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Doing More with Less: A Quantitative Analysis of Mindfulness, Meditation, Sustainable Consumption Awareness and Practice among University Undergraduates

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DOING MORE WITH LESS: A QUANTITATIVE ANALYSIS OF MINDFULNESS,
MEDITATION, SUSTAINABLE CONSUMPTION AWARENESS AND
PRACTICE AMONG UNIVERSITY UNDERGRADUATES

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of

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TITLE OF DISSERTATION: DOING MORE WITH LESS: A QUANTITATIVE ANALYSIS OF MINDFULNESS, MEDITATION, SUSTAINABLE CONSUMPTION AWARENESS AND PRACTICE AMONG UNIVERSITY UNDERGRADUATES

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ABSTRACT

Climate change, overconsumption, air and water pollution continue to be pressing issues for society. Given the significant impact of overconsumption, the search for strategies to promote more sustainable behavior has become a topic for investigation. Universities are uniquely positioned to help students work toward sustainable solutions. This research explored the role of mindfulness in university students' sustainable consumption awareness and practice as there are gaps in the literature concerning definitions, constructs, and research regarding mindfulness and sustainable consumption.

To address these disparities, this research used stepwise regression analysis to investigate the extent to which mindfulness and select demographic measures explained variation in sustainable awareness and consumption practices among 809 university students at a university located in the southeastern United States. The 15-item Mindful Attention and Awareness Scale was used together with measures of sustainable consumption awareness and practice. In addition, this study examined the extent to which meditation operated as either a moderating or mediating variable in the relationship between mindfulness and sustainable consumption awareness and practice.

Taken together, results revealed that demographic variables and mindfulness explained more variation in sustainable consumption awareness than in sustainable consumption practices. Although mindfulness was a positive predictor of both, the findings surrounding religion and religiosity were a bit surprising in that the most significant positive predictors of sustainable

consumption awareness were associated with individuals identifying as an atheist or being agnostic. Contrary to expected findings, these results cast a new light on the role of religion or lack thereof in sustainable consumption. In addition, undergraduates who did not meditate were less aware of the need for sustainable consumption. Finally, the Sobel test revealed that meditation operated neither as a moderating or mediating factor for sustainable consumption awareness; however, meditation did have a moderating impact between mindfulness and sustainable consumption practice.

The findings offer insight into the attitude-behavior gaps prevalent in sustainable consumption practice, resulting in inaction further compounding environmental issues. The study prompts a rethinking of the role of institutions of higher education regarding sustainability, and the role that organized religion may play in developing the attitudes of undergraduates.

DEDICATION

Dedicated to all of the people throughout my lifetime who have lifted me up and supported my dreams.

ACKNOWLEDGMENTS

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CHAPTER ONE

INTRODUCTION TO THE STUDY

Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.
– Ted Perry, *Home*

College students, both individually and collectively, can create momentum to promote ways to make our planet more sustainable. Importantly, colleges and universities are uniquely positioned to help students work toward sustainable solutions. People on this planet currently generate more than two billion tons of trash a year, and each year 1.3 billion tons of food, worth an estimated $1 trillion, end up rotting in garbage bins or spoiling due to harvesting practices and poor transportation (United Nations Environmental Programme [UNEP], 2020b). In addition, in 2016, the world generated 242 million tons of plastic waste, polluting our oceans, yet plastic consumption continues to increase. Trash does not cease to exist when items are discarded, and material goods do not just disappear; the environmental impact lingers for generations.

Lifestyles and waste management practices have an intense impact on our planet, affecting everything from our environment's health to our economies. In developing countries with no recycling practices, the waterways are often polluted with electronic and plastic waste, poisoning humans and wildlife (UNEP, 2017). Compounding this problem is the continued population growth in the least developed countries on earth, as the world's population is predicted to reach 9.6 billion by 2050 and 11.2 billion by 2100 (UNEP, 2020a; Kaza et al., 2018; UNEP, 2017). If population growth continues along this expected trajectory, by 2050 there will not be enough natural resources to sustain current lifestyles (UNEP, 2020a).

Background

Simply stated, sustainable consumption is doing more and better with less. Sustainable consumption also refers to "minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product" (UNEP, 2020, p. 1). Individuals and communities need to be environmentally aware and conscious of what they are consuming and how products are disposed of to ensure the world's resources are preserved for generations to come. Accordingly, individuals must become mindfully aware of and intentionally participate in practices that will sustain natural resources and protect the planet.

Some researchers postulate that mindfulness achieved through mindful awareness and practices can enhance an individual's ability to be more sustainable (Amel et al., 2009; Barrett et al., 2016; Ericson et al., 2014; Sheth et al., 2011). Researchers have examined the construct of mindfulness for more than 50 years (Black, 2011). Generally conceptualized, mindfulness is "a non-elaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is" (Kabat Zinn, 1990; Lau et al., 2006; Segal et al., 2002; Shapiro & Schwartz, 1999). Individuals can also think of mindfulness as the awareness that comes from purposefully paying attention in the moment and withholding judgment (Milne et al., 2020). Mindfulness is also a trait in which a person can engage in mindful modes of awareness in everyday circumstances; however, not everyone has this ability (Brown & Ryan, 2003).

Mindfulness increases connections between people and their world (Tipsord, 2009). Mindfulness also generates a sense of care for nature and society as individuals

with greater mindfulness are more likely to engage in sustainable consumption behaviors (Amel & Armstrong, 2012; Brinkerhoff & Jacob, 1999; Brown & Ryan, 2003; Dhandra, 2019: Fischer et al., 2017; Jacob et al., 2009; Manning & Scott, 2009). Research indicates that practicing mindfulness allows people to focus on the present moment and avoid the "hedonic treadmill" (Ericson et al., 2014, p. 73), wherein individual values are highly concentrated on pleasure with little regard for consequences. Importantly, mindful awareness plays a significant role in motivating individuals to shift behavior towards sustainability (Ericson et al., 2014; Fischer et al., 2017).

