie et al., 2019). Meditation

applications can provide an avenue for Generation Z students to have a positive way to spend time on their smartphones (Lattie et al., 2019). Guided and virtual meditation that is brief, user friendly and ratable will appeal to their generational characteristics (Xu et al., 2022).

The Mindfulness App offers aspects that are desirable for Generation Z individuals. Generation Z has different needs and wants than other generations. Spending less money is important for this generation (Deloitte, 2023). Generation Z values maximizing their time and money while also desiring quick positive results (Deloitte, 2023). Generation Z has been found to gain more emotionally from technology than other generations (Deloitte, 2023). Generation Z also reports having less brand loyalty and instead desires a lower cost and a positive experience (Deloitte, 2023). The free Mindfulness App appeals to the free experience and it also caters to Generation Z's want to immerse in technology for an emotionally beneficial experience. It also supports the generation's desire to escape reality for a short period of time (Priporas et al., 2017). Providing meditation that is free, brief and virtual will add to the literature of meditation for this young generation.

Anxiety

Anxiety is a natural experience when temporary, prolonged anxiety should be avoided as it can cause mental health illness and an interruption to everyday life (Daviu et al., 2019). When anxiety levels are high, college students report having difficulty focusing or completing their academic work (American College Health Association, 2017). Generation Z college students recently experienced the pandemic, and according to a recent study, 70% of college students who were enrolled during the pandemic reported increased levels of anxiety; the most common contributor of the increased anxiety was reported as academics (Wang et al., 2020). The anxiety had ties to feelings of social isolation and lack of connection with others (Haikalis et al., 2022), something observed as an obvious difference between an in person guided meditation and a

virtual remote meditation. Anxiety, while normal to experience, can evolve to anxiety disorders and overall, anxiety is on the rise for Generation Z college students (Wang et al., 2020).

Males and females have different levels of anxiety; males report less anxiety than females especially in the academic field (Y. Yang & P. Yang, 2022). Females were found to have higher levels of anxiety that are statistically significant in comparison with males (Y. Yang & P. Yang, 2022). A proposed hypothesis for the differing levels included males participating more regularly in exercise, games, and other methods to alleviate the anxiety or adverse emotions (Y. Yang & P. Yang, 2022). Studies that examine the effects of mindfulness on traits such as anxiety are typically dominated by females (Huberty et al., 2019; Jiwani et al., 2023). To have an accurate representation of the impact of mindfulness on anxiety, there is a need for more studies to aim including both genders as equal representation.

Y. Yang and P. Yang (2022) conclude that no matter the students' gender, by improving psychological capital, the internal resources to handle hard situations such as hope, efficacy, optimism and resiliency (Da et al., 2021; Martin & Marsh, 2006), students can reduce anxiety and academic stress (Chen & Lan, 2020; Liao et al., 2019). By improving the psychological capital elements, such as resilience, students have lower anxiety levels (Liao et al., 2019). Meditative practices can improve psychological capital such as resilience (TedX Talks, 2019).

Resilience

Dr. Norman Garmezy developed the theoretical framework foundation for resiliency over the course of almost four decades; he devoted a large part of his studies to examining resilience and child development (Hanson & Gottesman, 2012). Research has grown over the decades to evolve the framework and definitions of resiliency (Ahmed & Julius, 2015; Chmitorz et al., 2018). Scientists such as Garmezy define resilience in social sciences as “the process of bending and rebounding to overcome adversity” (Hunter, 2001, p. 172). Resilience does not encompass

the amount of adversity an individual faces, but rather the ability to overcome it (Hanson & Gottesman, 2012).

Everall et al. (2006) explained that resilience models typically examine one of three definitions: resilience as a personality characteristic which serves as a protector from the negative impacts of adversity and risk; resilience as a positive result, encouraged by positive traits such as high self-esteem, academic achievement, awareness, and self-control regardless of risk exposure; and resilience as an ever-evolving process depending on interactions and scenarios faced by the individual. Another known factor often included in the theoretical framework includes the social support, connections, and relationships of the individual with others (Hartling, 2005).

Theories such as resilience theory have emerged from Garmezy's empirical studies and others alike. The resilience theory focuses on the aforementioned models; it discusses how people face and adapt to adversity, risk and fear (Zimmerman, 2013). Resilience theory involves examining how individuals can use strength-based characteristics to rebound and thrive after facing adversity (Hanson & Gottesman, 2012; Zimmerman, 2013). Resilience theory also encompasses the ability for students, such as college students, to rebound and maintain high academic achievement despite facing academic and personal challenges or stressful events during their life (Jowkar et al., 2014). Researchers have described how mindfulness practice is a variable for academic resilience; these variables also include self-efficacy and coping skills (Li & Nishikawa, 2010; Rees et al., 2015).

Academic Resilience

The current generation, Generation Z students, often experience aversion to adversity, which does not expose them to adversity necessary to build academic resilience (Luecken & Gress, 2010). A combination of unresolved anxiety thus causes difficulty to focus on academic

work (American College Health Association, 2017). Generation Z students also tend to avert negative situations (Twenge, 2013) which may result in poor academic outcomes and low academic resilience (Bradley-Geist & Olson-Buchanan, 2014); supporting the need for more help to lower anxiety levels.

Generation Z students have different characteristics, strengths, weaknesses, and expectations in the classroom than previous generations (Seemiller & Grace, 2016; Shatto & Erwin, 2016). They are more likely to have experienced helicopter parenting, which entails parents excessively helping their children during a crisis or for logistical reasons (Talmon, 2019). This generation is stereotyped to require praise and high grades; these factors may lower their ability to be academically resilient in the face of adversity (Shen, 2022; Talmon, 2019). As a result of helicopter parenting, Generation Z students could be less resilient in the face of adversity. Because resilience is built through exposure to adversity, they may lack the essential skills to adapt and persevere (Shen, 2022).

According to Ahmed and Julius (2015), there was a significant relationship between anxiety, academic resilience, and academic performance. The study results state that a student who experiences high anxiety performs lower academically. Furthermore, the study concluded that higher rates of resilience can lower mental health problems; however, resilience scores were not found as a predictor of anxiety. Students who experience anxiety and struggle with resilience may benefit from a grounding meditation practice (Ahmed & Julius, 2015). Prolonged exposure to meditation is proven to help students cope with stressors and positively influence academic mindset or achievement (Athanas et al., 2021). Impacts of short interventions that fit the technology-immersed, instant gratification, and busy lifestyle of Generation Z college students need more studies to assess their effectiveness (Huberty et al., 2019).

Reducing anxiety in undergraduates can lead to an increase in resilience for their academic work (Y. Yang & P. Yang, 2022). Students are experiencing higher levels of stress and anxiety which impact the ability to demonstrate perseverance; additionally, the higher the stress and anxiety levels the more likely an individual will withdraw from school (Hsu & Goldsmith, 2021). College students who experience higher levels of stress and anxiety are not only impacted in academic perseverance, but they also are more likely to have additional mental health issues and physical illnesses (Hsu & Goldsmith, 2021). Flett et al. (2020) conducted a study and concluded that self-paced virtual meditation can benefit college students' anxiety and academic resilience; however, they stated that there is a need for further literature to explore the specific impact. Students who demonstrate higher levels of perseverance are labeled as resilient and are often able to use resources and ask for help when experiencing challenges (Ainscough et al., 2017; Lessard et al., 2014).

Managing stressors may be considered time-consuming from the student's perspective, and many facets to improve these mental health aspects, such as medicine or yoga memberships, can be expensive (Huberty et al., 2019). In offering an alternative solution, the creation of meditation applications available on phone devices has increased in recent years which helps college students who report more likely to seek help online than face-to-face (Huberty et al., 2019). However, many of these applications and guided meditations are not backed by research-based evidence strategies (Bamber & Morpeth, 2019; Gal et al., 2021), thus raising the question of their effectiveness. Overall, few researchers have explored the impact of meditation practice on anxiety and academic resilience.

Meditation Applications

There are many meditation applications available, yet few of them have research to measure their impact despite the growing interest in virtual sessions (Lange, 2020; Lattie et al.,

2019; Mani et al., 2015; Schulte-Frankenfeld & Trautwein, 2022). Interest has grown in recent years as emerging adults in the Generation Z population are met with the demands of a busy academic life; they have a higher acceptance of receiving mental health help, yet they have limited funds or time to pursue (Lattie et al., 2019). Generation Z students who are in the emerging adulthood phase of life are seeking ways to engage in virtual offerings such as therapy or meditation available through applications (Hudlicka, 2017; Lattie et al., 2019).

A search in the Apple Store yielded 260 (Mani et al., 2015); while the New York Times reported over 2,000 meditation applications available overall (Newman, 2022) many of which were published between 2015-2020 (Goodwin, 2020). 23% of Generation Z reports practicing meditation, which is twice as many than the Baby Boomer generation (Georgiou & Chheda, 2020), people born between 1946 and 1964 (Merriam-Webster), demonstrating an increase in virtual meditation practice. In response to a survey, 21% of respondents reported wanting to learn about virtual meditation (Lange, 2020) urging research studies to measure benefits for the practicing population.

Of the available meditation applications, Headspace and Calm rank in the top two most downloaded; Headspace reports over 30 million users in 190 countries (Headspace, 2022) while Calm (2022) reports over 100 million downloads. Headspace, Calm, and many other top-reviewed Mindfulness applications also require users to pay a subscription fee while others are offered for free. People who practice meditation more than once a day are usually willing to pay for an online subscription (Singh, 2020); which raises the question of students, or young adults, attempting to meditate to find relief without paying for an application. Other applications, less frequented, do offer free occasional programs. The search for virtual meditation increased by 65% between 2019 and 2020 (C.C. Yang et al., 2019) which emphasizes the need for further research of application effectiveness other than those ranked among the most popular with a

subscription fee. Specifically, there is a need to study web-based programs and applications that do not follow the typical therapy modality as it will provide more information about how Generation Z is seeking help for their mental health issues (Sylvia et al., 2022).

No matter the meditation practitioner's demographics or generational characteristics, meditation is proven to help problems such as those raised above as well as anxiety, obsessive compulsive disorder (OCD), depression, Post Traumatic Stress Disorder (PTSD) and more. As interest in virtual meditation has increased in recent years, researchers have begun to study comparing impacts (Taylor et al., 2021). Taylor et al. (2021) found that virtual meditation for prolonged periods of time and on a consistent schedule did have significant impacts on the overall wellbeing of virtual users, thus supporting the theory that virtual mindfulness may be a feasible alternative to in person meditation (Duraimani, 2019). Additionally, other studies have found that virtual meditation provides similar benefits as programs in person (Sylvia et al., 2022; Xu et al., 2022). However, there is an inconsistent report of data that supports the number of sessions, length of time, or program that will provide benefits to Generation Z undergraduates' mental health issues (Sylvia et al., 2022).

Virtual meditation applications appeal to Generation Z's busy lifestyle. Limited studies have explored the how these applications have impacted students who are working part-time; a recent study found 43% of undergraduate students work while enrolled as a full-time student (Ecton & Carruthers, 2023). Schulte-Frankenfeld and Trautwein (2022) conducted the first study to add literature about the efficacy of these applications. Generation Z undergraduates who work and balance academics are found to achieve lower (2022). It was found that the intervention was effective; however, there is a continuing need for more studies as it could provide additional opportunities for low-cost interventions that could more quickly address the early stages of mental health issues (Schulte-Frankenfeld & Trautwein, 2022).

Some hypotheses have emerged supporting short duration of meditation and mindfulness on apps such as Headspace and Calm (Flett et al., 2020; Huberty et al., 2019). Headspace and Calm are among the most frequently researched platforms; considering there are at least 260 other meditation applications available, there is a need more research on what is circulating for emerging adults in need of mental health help (Sylvia et al., 2022). Applications such as Calm allow a way for college students who experience stress, anxiety and self-criticism, a facet for healing that they may otherwise not seek due to their busy schedules or lack of funds (Huberty et al., 2019). The Calm and Headspace applications, like the Mindfulness App, offer a variety of guided meditations at differing lengths and covering different topics. Huberty et al. (2019) theorized that stress levels, which directly impact anxiety, would decrease with an eight-week guided meditation program using Calm; the results concluded that the application was impactful and further studies need to be conducted.

There is differing research to suggest the number of sessions and minutes that is required for a meditation application to be effective; Fowers et al. (2022) suggest that their findings support that the intervention should be at least how long it takes to form a habit, 64 days. They additionally discuss the importance of tracking app usage in the early stages to predict the potential abandonment of the intervention (Fowers et al., 2022). A study examined similar questions using Headspace, a popular meditation application (Saul & Fish, 2019). The study used a prescribed timeframe of ten-minute sessions over eight weeks, which is not consistent with the amount of time it takes to form a habit. The study explored how anxiety levels were impacted when individuals meditated using the set framework. Participants included in the sample reported high levels of everyday anxiety and were novice meditators at the college level. The study experienced limitations and yielded insignificant results stating that there is a further need

for more studies exploring short intervals of meditation (Schulte-Frankenfeld & Trautwein, 2022; Saul & Fish, 2019).

Studies continued to vary in their assigned minutes and sessions to measure the efficacy of meditation applications. Flett et al., (2020) provided a more general intervention; instead of prescribing amounts of time, they allowed students to use the app at their discretion over three months. The study found that students who used the application to meditate did see subtle results of lower anxiety and higher academic resilience; however, students who did not use the application regularly did not reap the same benefits (Flett et al., 2020). Other studies have also found that there is a large rate of drop out participants if they struggle with more severe mental illness (Sylvia et al., 2022). This impacts the results for those who struggle with deeper mental health problems and instead provides more information for the population who is not as severely impacted by mental illnesses (Sylvia et al., 2022).

An alternative study used another popular meditation application, Calm, to study its impact on stress levels for college students (Huberty et al., 2019). Stress, which is closely related to anxiety considering the behavioral and neural foundation (Daviu et al., 2019), is often experienced in combination with anxiety during the college years (Lemay et al., 2019). Both stress and anxiety are emotional responses that are caused by an external situation (Daviu et al., 2019). Participants in this study meditated for an average of thirty-seven minutes a week for eight weeks. The study's results indicated that the digital mindfulness application yielded positive results; however, with some limitations (Daviu et al., 2019). The study sample was predominately Caucasian, English-speaking women; the researchers claimed the need for a more diverse sample. Additionally, the study relied on self-report for the research, which may cause the data to be misrepresented (Daviu et al., 2019). The above-mentioned studies vary when

considering the number of sessions and length of time, especially when considering the time, it takes to form a habit.

This meditation study utilizing The Mindfulness App will provide more detailed findings for the effectiveness of short interval meditation sessions and the impact on anxiety and academic resilience for Generation Z undergraduate students. It will provide answers about the effectiveness of applications that do not follow regimented therapy modalities for Generation Z students who experience a mental health crisis (Sylvia et al., 2022; Lattie et al., 2019; *What is emerging adulthood,* 2023). It will ultimately add to the literature for virtual meditation that corresponds to the needs of current undergraduate students.

Summary

Generation Z students were raised with new and quickly advancing technology, they have more screen time and access to social media than other generations. Generation Z students are also emerging into adulthood and are faced with the challenge to be independent and balance academic and personal life. Mental health issues are on the rise within the generation; anxiety being one of the most prevalent (Flett et al., 2020). Anxiety inhibits the ability for academic perseverance and may cause students to lack academic achievement or academic resiliency (Shen, 2022). Virtual meditation applications have been on the rise in the past decade and offer students an option to improve their mindfulness and overall, well-being from the comfort of their own home and at their own leisure. There is limited research on the effectiveness of these applications and there is a need for further research to examine their impact (Lange, 2020; Lattie et al., 2019; Mani et al., 2015). These guided meditation applications can be brief and fit the needs and attention span of Generation Z; it offers the ability to seek the help that many are reluctant to get and allow them to continue with their busy everyday lives (Xu et al., 2022). This

study will explore the effectiveness of a guided brief meditation for Generation Z college students who report having levels of anxiety and its impact on academic resiliency.

CHAPTER THREE: METHODS

Overview

Generation Z undergraduates frequently report anxiety at a higher rate than previous generations (Park et al., 2024) and experience a challenge with academic resilience (Seibert, 2021; Wang et al., 2020). Considering their unique upbringing with devices and the increased demand to multitask (Lattie et al., 2019), the need for mental health help is necessary and self-reported by Generation Z undergraduates. While many Generation Z students acknowledge the need for help, they also report not seeking it out due to different reasons such as cost and the demands of day-to-day life (Wang et al., 2020). Since 2015, more virtual applications have become available (Goodwin, 2020) to address these mental health challenges for adults including Generation Z undergraduates (Newman, 2022). By conducting research to deepen the knowledge of the effectiveness of these available applications, more evidence-based results can be made available to encourage the use of these applications and therefore positively impact Generation Z anxiety and academic resilience. The purpose of this study is to analyze the effectiveness of The Mindfulness App meditation application and its impact on anxiety and academic resilience.

This chapter describes the methodology for the study. It describes the research design, questions, participants, setting and instrumentation. The final part of the chapter reviews the procedures of the study and provides a data analysis with a closing summary.

Design

A quantitative within-subjects pretest-post-test intervention design was used to measure if a short interval meditation web-based application improved academic resilience and decreased anxiety levels in Generation Z undergraduates. A pretest-post-test intervention design was effective for this study to measure the change in academic resilience and anxiety after the 5

weeks. This research design allowed the researcher to have a baseline of data prior to the intervention that measures the outcomes at the conclusion of the study (Thiese, 2014).

Research Questions

RQ1: Do short, virtual meditation sessions decrease anxiety in Generation Z undergraduate students?

RQ2: Do short, virtual meditation sessions increase academic resilience in Generation Z undergraduate students?

Hypotheses

Ho1: There will be no statistical difference in pre-test and post-test anxiety scores on the BAI after the short interval meditation in Generation Z undergraduate students.

Ha1: There will be a statistically significant decrease between pretest and post-test anxiety scores on the BAI after short interval meditation in Generation Z undergraduate students.

Ho2: There will be no statistical difference in pre-test and post-test anxiety scores on the ARS-6 after the short interval meditation in Generation Z undergraduate students.

Ha2: There will be a statistically significant increase between pretest and post-test academic resilience scores on the ARS-6 after short interval meditation in Generation Z undergraduate students.

Participants and Setting

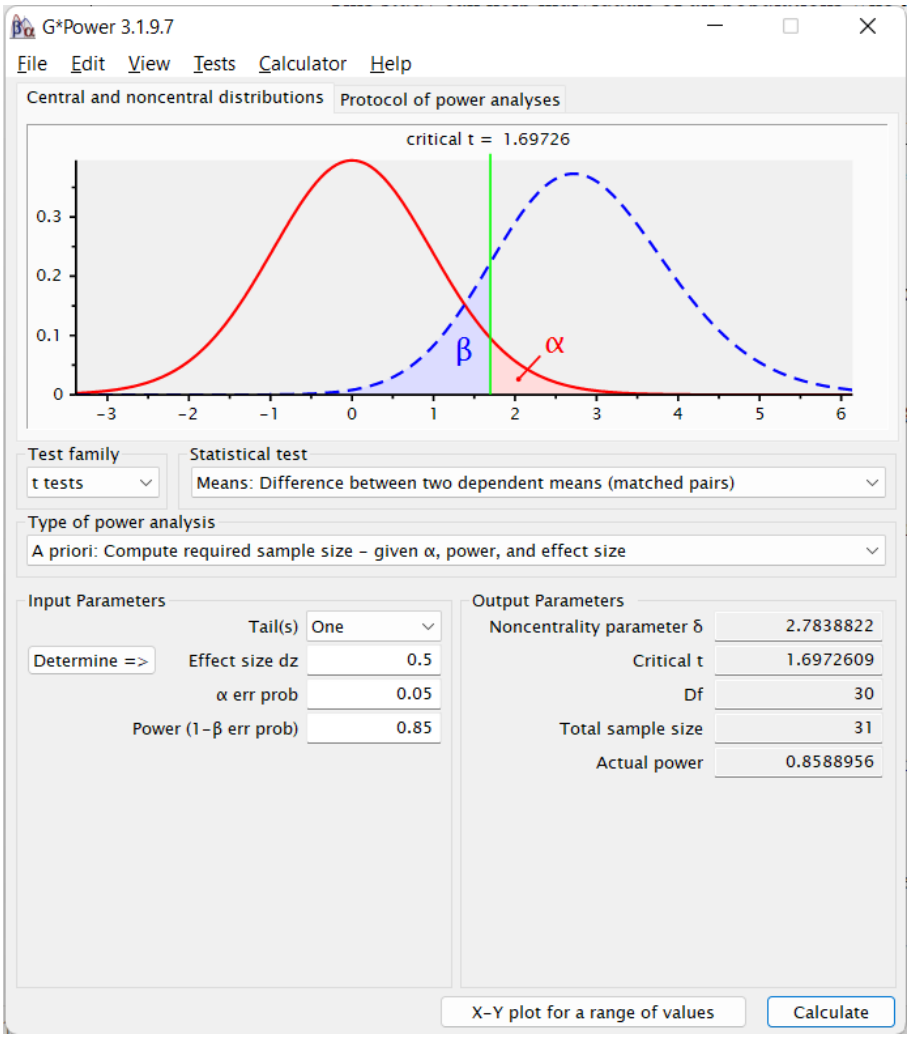
Liberty University Institutional Review Board (IRB) approval was granted before participant recruitment began (see Appendix C). The sample size for RQ1 and RQ2 was determined to be 31 using G*Power (see Figure 1) with a .85 statistical power and alpha set at .05 to provide a medium effect size (Faul et al., 2007). I aimed to recruit 37 participants, allowing for 20% of participant dropouts. I used a convenience sample for this study (Warner, 2013). The study included men and women, aged 18–26 who are undergraduate students. Men

and women who did not meet these qualifications were excluded from the sample. I recruited participants through a university in the Southeastern region of the United States and through social media. The undergraduates represented a diversity of races and ages within Generation Z.