From a historical perspective, the scientific community did not give serious attention to mindfulness until the beginning of this century. At that time, researchers operationally defined and translated the concept of mindfulness into measurable terms (Black, 2011). Since then, researchers have analyzed mindfulness and sustainable consumption in many disciplines, and are now investigating different aspects of mindful consumption. Although studies on mindfulness and sustainable consumption in education have overwhelmingly investigated teaching interventions (Ahamad & Ariffin, 2018), definitions that build awareness and understanding of mindfulness outside education might increase its application in other settings. Some research has shown mindfulness can improve a person's sustainable consumption practices by changing previously held beliefs, values, and habits (Bahl et al., 2016). For example, a person can make a conscious choice to buy a reusable water bottle instead of buying water in plastic bottles.

One popular misconception concerning mindfulness is that it is associated with meditation. However, an individual can be mindful without practicing meditation, and a person can meditate and may not be mindfully aware or possess the trait of being

mindful. Meditation is typically pursued in Western nations as a practice of contemplation and mindfulness (Stratton 2015) focused on accepting experiences in the present moment (Bartkowski et al., 2017). Consistent meditation practice allows individuals to choose a mindful state more often in their lives (Bishop et al., 2006). Carroll (2016) added that being still, a condition necessary for meditation can promote social intelligence and long-term strategic skills required for building a sustainable future. There is additional evidence suggesting prosocial behaviors are among the outcomes of meditation practice (Lim et al., 2015), especially as other-oriented meditation techniques (e.g., loving kindness or meta-meditation) have been shown to increase compassion (Condon et al., 2013) and prosocial behaviors (Leiberg et al., 2011).

There is considerable research on meditation as a practice in the United States and, more broadly, the West. Yet, there are several limitations associated with research on the subject.

First, meditation studies often involve a small number of subjects, raising questions about statistical significance. Second, although there have been many randomized controlled trials (RCT) of meditation, there is little correlational research on meditation using the definition provided for this study. Third, meditation in the general population is likely to be practiced quite differently than intervention-based meditation, as Americans who meditate are likely to do so alone and informally (Bartkowski et al., 2017).

Sustainable consumption has emerged as a critical priority area in sustainable development research and policymaking. Given the significant impact of overconsumption, the search for strategies to promote more sustainable behavior has

become a goal for many investigators. Clearly, there is a need for consumers to care for themselves, their community, and the world. Mindful behavior translates into slowing the overindulgence and excess associated with aspirational consumption (Sheth et al., 2011). However, it is vital to acknowledge the critiques of using mindfulness as a technique to repair structural problems and to recognize flaws in using mindfulness as a strategy for solving the world's problems (Jacob et al., 2016: Wamsler, 2020).

Statement of the Problem

A review of the relevant literature reveals little research on the relationship between mindfulness and sustainability practices among university students. While some evidence of a relationship between mindfulness and sustainable consumption has been established (Pena-Cerezo et al., 2019), researchers have yet to investigate this relationship among the undergraduate student population in the southern United States. Given the number of people that pursue a college education, an investigation into factors affecting sustainable consumption in the student population is warranted. The United Nations Sustainable Development Goal (SDG) 4.7 calls for ensuring that "all learners acquire the knowledge and skills needed to promote sustainable development" (Sustainable Development Solutions Network [SDSN] Secretariat, 2020, p.1). As the providers of education to hundreds of millions of students worldwide, colleges and universities have a critical role in meeting this need (SDSN, 2020). Institutions of higher education create knowledge, transfer this awareness to society, and prepare students for their future roles in life; thus, universities can help students transition into adulthood while understanding the importance of sustainability (Fischer et al., 2017).

Importantly, college students tend to be more informed on environmental issues than others in their age group (Ahamad & Ariffin, 2018). In addition, attaining a baccalaureate degree offers graduates an advantage in job placement over those who have not acquired an undergraduate education (U.S. Department of Commerce, 2016). As future consumers, university graduates will likely have more income over their lifetimes to spend than their counterparts without degrees, placing many in at least the middle class of American society (Ahamad & Ariffin, 2018). The United Nations Environmental Programme (2016) stated that middle-class society members are the biggest consumers in industrialized nations and increasingly so in other regions of the world. University graduates will also be ready to spend their newly acquired income as they aspire toward a better life. However, their consumer behavior could negatively impact the environment (Pena-Cerezo et al., 2019).

Sustainability is not a norm ingrained in many communities, and the impact is not always immediate or direct. However, over time, the consequences of overconsumption or the lack of sustainable practices can prove disastrous. Students might use their awareness of sustainability to practice mindful consumption as they move on to the working world. Students will undoubtedly become our future leaders, and some will be in charge of environmental oversight and protection (Ahamad & Ariffin, 2018). Becoming mindfully aware and implementing sustainability practices might play a significant role in ensuring the planet's well-being.

Purpose of the Study

This study will respond to the need articulated in the previous section by determining the impact of mindfulness on sustainable consumption among undergraduate

students at a large public university in the southern United States. The investigation will examine the relationship between mindful attention indicators and sustainable consumption awareness and practice as measured by a survey instrument primarily developed by Greg Siebert and Ross May (G. Siebert, personal communication, October 9, 2020) with items developed by Myriam Rudaz and Thomas Ledermann regarding the sustainable consumption awareness and practice (M. Rudaz, personal communication, October 15, 2020). The survey instrument incorporates six sustainable consumption awareness and practice indicators with 15 items from the Mindfulness Attention Awareness Scale (MAAS). In short, the present study will attempt to determine whether mindful attention has a statistically significant effect on sustainable consumption awareness and practices among undergraduate university students while controlling for meditation practices and select demographic measures.

Research Questions

This study will address the following three questions:

1. In a sample of college undergraduates, what are their levels of mindfulness, sustainable consumption awareness and practice?

2. To what extent, if any, can mindfulness and demographic variables explain variation in sustainable consumption awareness and practices among students?

3. To what extent, if any, does meditation operate as a mediating or moderating variable between mindfulness and sustainable consumption practice and awareness?

Significance of the Study

This study's findings will be important because there is such limited research on the relationship between mindfulness and sustainable consumption among university students, particularly outside of Europe and Asia. There is, however, substantial research on mindfulness and extensive research on sustainability (Fischer et al., 2017; Geiger et al., 2020), as well as research on mindfulness training and university students' interventions in various disciplines like health sciences and psychology (Ahamad & Ariffin, 2018; Armstrong, 2012; Pena-Cerezo et al., 2019). Taken together, however, there is limited research on the relationship between mindfulness and sustainable consumption in undergraduate university students. Evaluation of sustainable lifestyles increases the complexity of intervening factors and their interdependence (UNEP, 2016). What works or does not work is still subject to experiment and debate; consequently, this present study is essential.

University students can promote sustainable consumption through a range of strategies that may or may not be as effective as mindfulness; however, I will not investigate alternative approaches in this study. Researchers need to explore further how mindfulness plays a role in students' awareness and sustainable consumption practice. It is crucial to measure mindful awareness and sustainable consumption practice within the context of university students. Researching potential connections between mindfulness and sustainable consumption might offer institutions of higher education insight into what, if any, measures should be taken to encourage mindful awareness and sustainability practices in undergraduate student populations. Importantly, if students engage in these techniques, these practices might carry over into their lives after college.

CHAPTER TWO
LITERATURE REVIEW

Interest in mindfulness research and practice has spread into diverse sectors of society, including the field of sustainability. As positive findings in health and wellness have been revealed in meditation research, a growing base of researchers are studying how mindfulness affects sustainability and environmental behavior (Awasthi, 2013; Black, 2011; Thiermann & Sheate, 2020). Twenty years after the first study of the relationship between mindfulness and sustainability, an increasing number of studies are published every year on the topic (Awasthi, 2013; Quoquab & Mohammad, 2019). The literature shows that when mindfulness is combined with sustainable awareness and practice, as mindful awareness increases, sustainable consumption awareness increases. However, there is a behavioral gap between being aware of sustainable consumption and practicing it (Ajzen, 1991; Fukukawa & Ennew, 2010; Quoquab et al., 2019).

This present study will investigate by the impact of mindfulness on sustainable consumption awareness and practice among undergraduate students at a large public university in the southern United States. The literature review provides an overview of mindfulness, meditation, sustainability, sustainable consumption, and mindful consumption necessary to explore the topic adequately. Until this century, mindfulness has only been operationally studied to include meditation. The literature described how mindfulness and its unique elements of awareness and attention could contribute to sustainable behavior, thus tying mindfulness and sustainable consumption to positive consequences for society and the environment.

This chapter outlines the bodies of existing literature used to frame this study. Each section defines terms, historical perspectives, conceptualization, relevant theories,

and gaps in the literature applicable to this research. The first section on mindfulness describes the evolution of the concept as it is operationalized and measured. This section also covers the effects of mindfulness. The section on meditation covers the differences between meditation and mindfulness, and meditation as a mediator or a moderator. The section on sustainability presents three models of sustainability. The sustainable consumption section describes motivations and predictors of sustainable behavior. It also considers mindful consumption and consumerism. The following section discusses theoretical frameworks, and the last section offers a conclusion to the chapter.

Mindfulness

For nearly 50 years, researchers have examined and investigated mindfulness and contemporary meditation. Until this century, mindfulness research primarily emphasized meditation. The literature used for this review, particularly the literature on the definitions and concepts of mindfulness and meditation, comes from the fields of health, psychology, and religion. This section discusses definitions, operationalization and measurement, and the effects of mindfulness.

Academics and practitioners of mindfulness hold diverse understandings of mindfulness processes (Sillifant, 2007). Difficulty in defining mindfulness in the literature can partly be attributed to the various origins of the term and highly diverse secular variations, particularly in behavioral and clinical research (Grossman, 2010). Definitions of mindfulness vary in different parts of the world, and there are several accounts in the literature that demonstrate this. Mindfulness originating from Buddhist philosophy has been defined as "a state of consciousness that involves awareness and attention of the self, others, and the outside environment and substantially supports decision-making"

(Brown & Ryan, 2003, p. 883) or as the "deliberate, unbiased and openhearted awareness of perceptible experience in the present moment" (Fischer et al., 2017, p. 545). Mindfulness is the English translation of sati from Pali, an ancient language from northern India. The Pali Text Society defined sati as "memory, recognition, consciousness, intentness of mind, wakefulness of mind, mindfulness, alertness, lucidity of mind, self-possession, conscience, self-consciousness" (Sillifant, 2007, p.8). Mindfulness is also defined as the understanding that comes from purposefully paying attention in the moment and not using judgment (Milne et al., 2020).

Kabat Zinn (1994) proposed the most recognized contemporary Western definition of mindfulness, defining mindfulness as nonjudgmentally paying attention to the present moment. This description influenced many present-day definitions across different disciplines. Kabat Zinn (2003) stated that mindfulness aims to develop moment-to-moment awareness and involves giving awareness to a broad range of fluctuating objects of attention while maintaining moment-to-moment cognizance. Mindfulness is unlike mediation, restricting the focus to a single thing such as a mantra or breathing. The modification of mindfulness practices from Buddhism and secularization caused critics to voice that the origins specific to religion and culture are now gone. Researchers have stated that contemporary mindfulness practice lost its original characteristics, and mindfulness training has drawn criticism (Dorjee, 2010).

Therapeutic definitions of mindfulness typically center on two primary components. One is the self-regulation of attention, and the other is a curious, nonjudgmental, and accepting orientation to the present experience (Bishop et al., 2004). Seigel et al. (2009) reported that the first is strongly associated with historic meditational

practice, while the second is an extrapolation based on secular psychotherapy. Others appear to disagree (e.g., Nhất Hanh, 1976), seeing the nonjudgmental and accepting orientation consistent with Buddhist thought (Statton, 2015). For this study, mindfulness is defined as focusing attention on the present moment and engaging in mindful modes of awareness in everyday circumstances (Brown & Ryan, 2003).

Mindfulness Operationalized

Mindfulness did not gain considerable interest in the scientific community until researchers gave the concept an operational definition and put it into measurable terms. Brown and Ryan (2003) conducted a series of studies and provided the first valid and reliable mindfulness measure called the mindful attention awareness scale (MAAS; Black, 2011; Bergomi et al., 2013; Brown & Ryan, 2003). They distinguished between awareness and attention, the main elements of mindfulness. Brown and Ryan (2003) stated these two terms are similar but have different meanings:

> Awareness refers to the subjective experience of internal and external phenomena; it is the pure apperception and perception of the field of events that encompass our reality at any given moment. Attention is a focusing of awareness to highlight selected aspects of that reality. (pp. 242-243)

MacKillop and Anderson (2007) further validated the MAAS in a large university sample ($n = 711$), broadly supporting the MAAS as a valid measure of mindfulness. By 2013, there were eight mindfulness measures available. Each evaluation contributed to measuring mindfulness empirically. These scales made it possible to examine associations and influences of mindfulness on behavioral, biological, psychological, and social variables, and the findings are promising (Bergomi et al., 2013).