I asked participants to log in and complete all pre-assessments on a private web portal to ensure anonymity. Participants then engaged in the 5-week intervention program. At the conclusion of the five weeks, participants completed the post-assessment, which included a screenshot of time spent on the application over the course of the study. With successful completion of the study, participants received a $50 Amazon gift card. The webmaster distributed the compensation. Participants must complete the pretest, intervention, and post-test to receive the gift card.

Figure 2

*G*Power*



This graph indicates a sample size of 31 was needed to address research questions one and two with a statistically significant power of .85.

Instrumentation

Guided meditation using The Mindfulness App is the intervention for the study. The study measured anxiety and academic resilience; I used the *Academic Resilience Scale* to measure academic resilience, and the *Beck Anxiety Inventory* to measure anxiety.

The Academic Resilience Scale (ARS-6)

Martin and Marsh (2006) developed the six-item self-report academic resilience (see Appendix B). They created the instrument due to the lack of resources on academic resilience as opposed to general life resilience. Martin and Marsh found that academic resilience is necessary for students during their educational career and there was a necessity for measurement. The instrument contains six items reported on a 1–7 Likert scale. The items include: (a) "I believe I'm mentally tough when it comes to exams," (b) "I don't let study stress get on top of me," (c) "I'm good at bouncing back from a poor mark in my schoolwork," (d) "I think I'm good at dealing with school pressures," (e) "I don't let a bad mark affect my confidence," and (f) "I'm good at dealing with setbacks at school," (Martin & Marsh, 2006, p. 276).

The ARS-6 instrument is a brief attitudinal scale that measures the student's ability to deal with challenges, setbacks, and stress in a learning environment (Cui et al., 2023). The scale was developed based on multiple motivational theories such as the theory of needs, self-sufficiency theory, and expectancy-value theory, which led to the creation of the scale to obtain positive reactions when met with academic adversities. There is a high internal consistency of Cronbach's alpha =.89 (Martin & Marsh, 2006).

Beck Anxiety Inventory (BAI)

Beck et al. (1988) developed the 21-item self-report anxiety scale~~,~~ *Beck Anxiety Inventory~~,~~* (BAI; see Appendix A). The 21 items were drawn from three other anxiety scales: *The Anxiety Checklist, The Physicians Reference List,* and *The Situational Anxiety Checklist* (Beck et al., 1988). The 21 items came from a pool of 86 combined items from the aforementioned three scales; analyses were done to reduce the pool of items. The BAI shows a high internal consistency of Cronbach's alpha = .92. Test and retest over 1 week, r(81) = .75. The Beck Anxiety Inventory differentiates between anxious groups such as panic disorder, generalized

anxiety disorder, and other diagnoses, such as major depressive disorder, and dysthymic disorder (Beck et al., 1988). The Beck Anxiety Inventory is moderately correlated with the Hamilton Anxiety Rating Scale r(150)= .51 and mildly correlated with the Hamilton Depression Rating Scale r(153)= .25 (Beck et al., 1988).

The Beck Anxiety Inventory is solely focused on measuring the severity of anxiety; it was carefully constructed to avoid confusion with depression (Beck et al., 1988). It contains 21 questions that determine anxiety levels from minimal to severe. Example items include: (a) "fear of losing control" (b) "wobbliness in legs, and (c) feeling "scared," (Muntingh et al., 2011, p. 3). Self-reporters are asked to respond to questions about their anxiety levels over the preceding 4 weeks. A score of 0–7 indicates minimal anxiety, 8–15 is mild anxiety, 15–25 moderate anxiety and 30–63 indicates severe anxiety (Beck et al., 1988).

Procedures

Ethical research standards were consistent throughout the duration of the study; I closely followed guidelines provided by the IRB. Recruitment of participants and data collection began after the IRB provided approval of the study (see Appendix C). University site permissions were obtained (see Appendix D) to recruit via email (see Appendix E); additionally, social media posts (see Appendix F) and recruitment flyers (see Appendix G) were used to gather participants. The social media posts and flyers included information about the study, such as general information and the purpose.

The website provided anonymity for participants to access the information sheet (see Appendix H), screening questions (see Appendix I) a demographic questionnaire (see Appendix J), and pretest and post-test assessments. Additionally, it provided instructions to follow for the intervention portion of the study (see Appendix K). Participants were guided to create a unique user ID that maintained anonymity. The ID codes did not contain any information that could be

used to identify the participants. The webmaster was able to identify the pretest and post-test data by using the unique IDs. Participants used the same identification on all portions of the study including the demographic questionnaire, pretest, and post-test assessments. Applicants who did not agree to the informational sheet or answer "no" to any of the screening questions were directed to a page that thanked them for their interest in the study and explained the reason for disqualification.

Qualified participants were directed to the demographic survey and pretest assessment, which required about 15 minutes to complete. The website was made live 24 hours before the participant flyers or recruitment occurred. Upon completion of the demographic survey and pretest assessment, participants were directed to a page with instructions for the next 5 weeks. These instructions included how to download The Mindfulness App. They were instructed to create a free account. By creating an account, The Mindfulness App tracked usage that was necessary for the post-test assessment. The instructions informed participants to log on-to the application daily and complete a virtual 5-minute meditation; participants chose any meditation style that interested them on the given day. They were also reminded that they had the freedom to complete the meditation at any time and location during the day. Participants were encouraged to turn on notifications through the app to provide daily reminders to meditate. Participants received a reminder email from the webmaster at the start of each week. They were informed that the post-test assessment was available on the final day; participants received a reminder email each day during the 72-hour window. They had 72 hours to complete the post-test after the last day of meditation. The post-test assessment included uploading a screenshot of their usage of The Mindfulness App. This screenshot determined if participants completed 5 minutes of meditation daily for the 5 weeks. The post-test assessment was available on the same website domain as the pretest. The post-test required about 15 minutes to complete.

The third-party webmaster downloaded and forwarded the data to the researcher. I recorded the data on a spreadsheet that used numerical identifiers for participants. The anonymous data will be stored on the researcher's computer. I will permanently delete it after 3 years. I instructed the webmaster to delete all data once I confirmed receipt of the data.

Data Analysis

In this study, I used a paired samples *t*-test to analyze RQ1, *Do short, virtual meditation sessions decrease anxiety in Generation Z undergraduate students?* and RQ2, *Do short, virtual meditation sessions increase academic resilience in Generation Z undergraduate students?* This tested the alternate hypotheses that anxiety will decrease and academic resilience will increase. The null hypotheses will be confirmed if there is no statistically significant difference found in the pretest to post-test individual mean scores (Jackson, 2016).

The paired *t* test was used to identify participant differences in scores between the pretest and post-test. A paired *t* test was an appropriate analysis for both RQ 1 and RQ 2 because it provided results that depict the two various points, the pretest and post-test, and how they differed considering the intervention period (Warner, 2013). It allowed an evaluation of these two different points and demonstrated the impact the intervention had on the participant. I predicted there would be a statistically significant difference in the mean of scores between the pretest and post-test for RQ1 and RQ2. These results would support Ha1 and Ha2 and reject Ho1 and Ho2.

The assumption for each identified analysis (i.e., change in Back Anxiety Inventory [BAI] and change in Academic Resilience Scale [ARS-6]) was that the differences of pretest and post-test data would have a normal distribution. Each analysis was run on a one-tailed paired samples t-test in SPSS' latest edition. Based on the power analysis, the goal was to have 31 participants complete the study for an 85% chance of statistical significance. I added 20% to the

Gpower estimate to account for attrition. The statistic used to report the effect size was Cohen's *d*. I used it to explain the role of the independent variable on the dependent variable (S. L. Jackson, 2016). This allowed the 85% confidence interval to be calculated for a one-tailed test (S. L. Jackson, 2016).

Summary

The pretest-post-test design of this study tested the differences within groups to measure the effect of guided virtual meditation using The Mindfulness App and its impact on the dependent variables, anxiety, and academic resilience. The study aimed to include 31 Generation Z undergraduates to maintain a .85 confidence interval. Participants completed the screening questions to qualify for the study. They then completed a demographic survey and a pre-assessment followed by the intervention and finally the post-assessment, which allowed the researcher to analyze the difference. The Beck Anxiety Inventory measured anxiety (Beck et al., 1988). The Academic Resilience–6 scale measured academic resilience. *T*-tests were used to analyze RQ1 and RQ2.

CHAPTER FOUR: FINDINGS

Overview

The research questions for this study aimed to decrease Generation Z undergraduates' anxiety and increase academic resilience. Generation Z undergraduates report higher levels of anxiety in comparison to previous generations, which can subsequently impact resiliency (Jowkar et al., 2014; Lattie et al., 2019; & Liu et al., 2023). I investigated the effectiveness of a free and user-friendly app, The Mindfulness App, on undergraduate anxiety and academic resilience. The app provides flexibility on where and when to meditate; additionally, the brief five-minute meditation sessions were not time-consuming. Studies prove brief meditation has positive benefits over time (Wu et al., 2019). I aimed to examine if brief virtual meditation would impact not only anxiety (using the Beck Anxiety Inventory) but also academic resilience (using the Academic Resilience-6 Scale). The pretest and post-test results show that five-minute virtual meditation over five weeks can affect undergraduate anxiety and academic resilience.

Chapter four reviews the study's results. I review the results of a five-week intervention with 14 participants. First, I review the descriptive statistics such as age, gender, and ethnicity, measures of central tendency, measures of variability, and each variable's distribution. Second, I review informative statistics about internal consistency. Finally, I discuss the results of the paired samples *t*-test, which confirms whether the hypotheses are statistically significant.

Descriptive Statistics

Table 1 provides descriptive statistics. It includes age, gender, and ethnicity. Participants ranged from 18—25 years old, with an average age of 20.29 with a standard deviation of 2.34. No participants aged 26, the oldest permissible age, completed the study. The gender distribution of participants was 10 females and four males. Additionally, Table 1 presents ethnic groups; one Alaskan Native, two Asian, and 11 White participants were represented in the sample. Seventy

undergraduates enrolled in the study by completing the screening questions, demographic survey, and pretest; of the 70, only 15 completed the intervention, one of which was an outlier and deleted from the data set.