The MAAS is probably the most widely used scale to date, despite criticism that it considers mindfulness to include only an attentional aspect. Some argue that the scale does not measure mindfulness but rather "mindlessness" (the inverted concept of mindfulness). However, most other measures define mindfulness as having an emotional and an attentional aspect (Sauer et al., 2013). Other weaknesses have been reported in the scales, particularly concerning the vague interpretations of some items measured. Furthermore, there is still a lack of agreement regarding which aspects of mindfulness should be included in a mindfulness scale and the relationships between the scales' items (Bergomi et al., 2013; Black, 2011; Sauer et al., 2013).

Effects of Mindfulness

Practicing mindfulness promotes openness, generosity, kindness, and mental clarity (Fischer et al., 2017). Consequently, a person may develop a more compassionate attitude; mindfulness might also enhance well-being and other socially-oriented behavior that might contribute to more significant concern for sustaining the environment (Burroughs & Rindfleisch, 2002; Kasser et al., 2013; Richins & Dawson, 1992). Prosocial behavior is consistent with the functions of mindfulness. For example, compassion is an emotional source of prosocial behavior positively linked to pro-environmental intentions (Fischer et al., 2017). A primary skill of mindfulness, agreed upon by all approaches, focuses on the present moment (Sillifant, 2007). There has been an increase in scientific interest in mindfulness-based interventions, particularly those that evaluate mindfulness interventions focusing on psychiatric and medical conditions. Several studies support the positive effects of mindfulness, although it must be noted that the significance of these effects and the methodological quality varies extensively

between studies (Sauer et al., 2013). Mindfulness is an increasingly prominent construct in health research. A large body of empirical literature has associated mindfulness practice with positive psychological outcomes and other health benefits (Grossman et al., 2004; Krägeloh, 2016; Passmore, 2019). Several studies have been conducted on the impact of mindfulness on physical health and well-being, including cancer, heart disease, pain management, blood pressure, and the immune system. The results revealed preliminary signs that mindfulness could be more effective than other interventions such as nutrition education or standard treatment plans (Cramer et al., 2012; De Jong et al., 2016; Parswarni et al., 2013). There is also evidence that these interventions demonstrate benefits for adults and children (Bishop et al., 2006; Goldberg et al., 2017).

Research has also shown that mindfulness can have a positive, direct effect on patients suffering from mental health issues, such as depression, anxiety, stress, and trauma (Dekeyser et al., 2008; Hofmann et al., 2010; Wachs & Cordova, 2007). Studies on the neurological effects of mindfulness practice on the brain have revealed that mindfulness practice is associated with brain structure changes (Passmore, 2019). Neurological effects have been observed in regions associated with attention, short-term memory, and executive functioning. In addition, mindfulness appears to reduce cognitive decline associated with aging (Creswell et al., 2016; Singleton et al., 2014; Taren et al., 2013).

There are problems with the attempts to study mindfulness. Future researchers are encouraged to work towards a more informed understanding of the potential and limitations of these interventions. (Goldberg et al., 2017). Aside from the conceptual and methodological shortcomings in some research, others have urged caution about the

widespread use of mindfulness as a therapeutic technique and its "assembly-line" approach based on a reductive understanding of the human mind (Farias & Wikholm, 2016, p. 329).

Additional research is needed to better understand the role mindfulness can play individually and collectively in sustainable consumption. Organizations and universities need to engage in more collaborative research to provide larger sample sizes and participants under different conditions. Research with positive and negative outcomes needs to be published regardless of the results (Passmore, 2019). However, it is essential to acknowledge that mindfulness cannot be the sole strategy for solving the world's problems (Purser, 2019).

In summary, the study of mindfulness remains in its early stages. There is much unknown both conceptually and operationally (Fischer, 2017). The construct of mindfulness offers a good topic for further research. In this current study, an analysis will be conducted using the 15 Item-MAAS with sustainability awareness and practice questions to investigate the levels of mindfulness on sustainable consumption awareness and practice. The research being undertaken builds on prior scholarship and focuses on using mindfulness to close the gap between attitude and behavior to support more sustainable consumption awareness and practice.

Meditation

While this study focuses on mindfulness, I acknowledge that the concept has overlapped with meditation in the existing research, and some observations may apply to both. It is vital to study mindfulness, together with and independent of meditation, to understand the implications on sustainable consumption.

The types of meditation most closely associated with mindfulness are based on the ancient contemplative tradition, vipassana, which means "seeing clearly" (Cullen, 2011, p. 186). Meditation is a practice where an individual uses a technique to focus the mind on a particular activity, object, or thought to direct attention and awareness and achieve a mentally clear, emotionally calm, and stable state (Walsh & Shapiro, 2006). Through meditation, individuals can rediscover qualities of compassion and kindness, seen as innate in human nature. Meditation might offer a way to foster empathy and manage stress while combining all dimensions of an individual's existence (Beddoe & Murphy, 2004). Mindfulness differs from meditation, as a person can be mindful and not practice meditation. Conversely, individuals might say they practice meditation without necessarily being mindfully aware.

Although no consensus exists, meditation is conceptualized primarily as a practice for systematically training attention:

1. Meditation generally involves sitting still, done in a seated position.

2. Meditation is part of an effort to regulate and train attention.

3. Meditation is usually practiced during a dedicated time (Oman, 2020).

Historically, some type of meditation is present in every major religion. Meditation was traditionally used for spiritual purposes and accompanied by secondary practices, such as spiritual fellowship (Oman, 2020). The empirical study of meditation began with various conceptual and applied traditional and religious concepts. However, the spiritual or belief component of meditation practices is poorly described in the literature, so that it is unclear in what way and to what extent spirituality and belief may play a role in the successful practice of meditation" (Ospina et al., 2007, p. 18).