Table 1

Descriptive Statistics for Participants (N = 14)

	n	%	Mean	SD
Age			20.29	2.34
Gender				
Female	10	71.4%		
Male	4	28.6%		
Race				
Alaskan Native	1	7.1%		
Asian	2	14.3%		
White	11	78.6%		

Table 2 presents the minimum and maximum scores, mean, median, standard deviation, skewness and kurtosis scores for reported anxiety and academic resilience. The anxiety preintervention score had the largest range (range = 40). Participants reported higher anxiety (M = 14.00, SD = 12.34) and lower academic resilience scores (M = 30.93, SD = 8.06) before intervention. Postintervention, Anxiety scores decreased (M = 4.21, SD = 3.38), and academic resilience scores increased (M = 34.57, SD = 5.91; see Table 2 and Figure 3–5). Most variables had the same level of variability; the standard deviation range was 3.38 to 8.06. Anxiety preintervention scores were an exception with a standard deviation of 12.34.

Table 2

Descriptive Statistics of Study Variables (N=14)

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Anxiety (Pre)	0	40	14.00	12.335	1.018	.195
Academic Resilience (Pre)	14	42	30.93	8.062	-.375	-.164
Anxiety (Post)	0	9	4.21	3.378	-.187	-1.600
Academic Resilience (Post)	26	42	34.57	5.906	-.203	-1.323

Figure 3

Pre and Postintervention Mean Differences for Anxiety and Academic Resilience

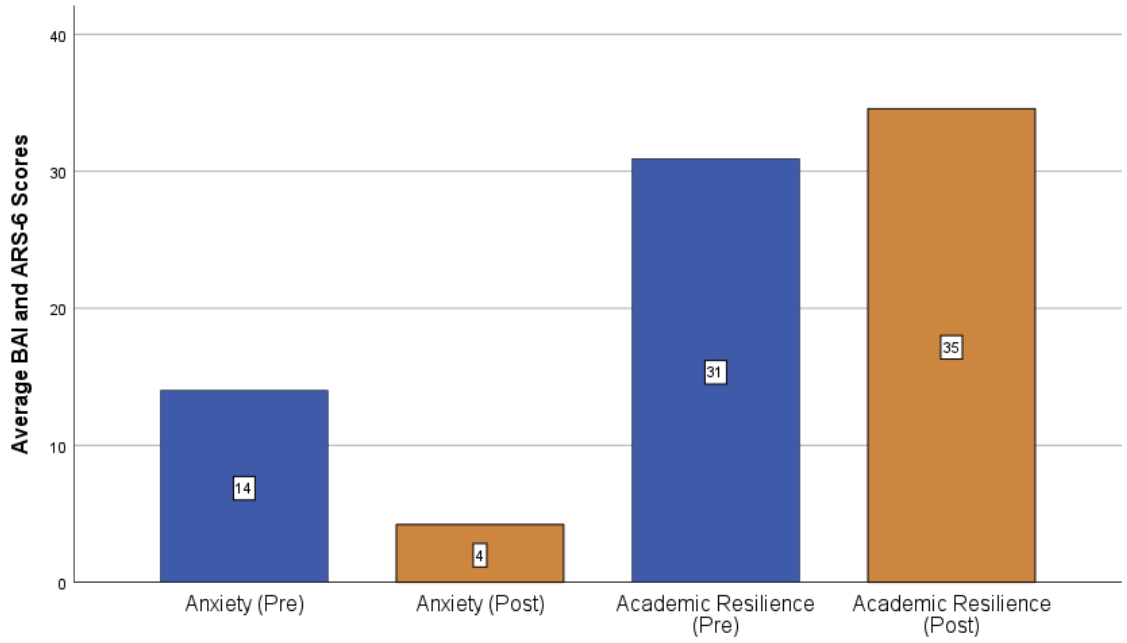


Figure 4

Preintervention and Postintervention Anxiety Scores

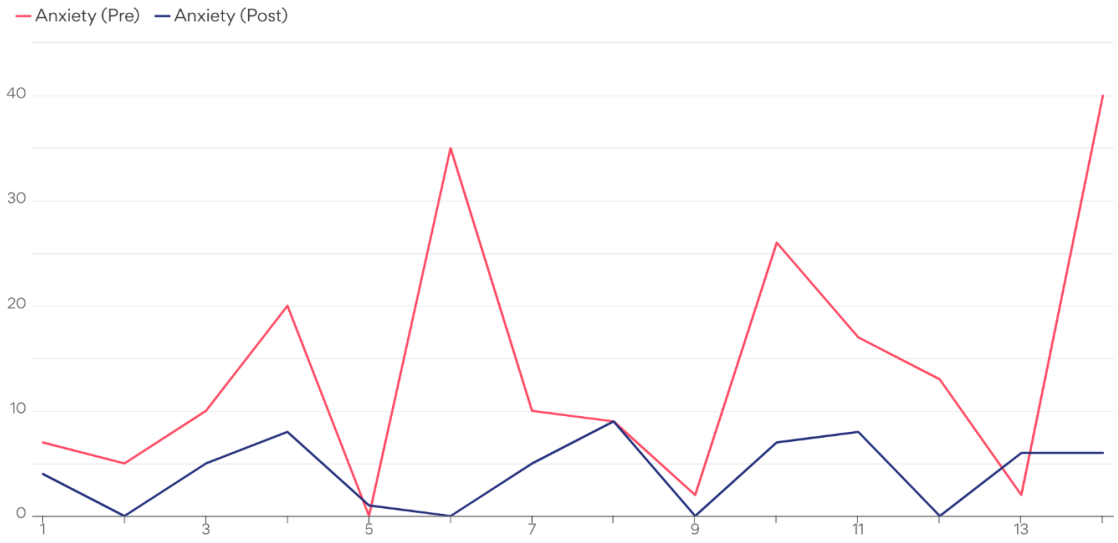
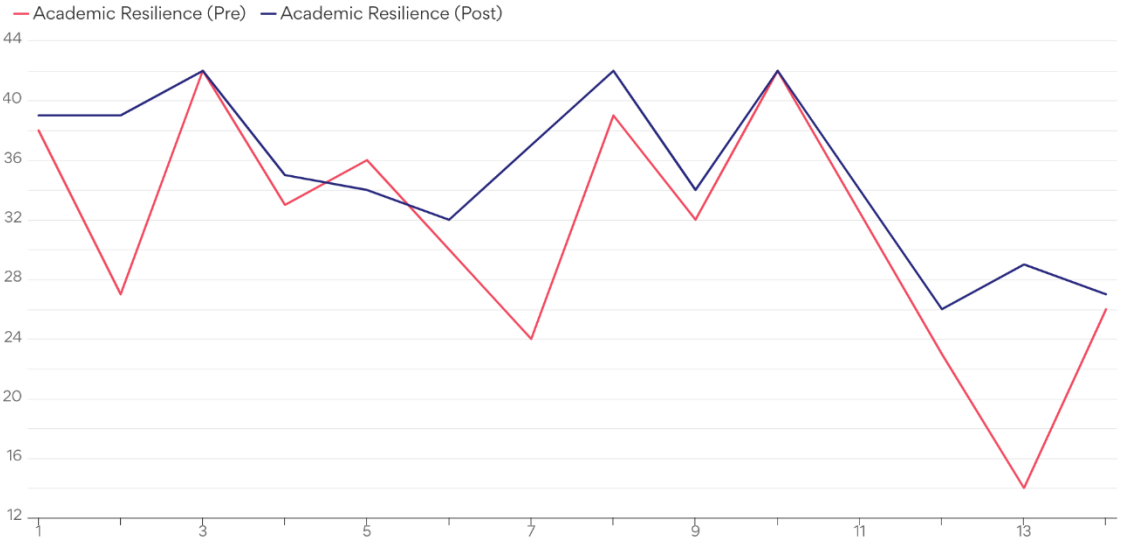


Figure 5

Preintervention and Postintervention Academic Resilience Scores



Results

Data Screening

The data was provided on an Excel spreadsheet and input into IBM SPSS. I checked all pretest and post-test scores for pairing and proofread the initial screening and demographic surveys. Participants submitted a screenshot of minutes spent meditating to verify the intervention requirements were met. I verified the data had no missing values. I created boxplots as a visual representation (see Figures 4-7). I confirmed one outlier in the anxiety post-test data; I removed that outlier from the data set (see Figure 8).

Figure 6

1-D Boxplot of Anxiety (Pre)

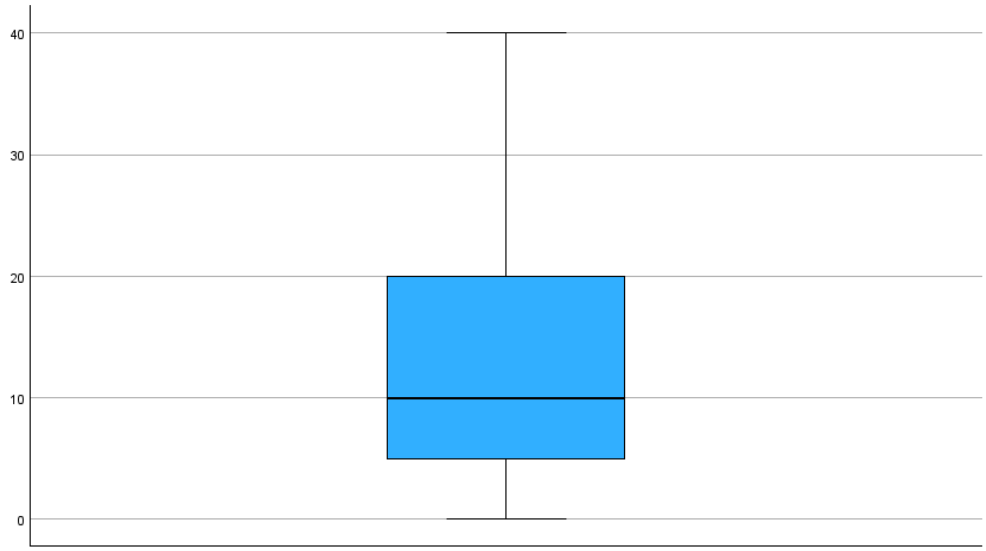


Figure 7

1-D Boxplot of Anxiety (Post)

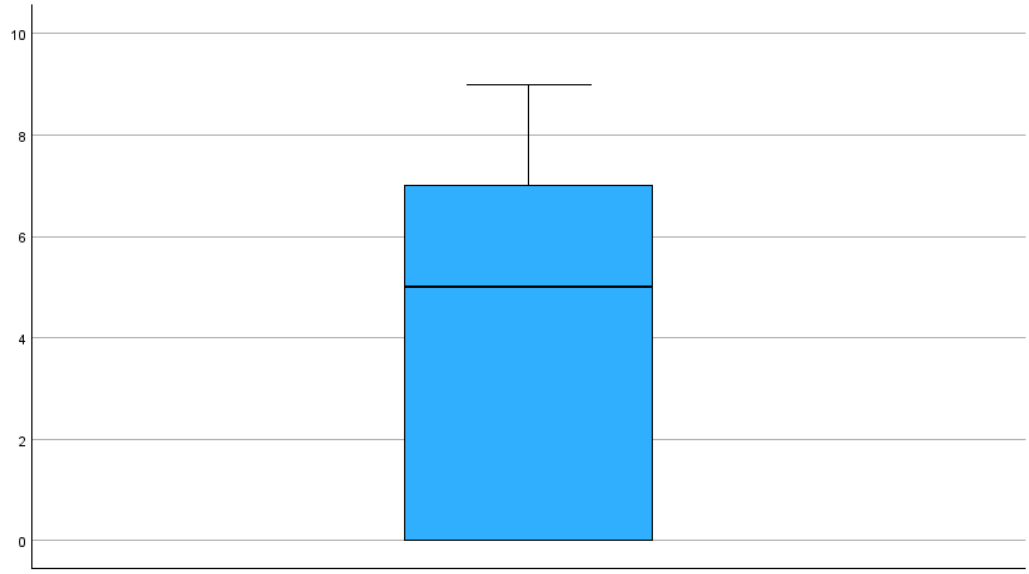


Figure 8

1-D Boxplot of Anxiety (Post) with Outlier

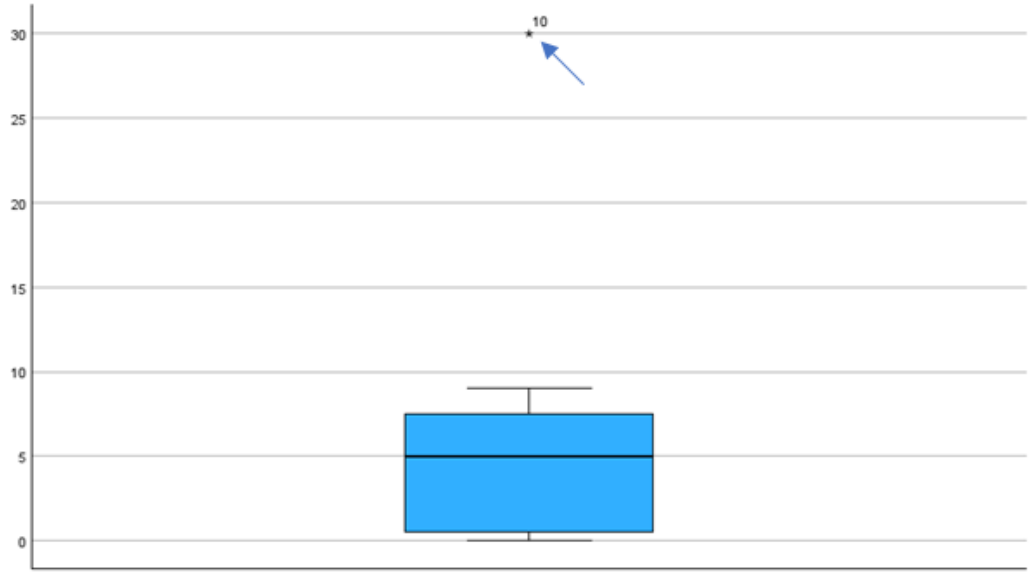


Figure 9

1-D Boxplot of Academic Resilience (Pre)

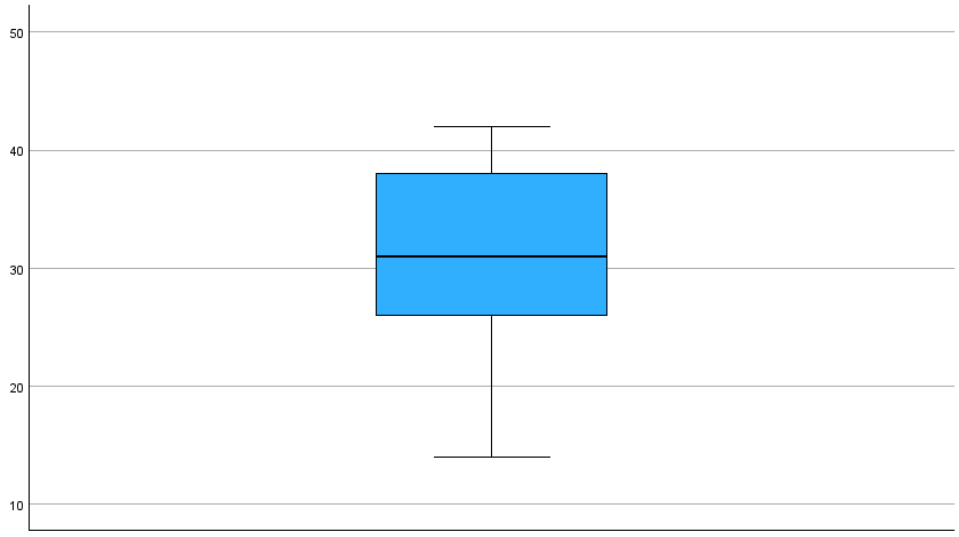
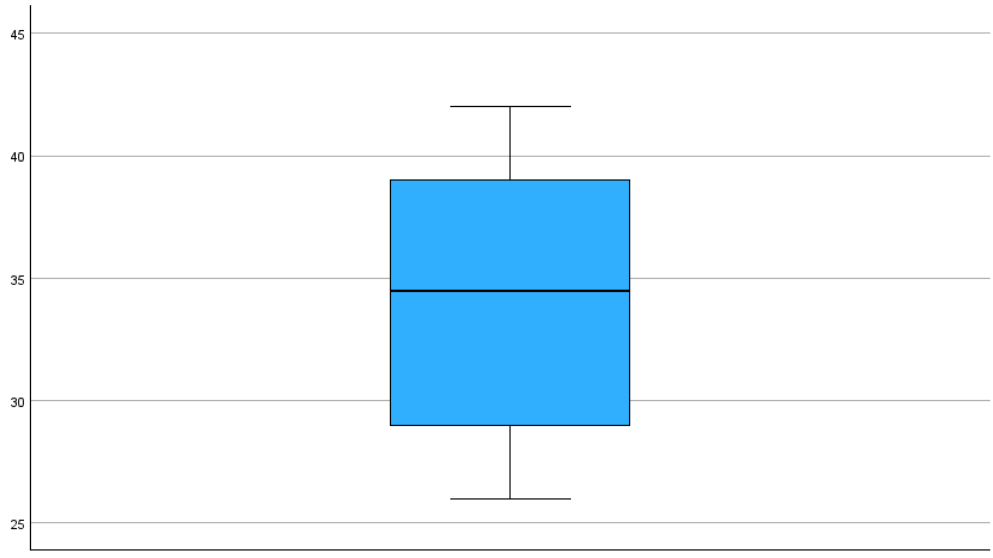


Figure 10

1-D Boxplot of Academic Resilience (Post)



Hypothesis One

In this section, I examine research question one and test the null hypothesis.

RQ1: Do short, virtual meditation sessions decrease anxiety in Generation Z undergraduate students?

Ho1: There will be no statistical difference in pre-test and post-test anxiety scores on the BAI after the short interval meditation in Generation Z undergraduate students.

Ha1: There will be a statistically significant decrease between pretest and post-test anxiety scores on the BAI after short interval meditation in Generation Z undergraduate students.

Assumptions for Paired Samples T-Test

I created histograms as visual charts to portray skewness and kurtosis. Skewness is the degree of asymmetry for a variable's score distribution. Normal distributions have a 0 value and a symmetrical, bell-shaped curve (The Normal Distribution and Z Scores, n.d.). Values between –1 and +1 are within the range of normality (Gupta et al., 2019). Table 2 shows anxiety had a value of 1.09 (pretest) and .19 (posttest). Anxiety pretest scores fell slightly out of the range of normality (see Figure 8); however, anxiety post-test scores fell within the range of normality (see Figure 9).

Figure 11

Simple Histogram of Anxiety (Pre)

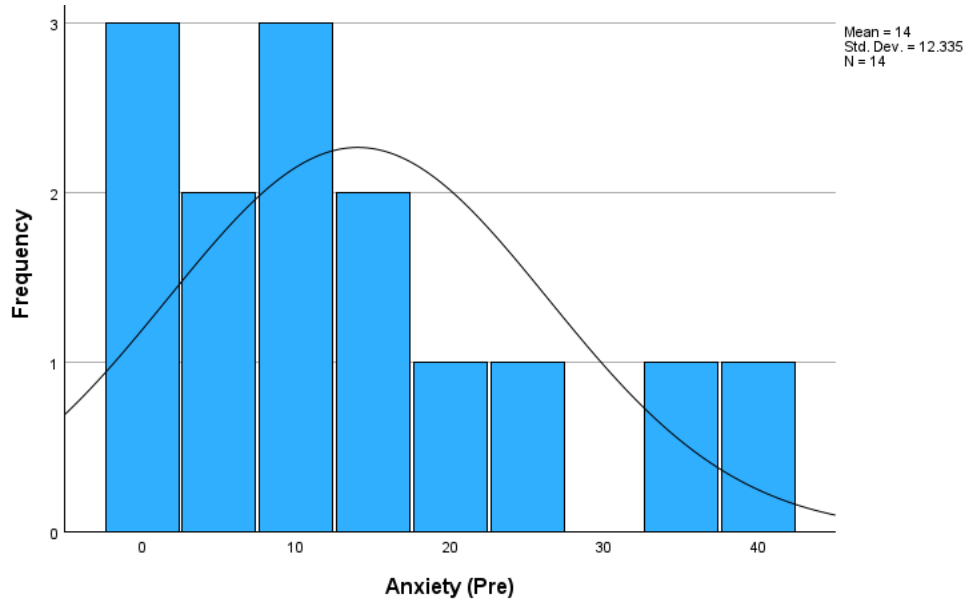
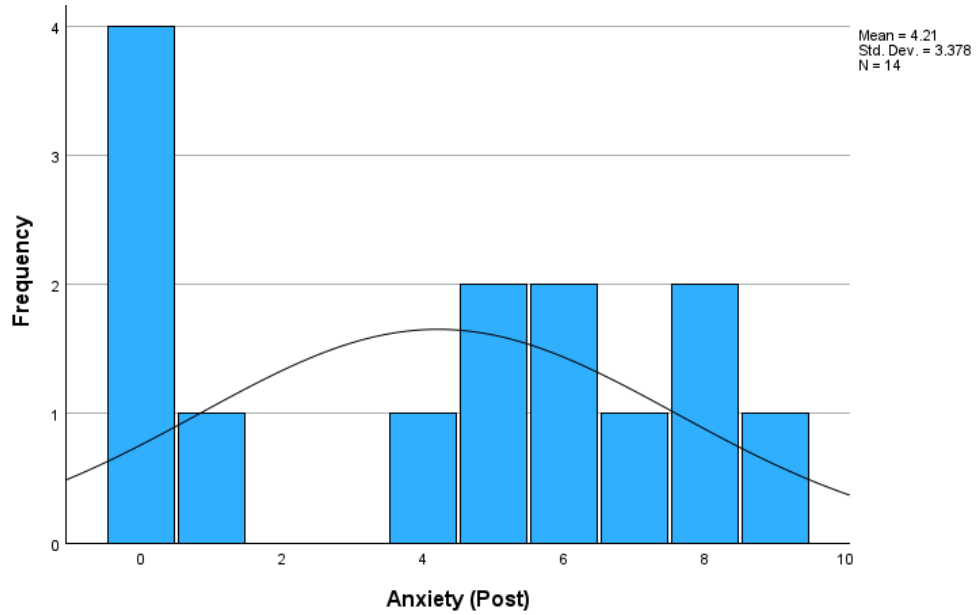


Figure 12

Simple Histogram of Anxiety (Post)



Kurtosis measures how data spreads between the distribution center and the tails; normal kurtosis distributions have a value of 0 (Gupta et al., 2019). The kurtosis value for the anxiety pretest was -.20 and the anxiety post-test was .17, both within the normality range of −3 to +3 (see Table 2). I performed a paired samples *t*-test to test the hypothesis.