Contemporary research on meditation dates back 50 years. The earliest study on meditation was published in 1957, and by 2015, over 1000 peer-reviewed articles had been published. In the 1970s, the field sought consistency to identify common denominators across major cultural traditional systems worldwide. In 1977, the American Psychiatric Association (1977) made a formal recommendation that meditation be critically examined through controlled experiments to explore clinical usefulness and possible adverse effects of the practice.

The literature defines a wide variety of techniques are described as meditation in the literature, with mixed and contradictory findings reported (Awasthi, 2013). Early on, there was little evidence that the physiological effects of meditation differed from other relaxation techniques (Thompson, 2005). However, later research found that meditation is a different state than rest and that different meditative states affect different regions of the brain (Lazor, 2005). Shapiro and Walsh (2003) found that participants who practiced meditation perceived more positive changes than those who practiced relaxation, even if there was no physiological evidence of these changes. Meditative mindfulness offers a distinctive method for creating interventions in many areas (Thiermann & Sheate, 2020), and has shown positive results in education, health, and psychology (Chung et al., 2018; Crescentini et al., 2016; Priya & Kalra, 2018).

Differences Between Meditation and Mindfulness

Meditation is typically pursued in Western nations as a practice of contemplation and mindfulness (Stratton 2015). Some researchers misunderstand the difference between mindfulness and meditation, identifying the terms as having the same meaning. Mindfulness is connected with subjective states "that cannot be reduced to their neuronal,

psychological, and physiological correlates" (Sauer et al., 2013, p.13). An individual can be mindful without practicing meditation, and a person can meditate and may not be mindfully aware or possess the trait of being conscious. Buddhist teachings stress that mindfulness should extend into everyday life (Thompson, 2005). The practice of mindfulness in day-to-day living can be developed through meditation practice and allows one to choose a mindful state more frequently (Bishop et al., 2006; Thich Nhat Hanh, 1996, 2002); however, meditation and mindfulness are not synonymous.

Meditation as a Mediating or Moderating Variable

Mediator

The current study includes the analysis of meditation as a mediating and/or a moderating variable. This analysis of the mediating variable determines whether meditation has an impact on mindfulness or sustainable consumption. Mediation analysis examines the mediating variable's influence to determine if it is stronger than the independent variable's direct effect. Investigating meditation as a moderating variable determines if meditation strengthens, diminishes, alters, or negates the association between mindfulness and sustainable consumption (Pierce, 2003).

Studies that investigated meditation as a mediating or moderating variable in mindfulness and sustainable consumption were not located. However, Thompson and Waltz (2007) conducted three studies investigating sitting meditation on mood and found that the effect varied across studies.

Sustainable consumption studies have investigated some of the following mediators: understanding sustainable consumption, subjective norms, hedonic

motivation, sustainable behavior, and perceived risk (Brach et al., 2018; Minton, 2018; Rezvani et al., 2018), but not with meditation.

Moderator

Three previous studies incorporated moderators within the sustainable consumption framework (Quoquab & Mohammad, 2020). The first was environmental attitude as the moderator on the connection between values and sustainable consumption behavior and consumer effectiveness as the moderator between attitude and sustainable consumption behavior (Sharma & Jha, 2017). Second, green purchasing intention as a substitute for sustainable consumption, testing age, educational level, and gender as the moderator among Malaysian consumers (Chekima et al., 2016). The third study considered emotional intelligence as a moderator between engagement and consumer sustainable consumption behavior (Kadic-Maglajlic et al., 2019).

There is a lack of inclusion of mediating or moderating variables in the existing research (Helm & Subramaniam, 2019; Quoquab & Mohammad, 2020; Thiermann & Sheate, 2020). Quoquab and Mohammad (2020) recommend future research that includes mediators and/or moderators in relation to sustainable consumption to improve the predictive ability of theoretical models.

Sustainability

Generally defined, sustainability is maintaining well-being over a long period. In 1987, the Brundtland Commission defined sustainability as meeting the needs of the present without compromising the ability of future generations to meet their own needs (Keeble, 1988). It is important to understand that the terms environmental and sustainability are not synonymous. Some types of environmental degradation can be

reversed, such as many forms of air and water pollution (Kuhlman & Farrington, 2010).

The rapid improvement of air quality due to worldwide shutdowns during the Covid19

pandemic provided an example of this (Le Quéré et al., 2020). For the present study,

sustainability will be defined as a "global approach towards securing lasting welfare for

the human race" (Nkamnebe, 2011, p.222).

Models of Sustainability

There are many different sustainability models. For example, in the health and

wellness field, there is often a model that incorporates environmental, social, and

economic factors (NIRSA, 2021).

Three types of sustainability models are described in the following section

(Todorov & Marinova, 2009; Willard, 2010).

1. The three-legged stool model illustrates three dimensions of sustainability:

   economic, environmental, and social/cultural. The economic, environmental, and

   social legs look separate and equal. The downside of this metaphor is the

   suggestion that all are required for a good quality of life, and society becomes

   unstable if one of them is weak.

2. Three overlapping circles model of sustainability acknowledges an intersection of

   economic, environmental, and social factors. The circles can be resized to show

   that one factor is more dominant than the other two. For example, business

   leaders may consider the economy the largest circle because it is the most

   important to their success.

3. The three nested dependencies model reflects a co-dependent reality. It

   demonstrates that human society is a wholly-owned subsidiary of the

environment—that without food, clean water, fresh air, fertile soil, and other natural resources, humankind cannot survive.

The well-known image of the Earth in photographs taken from outer space shows land, water, and clouds in the atmosphere. The picture reminds us that people must live within the planet's carrying capacity and form societies within that larger environment. Those societies will decide how they will exchange goods and services within and between their invisible economies. The three nested dependencies model best replicates this reality and reflects sustainable consumption conceptually as used in this study (Willard, 2010).

Sustainable Consumption

This section focuses on sustainable consumption, though this concept overlaps significantly with sustainability, and some observations may apply to both. In recent years, the notion of sustainable consumption is in the foreground due to its impact on the economy, environment, and society (Kumar, 2017; Minton et al., 2018; Quoquab & Mohamadd, 2019).