Data Analysis

I used a paired sample *t*-test as an inferential statistical test to assess the null hypothesis. The null hypothesis predicted that participants who virtually meditated for five minutes a day for five weeks would see no change in anxiety scores from the pretest to the post-test. The alpha level was $p < .05$ and I used Cohen's *d*. The convention I used to interpret it was 0–.3 as weak, .3–.7 as moderate, and .7 and higher as strong using a .0. The intervention had a strong effect with .80 (see Table 3).

Table 3

Paired Samples Effect Sizes

					95% Confidence Interval	
			Standardizer	Point Estimate	Lower	Upper
Pair 1	Anxiety (Pre) - Anxiety (Post)	Cohen's d	12.091	.809	.190	1.406
		Hedges' correction	12.849	.762	.179	1.323
Pair 2	Academic Resilience (Pre) - Academic Resilience (Post)	Cohen's d	5.458	-.667	-1.239	-.075
		Hedges' correction	5.800	-.628	-1.166	-.071

I examined the preintervention and postintervention anxiety scores for 14 participants. There is statistical support for the hypothesis; anxiety scores decreased significantly after virtually meditating for five minutes a day for five weeks [t (13) = 3.03, *p* = .010, *two tailed*, *d* = .81] (see Table 4). Anxiety decreased 9.79 points (see Table 2).

Table 4

Paired Samples T-Test

		Paired Differences							Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	Anxiety (Pre) - Anxiety (Post)	9.786	12.091	3.231	2.805	16.767	3.028	13	.005	.010
Pair 2	Academic Resilience (Pre) - Academic Resilience (Post)	-3.643	5.458	1.459	-6.794	-.492	-2.497	13	.013	.027

Hypothesis Two

In this section, I examine research question two and test the null hypothesis.

RQ2: Do short, virtual meditation sessions increase academic resilience in Generation Z undergraduate students?

Ho2: There will be no statistical difference in pre-test and post-test academic resilience scores on the ARS-6 after the short interval meditation in Generation Z undergraduate students.

Ha2: There will be a statistically significant increase between pretest and post-test academic resilience scores on the ARS-6 after short interval meditation in Generation Z undergraduate students.

Assumptions for Paired Samples T-Test

I created histograms to portray skewness and kurtosis due to the small sample size. Skewness is the symmetry of a variable's score distribution. Normal distributions have a 0 value and a symmetrical, bell-shaped curve (The Normal Distribution and Z Scores, n.d.). Values between –1 and +1 are within the range of normality (Gupta et al., 2019). Table 4 shows academic resilience had a value of –.48 (pretest) and –.30 (post-test). Academic resilience pretest and post-test scores fell within the range of normality and did not have any outliers (see Figures 10–11).

Figure 13

Simple Histogram of Academic Resilience (Pre)

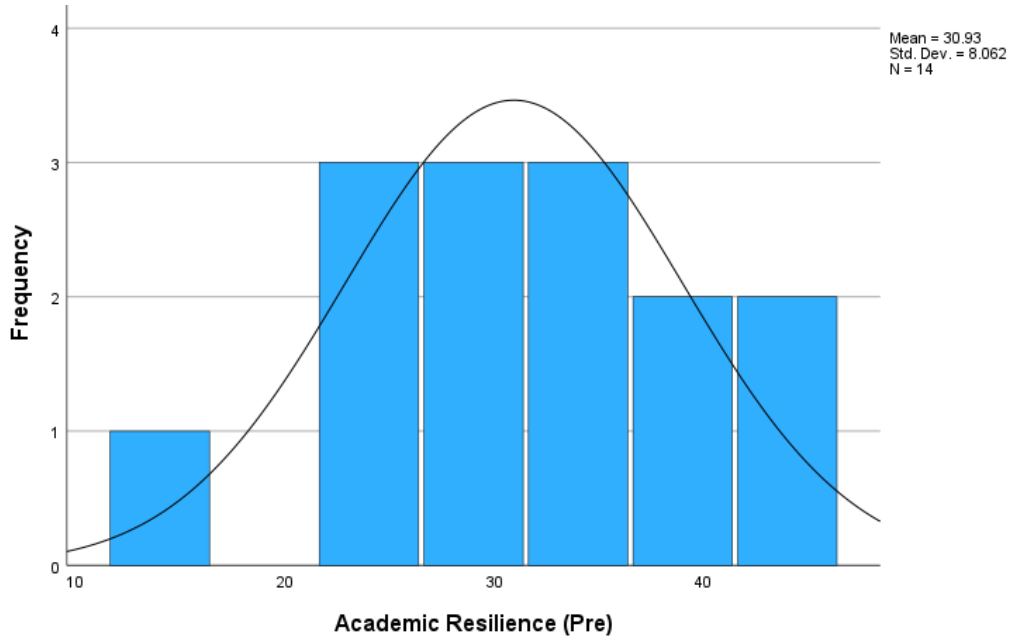
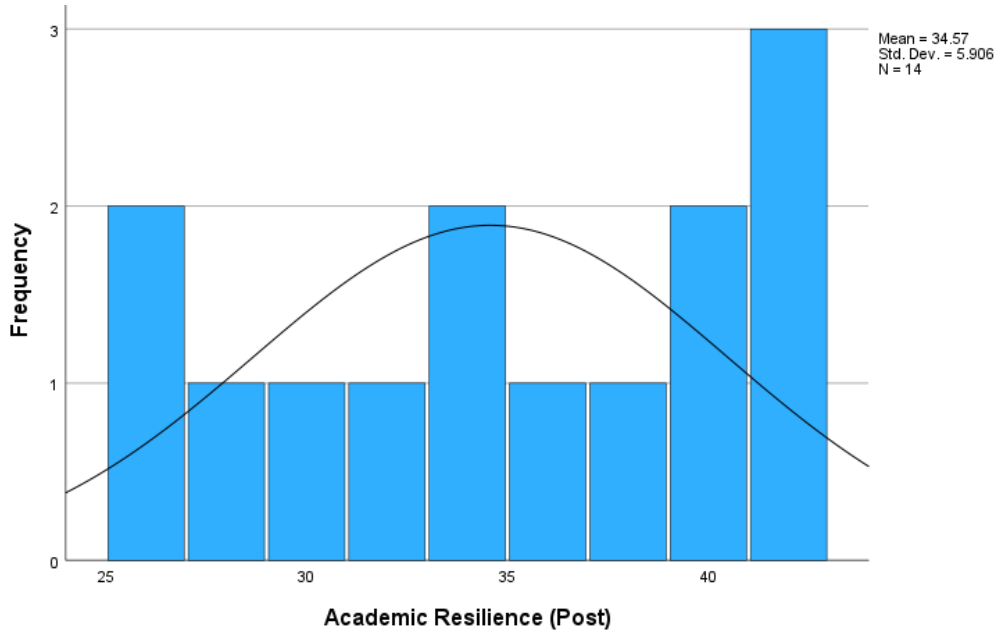


Figure 14

Simple Histogram of Academic Resilience (Post)



Kurtosis measure steepness and shows how data disperses between the distribution center and the tails; normal kurtosis distributions have a value of 0 (Gupta et al., 2019). The kurtosis value for the academic resilience pretest was –.16, within normality, and the academic resilience post-test was –1.32, within the normality range of −3 to +3 (see Table 2). A paired samples t-test was suitable to use as an inferential statistical approach because skewness and kurtosis values were within the range of normality.

Data Analysis

A paired sample *t*-test was the inferential statistical test used to assess the null hypothesis. The null hypothesis predicted participants who virtually meditated for five minutes a day for five weeks would see no change in academic resilience from the pretest to the post-test. The alpha level was $p < .05$ and Cohen's *d* was used. The convention used to interpret it is 0–.3 as weak, .3–.7 as moderate, and .7 and higher as strong using a .0. The intervention effect size was moderate at .68 (see Table 3).

I examined the preintervention and postintervention academic resilience scores for 14 participants. There is statistical support for the hypothesis; academic resilience scores increased significantly after virtually meditating for five minutes a day for five weeks [$t(13) = –2.50$, $p = .03$, *two tailed*, $d = .68$] (see Table 4). Academic resilience increased 3.64 points (see Table 2).

Summary

I conducted this study to examine the impact of brief virtual meditation, via The Mindfulness App, on anxiety and academic resilience for Generation Z undergraduates. I gave participants the flexibility to meditate anywhere and anytime, using a free smartphone application. This population grew up with technology and relies on it in their daily life; they also report higher anxiety rates than previous generations (Park et al., 2024). Generation Z students balance many different areas of life and desire instant gratification (Deloitte, 2023). I wanted to

add to the literature that virtual meditation practice can improve mindfulness and thus lower anxiety rates and increase academic resiliency. There is a gap in the literature of virtual meditation duration (minutes/day and days total) that produces benefits (Norris et al., 2018). Studies show that brief virtual meditation has positive benefits (Flett et al., 2020; Wu et al., 2019); I sought to answer if it would work for Generation Z. The results of the paired-sample *t*-test indicate that there is statistical evidence to support that brief virtual meditation on The Mindfulness App can reduce anxiety and increase academic resiliency. The results for anxiety, [t (13) = 3.03, p = .010, *two tailed*, d = .81] and academic resilience, [t (13) = –2.50, p = .03, *two tailed*, d = .68], mean brief virtual meditation might aid this population.

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter discusses whether the Mindfulness App can impact anxiety and academic resilience by decreasing scores on the BAI and increasing scores on the ARS-6. This chapter will include relevant literature in the discussion of the results, implications for Generation Z undergraduates, limitations, and recommendations for future research.