The concept of sustainable consumption originated at the Oslo Symposium in 1994 (Lorek & Fuchs, 2013). Sustainable consumption is a "socially and environmentally concerned way of buying, using and disposing of goods and services" and "ensures at least three aspects: quality of life, protecting and preserving the environment, and keeping the natural resources useful for the future generation" (Quoquab & Mohammad 2019, p. 796). Sustainable consumption refers to "minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product" (UNEP, 2020, p. 1). The fundamental principle of sustainable

consumption is "to enhance the quality of life without causing further environmental degradation" (Ahamad & Ariffen, 2018, p. 88). Consumption becomes problematic overconsumption "when the level of consumption becomes unaffordable or unacceptable because of its environmental or economic consequences, and affects negatively personal and collective well-being" (Sheth et al., 2011, p. 25).

Sustainable consumption is about doing more and better with less (UNEP, 2020b). Individuals must become environmentally conscious and intentional in saving resources (UNEP, 2016). Sustainable consumption does not mean everyone needs to be a minimalist. Still, it suggests individuals can do better by educating themselves on environmental issues and being aware of how they can do their part by being committed to doing what they can.

Sustainable consumption goes beyond direct consumption to include individuals' whole consumption pattern. The concept emphasizes improving individuals' quality of life without focusing on worldly gains (Quoquab & Mohamadd, 2019). In the literature, there is a lack of agreement defining a sustainable consumption construct. For example, sustainable consumption has been described as a person's concern toward the environment in which individuals make decisions in their consumption (Lee, 2014). Hornibrook (2013) referred to sustainable consumption as the appropriate use of goods and/or services to meet basic needs and benefit an individual's quality of life. Sustainable consumption has also been explained from the perspective of responsible consumption, anti-consumption, and mindful consumption (Lim, 2017).

The inspiration for combining 'mindfulness' with 'sustainability' was found in ecologists' theories (Brinkerhoff & Jacob, p. 342). These ecologists felt a cultural shift

was needed to prevent the collapse of the ecosystem, which was increasingly ignored by the desire for more material accumulation.

Thich Nhất Hanh promoted mindfulness as essential to overcome many trials in contemporary society (Palmer-Cooper, 2018; Weisbaum 2017). Nhất Hanh, a Vietnamese refugee, and Buddhist Monk, was the first to suggest in his writings that mindfulness could solve the environmental crisis (Thiermann & Sheate, 2020). Nhất Hanh wrote:

> There is a revolution that needs to happen, and it starts from inside each one of us. When we change the way we see the world, when we realize that we and the Earth are one and we begin to live with mindfulness, our own suffering will start to ease. When we're no longer overwhelmed by our own suffering, we will have the compassion and understanding to treat the Earth with love and respect. Restoring balance to ourselves, we can begin the work of restoring balance to the Earth.[…] There is no difference between healing the planet and healing ourselves. (Nhất Hanh, 2013, pp. 56–57)

Thich Nhất Hanh offered a connection to be considered and studied. The following section discusses motivations and predictors of sustainable consumption and the literature relevant to the current study.

Motivations for Sustainable Consumption

Various motivations drive individuals to practice sustainable consumption. Social factors contribute to environmental influences, education, information, and market conditions (Figueroa-García et al., 2018). Moral, religious, or ethical appeals need to be considered (Subrahmanyan & Gould, 2012). Four main strategies motivate consumers to make sustainable choices: "government laws, regulations, and incentives based, programs

of education to change people's attitude" (Jackson, 2006, p.116). There is also a familial influence on attitudes and behaviors toward sustainable behavior (Omburo, 2020).

It has been long recognized in conservation psychology that "conservation without moral values cannot sustain itself. Unless we reach people through beauty, ethics, spiritual, or religious values or whatever, we are not going to keep our wilderness areas" (Clayton & Myers, 2011, p.130). Recent scholarship has shown that religion is one factor motivating consumer behaviors, ethics, and materialism. Religious beliefs, ideas, and practices can drive the adoption of sustainable consumption practices by promoting intrinsic motivation for changing behavior (Orellano et al., 2020; Rolston III, 2009). Religiosity also has a significant and positive effect on sustainable consumption practices (Ahmadi & Zareei, 2017).

Mindfulness training can contribute to sustainable consumption behaviors and students' introspective ability. Research on educational programs using mindfulness interventions on sustainable consumption concluded that awareness was crucial for aligning behavioral patterns with values (Frank et al., 2019). For example, Omsburo (2020) concluded that community college students recycle when they have the information and believe it is essential. Awareness and training in mindfulness and sustainable consumption can start at a personal level and spread globally. Changes on the individual level might extend and foster changes collectively in society (Wamsler et al., 2018), and this could begin with university students. The prevalence of higher education warrants an investigation into factors affecting sustainable consumption practices in an undergraduate student population. (Erickson et al., 2014).

Consumerism

Mindful consumption applies mindfulness to inform consumers' choices and is premised on a consumer mindset of caring for oneself, the community, and nature. There are many motivations to consume, and slowing the excess associated with repetitive acquisition and aspirational consumption can transform behaviorally into mindful consumption (Sheth et al., 2011). Conscious consumption is demonstrated by a person's ability to consider their responsibility to others in our world through awareness and sustainable consumption practices (UNEP, 2020). It is plausible the more mindful a person is, the more care they might take to preserve the world's resources for future generations. When making decisions, mindfulness is one approach to change consumerism, society, and individuals' well-being (Milne et al., 2020).

Consumers are accumulating unnecessary items in their homes without any personal satisfaction, and many individuals are asking, is consumption all there is to life (Benett & O'Reilly, 2010)? Being mindful and using emotional regulation can control impulsive buying (Williams & Grisham, 2012). Conscious consumption plays a central and foundational role in assisting college students with deterring compulsive shopping (Armstrong, 2012). Growing unhappiness has led to an era where many people adopt minimalist behaviors and are ridding themselves of things not needed. Examples of this type of transformation are found in the Tiny House movement and the success of Marie Kondo (Milne et al., 2020). There are indirect effects of mindful awareness and sustainable consumption, such as increased well-being and decreased materialism (Geiger et al., 2019).