Discussion

This quantitative pretest-post-test evaluated if brief five-minute virtual meditation over five-weeks on The Mindfulness App would decrease anxiety and increase academic resilience according to the BAI and ARS-6 instruments. All 14 participants were Generation Z, aged 18–25. All participants were enrolled in an accredited undergraduate program. The website, meditation-study.com, included instructions for the study. Participants used the website for pre- and post-intervention data; they used The Mindfulness App on their smartphone for meditation. Data was collected on this website for pre- and post-test data. Literature shows that brief, virtual meditation has positive benefits (Wu et al., 2019; Zhu et al., 2019); however, there is a lack of research specifying what duration is considered brief and effective (Wu et al., 2019).

Research Question One

RQ1: Do short, virtual meditation sessions decrease anxiety in Generation Z undergraduate students?

Anxiety scores decreased by an average of 9.34 points during the intervention period; this result supports the hypothesis that The Mindfulness App would lower anxiety according to the BAI. This result is in accordance with other literature that found brief, virtual meditation effective for anxiety (Lahtinen & Salmivalli, 2020; O'Donnell et al., 2020). Lahtinen and

Salmivalli (2020) found that virtual meditation was effective when participants meditated for five minutes a day over eight weeks. The authors examined weekly data to track the decrease in anxiety at each week's mark; it found that anxiety decreased throughout the duration of the intervention (Lahitnen & Salmivalli, 2020). Similarly, O'Donnell et al. (2020) concluded anxiety, measured by the General Anxiety Disorder-7 (GAD7), was reduced with 10 minutes of meditation over one month. The findings of these studies were similar; however, there is a contradiction in the duration of brief meditation. Wu et al. (2019) found there is a connection between brief meditation and emotional wellbeing. The belief is that the emotional benefits are due to cortisol recovery after an emotional stimulus (O'Leary et al., 2016; Wu et al., 2019). The findings of this study conclude that five minutes over five weeks may be effective for lowering anxiety. The lowering of anxiety may greatly impact the population, Generation Z, who report higher levels of anxiety than previous generations (Park et al., 2014). Overall, the study supported the hypothesis that virtual meditation can lower anxiety and add to relevant literature.

Research Question Two

RQ2: Do short, virtual meditation sessions increase academic resilience in Generation Z undergraduate students?

On average, academic resilience scores increased 3.20 points during the intervention. This change supports the hypothesis that ARS-6 scores will increase when using The Mindfulness App for five minutes a day for five weeks. These findings align with similar literature. There is a significant relationship between anxiety and academic resilience (Ahmed & Julius 2015). Studies support the idea that exposure to meditation positively influences academic performance and mindset (Athanas et al., 2021; Huberty et al., 2019). Further studies concluded that decreasing anxiety can positively impact a student's academic resilience and academic achievement. Positive impacts can include higher academic achievement, improved overall

mental health and well-being and life satisfaction (Flett et al., 2020 & Yang & Yang, 2022). This study adds to relevant research and supports the hypothesis that brief, virtual meditation, such as five-minutes per day for five weeks, can increase academic resilience in Generation Z undergraduates.

Implications

Results from the study indicate that brief and virtual meditation can help reduce anxiety and increase academic resilience for Generation Z undergraduates. These findings suggest the counseling field could utilize brief and virtual mindfulness as an at-home practice to address mental health issues such as anxiety. Generation Z is less likely to seek out professional counseling (American College Health Association), so this may serve as a beneficial option to address mental health concerns. These results add to the existing literature stating that practicing brief virtual meditation, five minutes a day for five weeks, can positively affect Generation Z.

These results indicate that college counselors may find brief and virtual meditations are useful for college counselors to use with undergraduates. College counselors could encourage undergraduates to practice brief and virtual meditation to help their ability to engage and succeed in academics. Lower anxiety rates help students maintain focus on academics which can positively impact their grades. This factor may also impact student dropout rates and provide a higher chance to completion of their degree (Bäulke et al., 2022). Additionally, higher resiliency, such as increased academic resilience, could help college undergraduates maintain emotional regulation when faced with an academic or personal challenge. This emotional regulation could improve academic achievement and overall well-being (Everall et al., 2006; Jowkar et al., 2014).

Meditation has many religious roots, including Christianity. While some express concern about meditation within Christianity, it can serve to become closer to God (Slaby, 2019). Through the years, meditation has evolved largely from its religious roots, but it remains a way

to use breath, focus, and prayer to connect to God (Giraldi, 2019; Slaby, 2019). Both secular and Christian meditation utilizes imagery, stillness, and breathing to focus on the present moment free of judgment. Despite meditation's evolution away from religion and movement towards science and the brain, it can still align with one's Christian beliefs (Slaby, 2019). While not Christian-based, Christians can use The Mindfulness App as a platform for quiet prayer meditation by utilizing its silent feature that includes only the sound of bells.

I designed the study to allow for participant autonomy. Participants could choose when and where to meditate and were offered a wide range of topics and meditation styles (i.e. guided meditation, silent meditation, themes within the guided meditations etc.). Participants did not experience a large time commitment and could access the application easily online on their smartphone. This diversity appeals to Generation Z's desire for independence and choice (Huberty et al., 2019). Participants can also share progress via social media, which appeals to Generation Z's tech-oriented lifestyle (Deloitte, 2023).

Limitations

One limitation of this study was the sample size. The small sample size did not allow generalization of the findings to the Generation Z population. Using an 85% G*Power, the required sample size was 31 (see Figure 2). The study had a large dropout rate. I had 70 undergraduates complete the pretest and 15 complete the entire study. The small sample size reduces the statistical power and does not allow for population generalization (Serdar et al., 2020). Fifteen participants completed the pretest, intervention, and post-test; however, one was removed because it was an outlier due to the post-test anxiety score *(N* = 14).

Another limitation of the study was not having a way to know if participants were completing their meditation during the intervention; while email reminders were sent out, they did not have to check in until the post-test became available. Participants submitted a screenshot

of their time spent meditating, but there was no way to know their completion until the conclusion of the five weeks. Future studies could track the screenshot more frequently which could help target reminder communication and have a prediction of attrition before the end of the intervention window. Additionally, the website master sent many erroneous emails that could have negatively impacted participants to remain in the study due to the surplus of communication. Generation Z views emails as an outdated communication method and they are more likely to delete emails without opening them (Anjum et al., 2020). I recommend future researchers craft a way for participants to check in once a week throughout the study and verify communication is brief, purposeful, and accurate.

I obtained site permission and recruited via email through a Southeastern university. I also used social media for recruitment. A limitation of recruiting through only one university was a lack of diversity in geographical regions of the United States. Additionally, it was a female-heavy study with 73.3% being female; it also lacked ethnic diversity.

Recommendations for Future Research

There are many future research recommendations for this study. This study should be repeated with a larger sample size that includes more diversity within the sample to better represent the population which would help the limitation of this current study. Recruiting from a variety of accredited universities would help diversify the sample. Future studies should also aim to recruit a variety of ethnicities to better represent the Generation Z population.

Future researchers should also include a way to track participant usage of the Mindfulness App, preferably each week to track the dropout rate and when it occurs. This information could provide further information regarding what week students decide to drop out; this could influence other studies to decrease attrition. The ways other studies could utilize this information is by creating more targeted reminder emails. It would also be beneficial to collect

data on which topic and meditation style each participant chooses, and if they intend to utilize meditation in their everyday life.

Another recommendation is to control confounding variables; in this case, varying the time of year the intervention takes place is recommended since differing times of the school year can present more academic stress. This study took place as students prepared for finals, which is a stressful time of year for students (Borghi et al., 2021). Future studies that include various times of the year can compare their results with those from their study. Studies could also track the lasting benefits once students stop meditating. These future recommendations would help future researchers find statistical significance, mitigate current limitations and add more specific data.

Summary

The results of this study indicate that brief, virtual meditation helps to reduce anxiety and increase academic resilience. I conducted this study to examine if the BAI and ARS-6 would demonstrate a decrease in anxiety and an increase in resiliency when comparing pretest and post-test results. The small sample size was a limitation in drawing conclusions about the population; however, it supported existing literature that shows brief, virtual meditation can decrease anxiety and improve academic resilience within the sample (Flett et al., 2020; Wu et al., 2019; Yang & Yang, 2022). Generation Z reports higher rates of anxiety than previous generations (Park et al., 2019), and anxiety can reduce the likelihood of resilience (Shen, 2022); therefore, virtual meditation for five minutes a day for five weeks may positively impact the Generation Z population.

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APPENDIX A

Beck Anxiety Inventory (BAI)

Beck Anxiety Inventory (BAI)

About: This scale is a self-report measure of anxiety.

Items: 21

Reliability:
Internal consistency for the BAI = (Cronbach's α=0.92)
Test-retest reliability (1 week) for the BAI = 0.75 (Beck, Epstein, Brown, & Steer, 1988).

Validity:
The BAI was moderately correlated with the revised Hamilton Anxiety Rating Scale (.51), and mildly correlated with the Hamilton Depression Rating Scale (.25) (Beck et al., 1988)

Scoring:

	Not At All	Mildly but it didn't bother me much	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
All questions	0	1	2	3

The total score is calculated by finding the sum of the 21 items.
Score of 0 – 21 = low anxiety
Score of 22 – 35 = moderate anxiety
Score of 36 and above = potentially concerning levels of anxiety

References:

Beck, A. T., Epstein, N., Brown, G., Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56,* 893-897.

Beck Anxiety Inventory (BAI)

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not At All	Mildly but it didn't bother me much	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	☐	☐	☐	☐
Feeling hot	☐	☐	☐	☐
Wobbliness in legs	☐	☐	☐	☐
Unable to relax	☐	☐	☐	☐
Fear of worst happening	☐	☐	☐	☐
Dizzy or lightheaded	☐	☐	☐	☐
Heart pounding/racing	☐	☐	☐	☐
Unsteady	☐	☐	☐	☐
Terrified or afraid	☐	☐	☐	☐
Nervous	☐	☐	☐	☐
Feeling of choking	☐	☐	☐	☐
Hands trembling	☐	☐	☐	☐
Shaky / unsteady	☐	☐	☐	☐
Fear of losing control	☐	☐	☐	☐
Difficulty in breathing	☐	☐	☐	☐
Fear of dying	☐	☐	☐	☐
Scared	☐	☐	☐	☐
Indigestion	☐	☐	☐	☐
Faint / lightheaded	☐	☐	☐	☐
Face flushed	☐	☐	☐	☐
Hot/cold sweats	☐	☐	☐	☐

APPENDIX B

Academic Resilience Scale (ARS-6)

Please indicate how strongly you agree or disagree with each statement below.