By engaging in mindfulness, an individual can potentially change habits and lead to transformative choices in the marketplace (Milne et al., 2020). These changes can

offset mindless behavior in three domains of well-being. Consumer well-being covers family circumstances, finances, health, and materialism. Societal well-being envelops education, multiculturalism, and political engagement. Environmental well-being encompasses sustainability and waste (Bahl et al., 2016). Mindfulness practices can clarify personal beliefs and temper the role of materialism in an individual's life (Ericson et al., 2014). Many studies have adopted models and frameworks to explain the phenomenon (Fischer et al., 2017; Park & Lin, 2020; Quoquab et al., 2019). A higher level of mindfulness might help change daily consumption routines and reduce the negative ecological impact of overconsumption (Helm & Subramaniam, 2019). This is relevant to populations with increased environmental concerns, particularly college students (Ahamad & Ariffin, 2018; Cotton & Alcock, 2013).

Predictors for Sustainable Consumption

Predictors have been observed in sustainable consumption research. Happier middle school students live in more environmentally sustainable ways. Over half of high school students don't think about environmental sustainability before starting college, however, attending university has a significant positive relationship with ecological responsibility.

Education is a necessary but not sufficient condition to develop sustainable behavior (Brown & Kasser, 2005; Cotton & Alcock, 2013; Pena-Cerazo et al., 2019). Community college students participate in recycling when they believe it is essential and have the correct information on participating. Most students recycled when given accurate information (Ahamad & Ariffin, 2018; Árnadóttir et al., 2019).

Social media is the primary source of obtaining environmental knowledge for college students. Dissemination of information can be done cheaply and efficiently through social media (Ahamad & Ariffin, 2018). University students that use social media and mass media (e.g., read or watch news and/or documentaries) to learn about sustainability issues are more likely to engage in sustainable consumption practices (Omburo, 2020; Sahin et al., 2012). Education about sustainability issues might result in more sustainable lifestyles and mindfulness associated with ecological values and indicators of a higher quality of life and might contribute to sustainability by promoting a concept of non-materialistic well-being (Jacob & Brinkerhoff, 1999).

A university student's major made a significant difference in sustainable consumption practice (Pena-Cerazo et al., 2019), and gender was an important factor explaining sustainability-related attributes. Female college students held more favorable attitudes and behaviors toward sustainable lifestyles and had more eco-centric values. Interestingly, even though male students spend more time participating in outdoor recreation, female students took more sustainable actions due to their attitudes toward the environment (Sahin et al., 2012). Several of the motivations and predictors are investigated in the current study.

Environmentalism can be addressed through mindful consumption, and research has found connections to being aware and keeping the environment healthy through sustainable consumption (Milne et al., 2020). There is evidence to support these claims, but research is limited to the methodological approaches used in the literature discussed (Fischer et al., 2017; Milne et al., 2020). Several variables are investigated as predictors of sustainable consumption behavior. However, other indicators predict environmentally

significant behaviors rather than sustainable consumption behavior in its entirety

(Quoquab & Mohammad, 2020). Given that the concept of sustainable consumption

behavior is comprehensive and complex, relationships and other factors that could

explain this behavior may have been omitted.

Over the last 20 years of sustainable consumption research, several problems and

gaps in the literature are found. The studies rarely investigated the concept of sustainable

consumption in undeveloped countries throughout the world. There are inconsistencies in

operationalizing the sustainable consumption construct, as some researchers measured it

as a unidimensional construct, while others measured it as a multidimensional construct.

The majority of the measures focus on behavior, ignoring sustainable consumption's

attitudinal and cognitive aspects (Quoquab & Mohammad, 2020).

There are disagreements in the research on the potential benefits of mindfulness

for sustainable consumption. Most studies found positive relationships between different

aspects of mindfulness and other types of self-reported sustainable consumption

behavior. Studies reviewed by Geiger et al. (2020) were mainly "cross-sectional in nature

and used diverse operationalizations of both concepts. Previous research often claimed a

causal effect of mindfulness on cross-sectional behavior that remains far from proven" (p.

24). Another analysis of existing mindfulness and sustainability research revealed

methodological problems with definitions, study designs, instruments, samples, and a

need to include mediating or moderating variables in existing research approaches.

This review discovered the literature to be dispersed across diverse disciplines

and lacking integration. The definitions of mindfulness appear to be cohesive, and

descriptions of meditation and sustainable consumption vary across disciplines (Fischer

et al., 2017). There has also been criticism of research giving too much attention to mindful consumption practices and not enough consideration to consumer behavior in general (Pena-Cerezo et al., 2019).

Environmental sustainability is vital to most large organizations, including colleges and universities. Universities are responsible for promoting a systemic approach to deal with the multiple challenges of sustainability, and colleges influence policymakers. Universities and other stakeholders need to develop partnerships (Paletta et al., 2019). However, not all colleges have procedures in place to address sustainability issues (Omburo, 2020). Having policies in place might help universities influence student attitudes and embrace practices with the potential to save the world from environmental ruin (Weaver et al., 2015). Further investigation of contextual variables might contribute to the success or failure of sustainable behaviors on college campuses (Miller et al., 2016).

Theoretical Frameworks

There are theoretical links between mindfulness and sustainability in the literature, including "reduced automaticity, enhanced health, and subjective well-being, greater connectedness with nature, improved pro-sociality, recognition of intrinsic values and openness to new experiences" (Thiermann & Sheate, 2020, p. 1). There are mechanisms explaining the effect of mindfulness on sustainable consumption. Mindfulness increases awareness; with higher awareness levels, automatic behavioral patterns diminish, and more deep-seated satisfaction and connectivity with others emerge (Rosenberg, 2004; Thiermann & Sheate, 2020). Mindfulness can promote sustainable behaviors in several ways. Increased well-being, empathy, awareness of

values, disruption of routines, closing the attitude-behavior gap, fostering prosocial

behavior, connectedness to nature, and openness to new experiences can all lead to

sustainable practice (Fischer et al.,2017; Geiger et al., 2019; Thiermann & Sheate,

2020).

One of the earlier concepts proposed on mindfulness and its contribution to

sustainable consumption comes from Rosenberg (2005). Rosenberg offered a dual

conceptual framework and suggested by increasing mindful awareness of "potentially

accessible cognitive-behavioral processes underlying consumption that have become

relatively automatic" (Rosenberg, 2005, p. 108), mindfulness would allow for

intentional, sustainable choices. Mindfulness might increase sustainable consumption

behavior by reducing the gap in a person's attitude and actual conduct or lessening

materialism, and improving their well-being (Geiger et al., 2020). For sustainable

consumption, this may reduce people's unconscious choices. For example, being mindful

might mean a person remembers to bring reusable bags to the grocery store rather than

purchasing plastic bags to carry groceries home (Bahl et al., 2016; Grossman et al.,

2004; Rosenberg, 2005).