1. **I believe I'm mentally tough when it comes to exams.**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

2. **I don't let study stress get on top of me.**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

3. **I'm good at bouncing back from a poor mark in my schoolwork.**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

4. **I think I'm good at dealing with schoolwork pressures.**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

5. **I don't let a bad mark affect my confidence.**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

6. **I'm good at dealing with setbacks at school (e.g. bad mark, negative feedback on my work).**

   7 = Strongly Agree 6 = Agree 5 = Somewhat Agree 4 = Neutral 3 = Somewhat Disagree

   2 = Disagree 1 = Strongly Disagree

Total Score: _____ / 42

APPENDIX C

IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

April 26, 2024

Alexandra Jackson
Pamela Moore

Re: IRB Exemption - IRB-FY23-24-1389 A Short Meditation Intervention and the Impact on Generation Z College Students' Anxiety and Academic Resilience

Dear Alexandra Jackson, Pamela Moore,

The Liberty University Institutional Review Board (IRB) has reviewed your application per the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data-safeguarding methods described in your IRB application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

For a PDF of your exemption letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study Details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. Your information sheet and final versions of your study documents, **which you must use to conduct your study,** can also be found on the same page under the Attachments tab.

This exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at [redacted]

Sincerely,
[redacted]
Administrative Chair
Research Ethics Office

APPENDIX D

Site Permission

Dear [redacted]

As a doctoral student in the Community Care and Counseling: School of Behavioral Sciences at Liberty University, I am conducting research as part of the requirements for my dissertation for a Doctor of Education in Community Care and Counseling: Traumatology. The title of my research project is *A Short Meditation Intervention and the Impact on Generation Z College Students' Anxiety and Academic Resilience.* The purpose of my research is to better understand if virtual and remote short-interval meditation practices can positively impact anxiety and academic resilience for undergraduate college students. The targeted population is undergraduate students 18-26 who identify anxiety and lower levels of academic resilience.

I am writing to request your permission to conduct my research at the [redacted]

A quantitative within-subjects pretest-posttest intervention design will be used to measure if a short interval meditation web-based application will improve academic resilience and decrease anxiety levels in an undergraduate Generation Z student. Participants will be asked to complete the pretest and then use The Mindfulness App to practice meditation five minutes a day for five weeks. Participants will then complete the posttest to measure results. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please provide a signed statement on official letterhead indicating your approval.

Sincerely,

Alexandra Jackson
Liberty University Doctoral Candidate

APPENDIX E

Recruitment Email

Dear [Recipient]:

As a doctoral candidate in the School of Behavioral Sciences at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to better understand if virtual and remote short-interval meditation practices can positively impact anxiety and academic resilience for undergraduate college students. and I am writing to invite eligible participants to join my study.

Participants must be 18-26 years old and be enrolled in an accredited undergraduate program. Participants will be asked to complete the demographic survey, BAI, and ARS-6 pretest at the start of the study (15 minutes total). Then, participants will download The Mindfulness App (3 minutes) and create an account on the app (5 minutes). Participants will then use the app to meditate for five minutes a day for five weeks; participants will meditate anywhere and anytime during the day. At the end of the five weeks, participants will take the BAI and ARS-6 tests again (15 minutes total). Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please click here to access the researcher's website.

An information sheet is provided as the first page of the website. The information sheet contains additional information about my research. Because participation is anonymous, you do not need to sign and return the information sheet. After you have read the information sheet, please click the button to proceed to the survey. Doing so will indicate that you have read the information sheet and would like to take part in the survey.

Participants will receive a $50 Amazon gift card for completing the study.

Sincerely,
Alexandra Jackson
Liberty University Doctoral Candidate
[redacted]

APPENDIX F

Social Media Recruitment Post

ATTENTION FACEBOOK FRIENDS: I am conducting research as part of the requirements as part of a Doctor of Education degree at Liberty University. The purpose of my research is to better understand if virtual and remote short-interval meditation practices can positively impact anxiety and academic resilience for undergraduate college students. To participate, you must be between the ages of 18-26 and be enrolled in an accredited undergraduate program. Participants will be asked to complete the demographic survey, BAI, and ARS-6 pretest at the start of the study (15 minutes total). Then, participants will download The Mindfulness App (3 minutes) and create an account on the app (5 minutes). Participants will then use the app to meditate for five minutes a day for five weeks; participants will meditate anywhere and anytime during the day. At the end of the five weeks, participants will take the BAI and ARS-6 tests again (15 minutes total). If you would like to participate and meet the study criteria, please click the link below. An information sheet is provided on the first page of the website. Participants who complete the study will not only receive meditation benefits but also a $50 gift card to Amazon.

Link to the website: https://meditation-study.com/

ATTENTION INSTAGRAM FRIENDS: I am conducting research as part of the requirements as part of a Doctor of Education degree at Liberty University. The purpose of my research is to better understand if virtual and remote short-interval meditation practices can positively impact anxiety and academic resilience for undergraduate college students. To participate, you must be between the ages of 18-26 and be enrolled in an accredited undergraduate program. Participants will be asked to complete the demographic survey, BAI, and ARS-6 pretest at the start of the study (15 minutes total). Then, participants will download The Mindfulness App (3 minutes) and create an account on the app (5 minutes). Participants will then use the app to meditate for five minutes a day for five weeks; participants will meditate anywhere and anytime during the day. At the end of the five weeks, participants will take the BAI and ARS-6 tests again (15 minutes total). If you would like to participate and meet the study criteria, please click the link below. An information sheet is provided on the first page of the website. Participants who complete the study will not only receive meditation benefits but also a $50 gift card to Amazon.

Link to the website: https://meditation-study.com/

APPENDIX G

Participant Recruitment Flyer

A Short Meditation Intervention and the Impact on Generation Z College Students' Anxiety and Academic Resilience

Are you between the ages of 18-26?

Are you enrolled in an accredited undergraduate program?

If you answered **yes** to each of the questions listed above, you may be eligible to participate in a research study.

The purpose of the study is to assess if virtual meditation, using The Mindfulness App, will decrease anxiety and increase academic resilience. The study takes five minutes a day for five weeks.

Participants will be asked to take a demographic survey and the anxiety and academic resilience pretest on the researcher's website (15 minutes). Then, participants will download, create an account, and use the free version of The Mindfulness App for five minutes a day for five weeks. At the end of the five weeks, the participant will take the anxiety and academic resilience post-test on the researcher's website (15 minutes).

The direct benefits participants should expect to receive from taking part in this study include a possible decrease in anxiety and increase in academic resilience. Benefits to society include a greater understanding of how virtual meditation can be used to decrease anxiety and increase academic resilience; additionally, how virtual meditation can be a valuable tool for undergraduate college students.

Participants will receive a $50 gift card to Amazon.

If you would like to participate, please scan the QR code.

An information sheet is provided as the first page of the survey.

Alexandra Jackson, a doctoral candidate in the Department of Community Care and Counseling, School of Behavioral Sciences at Liberty University, is conducting this study.
Please contact Alexandra Jackson at [redacted] or [redacted] for more information.

APPENDIX H

Information Sheet

Title of the Project: A Short Meditation Intervention and the Impact on Generation Z College Students' Anxiety and Academic Resilience

Principal Investigator: Alexandra Jackson, Liberty University Doctoral Candidate, Department of Community Care and Counseling, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18-26 years old and a college student enrolled in an accredited undergraduate program. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to assess if virtual meditation, using The Mindfulness App, will decrease anxiety and increase academic resilience. The study takes five minutes a day for five weeks.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. At the start of the study, you will take the demographic survey, BAI, and the ARS-6 pretests. 15 minutes.
2. You will then download The Mindfulness App. 3 minutes.
3. Create an account using the free version. 5 minutes.
4. Log in to the app daily and complete a guided meditation of the participant's choice. 5 minutes/day for 5 weeks.
5. At the end of the study, participants will take the BAI and ARS-6 and submit scores; additionally, participants will upload a screenshot of the total time meditating. 15 minutes.

How could you or others benefit from this study?

The direct benefits participants should expect to receive from taking part in this study include a possible decrease in anxiety and increase in academic resilience.

Benefits to society include a greater understanding of how virtual meditation can be used to decrease anxiety and increase academic resilience; additionally, how virtual meditation can be a valuable tool for undergraduate college students.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher and the webmaster will have access to the records.

Participant responses will be anonymous to the researcher, but the webmaster may be able to identify the accounts of participants.

Data will be stored on a password-locked computer. After 3 years, all electronic records will be deleted.

How will you be compensated for being part of the study?

For participating in the study and completing every procedure, participants will receive a $50 Amazon gift card. To maintain anonymity, the webmaster will distribute gift cards after the completion of the study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Should you choose to withdraw, your responses will not be included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Alexandra Jackson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] You may also contact the faculty sponsor, Pamela Moore at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is [redacted]; our phone number is [redacted], and our email address is [redacted]

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

APPENDIX I
Screening Questions

Are you enrolled in an accredited undergraduate program? (Yes) (No)

Are you between the ages of 18-26? (Yes) (No)

APPENDIX J

Demographic Questions

Please complete the demographic survey below.

1. What is your age? _____

2. What is your gender?
   - Biological Female
   - Biological Male

3. What is your race/ethnicity?
   - American Indian or Alaska Native
   - Asian
   - African American
   - Hispanic or Latino
   - Native Hawaiian or Other Pacific Islander
   - White
   - Other

APPENDIX K

Instructions for the Study

Instructions for Setting up The Mindfulness App

1. Using the button above, download the application to your mobile device. You can also search for it in the App Store.
2. Create an account and fill in the appropriate log in information.
    a. You will not need to share any of this information for the study. However, you will need it to make sure that your minutes and sessions are tracked.
    b. Make sure to stay on the "free version".
3. Click on "settings" on the bottom right-hand side of the screen.
4. Under "features" click "reminders".
5. Set up reminders that fit your daily schedule.
    a. Setting up reminders is not a requirement, but it is encouraged.

Instructions for Using The Mindfulness App

1. Open the app on your mobile device.
2. Click on "meditate" on the bottom far-left side of the screen.
3. Click on "Meditations - Guided, Silent and Personalized".
4. Click "5 minutes" under "Timed Meditations".
5. Click the blue drop down button that is under "5 minutes".
6. Choose your preference daily for a silent, standard or body scan meditation.
    a. Note that this can change daily according to your preference.
7. Click on "Personalized Meditations" and edit the interval of bells according to your preferences.
    a. You may save your personalized meditations for future use.
8. **Please note:** As long as the meditation duration is 5 minutes, you have the flexibility to change the interval of bells and meditation style (silent, standard, or body scan) daily.

Instructions for the Study

1. Complete the pretest.
2. Download and personalize the application following the instructions above.
3. Open the Mindfulness App each day at the time and location of your choice.
4. Meditate for 5 minutes.
5. Repeat daily for 5 weeks.
6. On the last day of the study, the post-test will become available.
    a. You have 72 hours to complete the post-test.
    b. When completed the post-test, be sure to include a screenshot of your total time spent meditating.
        i. Click on "profile" and scroll down slightly. Click on "total". Be sure to also include the table that shows "Days of Mindfulness". See the example below.


1:22
Week
Month
Year
Total
Total
TOTAL TIME
14 min
AVERAGE
3 min
COURSES
0
SESSIONS
4
Days of Mindfulness
2
MINDFUL DAYS
3
DAYS
5
DAYS
Meditate
Favorites
Profile
Discover
Settings