Several studies do not consider any particular theory while explaining the

sustainable consumption phenomenon (Quoquab & Mohammad, 2020). However, the

idea of planned behavior was frequently used. Cultural theory was the second most

commonly used in the literature as a framework (O'Riordan & Jordan, 1999; Quoquab &

Mohammad, 2020).

Planned behavior theory purports intentions to perform certain behaviors can be

predicted with high accuracy. Nevertheless, attitudes, norms, control, and choices,

together with behavioral control perceptions, account for the extensive inconsistency in actual conduct (Ajzen, 1991; Chatzisarantis & Hagger, 2007). The attitude-behavior gap is well established across various non-consumption related actions (Ajzen, 1991; Fukukawa & Ennew, 2010; Quoquab et al., 2019). Many studies argue an evident inconsistency in a person's attitude about sustainable product consumption and what consumers believe is not always exhibited in their behavior. Closing the gap between attitude and behavior is necessary for an individual to practice mindfully aware consumption, and this framework proved most beneficial to the current study (Fischer et al., 2017).

A growing amount of research points toward the potential of mindfulness to help individuals practice sustainable consumption. Mindful awareness might help change daily consumption routines and reduce the negative environmental impacts of overconsumption. Research agendas have proposed interdisciplinary research to address the practice of mindfulness and its contribution to making a change in a person's behavior and/or investigating how it might translate into societal change. Finding potential connections might offer institutions of higher education insight into measures that encourage mindful awareness and sustainability practices. This is essential as college students are the future consumers; they are more informed and educated than the average person and will likely have more income and influence in their workplaces (Mcmillin & Dyball, 2009; Nejati & Nejati, 2013; Pena-Cerezo et al., 2019).

Conclusion

Past research on university students overwhelmingly investigated mindfulness separately as a teaching intervention in several disciplines. In the absence of mindful

awareness, sustainability has been studied by analyzing individuals' views, practices, and routines (Ahamad & Ariffin, 2020; Frank et al., 2019; Stanszus et al., 2017). Recent research on university students has been conducted outside of the United States and predominately in Europe and Asia (Ahamad & Ariffin, 2020; Geiger et al., 2020; Paletta et al., 2019; Pena-Cerezo et al., 2019). Further investigation is encouraged with a more diverse group of demographics from different regions of the world (Helm & Subramaniam, 2019).

Building upon the scholarship of the academics discussed above, the focus of this study narrowed to investigating university undergraduates in a large, public, institution in the southern United States. Mindful awareness and sustainable consumption in the context of this literature review have informed and laid the groundwork for the current study. Knowledge gaps pertaining were identified and discussed and speak to the importance of this research. It is essential to understand how mindful awareness affects sustainable consumption awareness and practice among university undergraduates. Universities are positioned to help attain the United Nations 2030 Sustainable Development Goals and meet the missions of higher education institutions and associations, and other institutions throughout the world.

This chapter provided definitions and reviewed the evolution of research on mindfulness, meditation, sustainability, sustainable consumption, and mindful consumption. It established the major premises for this research study. The chapter described studies that focus on mindful consumption, which validate the existence of indirect effects of conscious awareness and sustainable consumption, such as increased well-being and decreased materialism. Furthermore, the review demonstrated congruence

and dissimilarity in mindfulness and meditation practices and research. It found

associations between sustainability and sustainable consumption research. Research

evaluating mindful consumption confirmed that sustainable consumption is affected by

awareness and attention. A few studies determined that instructional interventions play an

important role and that social media has a significant impact. The review confirmed the

importance of educational awareness to mindfulness and sustainable consumption was

confirmed.

Finally, this review reveals the challenges to studying mindful consumption. The

scholarship demonstrated the value of attention and awareness to sustaining our planet.

There is a relationship between the way humans treat each other and the way they treat

the Earth: "It is impossible to care for each other more or differently than we care for

the Earth" (Berry, 1977, p. 225).

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology used to answer the study's research questions. The chapter begins by reviewing both the purpose of the research and the research questions. This is followed by a description of the research design, including outlining the purpose and advantages of using a quantitative approach. The final sections focus on participant selection, data collection, and data analysis.

As described in the previous two chapters, the purpose of this study was to determine the impact of mindfulness on sustainable consumption among undergraduates at a large public university in the southern United States. The following three research questions guided the study:

1. In a sample of college undergraduates, what are their levels of mindfulness, sustainable consumption awareness and practice?

2. To what extent, if any, can variation in sustainable consumption awareness and practice among these students be explained by mindfulness and select demographic measures?

3. To what extent, if any, does meditation operate as a mediating or moderating variable between mindfulness and sustainable consumption practice and awareness?

Research Design: A Quantitative Approach

To answer questions about the participants' specific experiences, I used secondary data from a study performed on undergraduate students at a large public university in the

southern United States. This cross-sectional study's quantitative data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 26.

The multivariate correlational research design was used to determine to what extent, if any, variation in the dependent variable (sustainable consumption) was explained by the independent variable mindfulness, meditation, and select demographics. In addition, models were estimated to determine if meditation operated as a mediating or a moderating variable between the other independent variables and sustainable consumption. However, throughout the analysis, it was essential to be aware of cross-sectional studies' predictive limitations because the exposure and outcome were simultaneously assessed (Solem, 2015).

Secondary Data

Secondary data was used for this study. The analysis involved using the information someone else gathered to answer new research questions. In this case, the researchers chose to collect additional data outside of the direct research questions to investigate dyadic relationships in an undergraduate student population. Of course, the main advantage of using secondary data was cost-effectiveness as no money, time, or effort was expended to collect the data (Weston et al., 2019).

A disadvantage of secondary data use is the amount of time and effort needed to understand the primary study. The time required to understand research that is not one's creation can be prohibitive. I needed to understand the research design used, the sample and population from which it was drawn, measures, data collection, coding, and storing (Cheng & Phillips, 2014). Fortunately, I was able to speak directly with the original developers, and they were able to answer a myriad of questions. These questions included

(a) has any research been completed and or published using this dataset, (b) where and how was the population selected, (c) the number in the actual sample size, (d) whether participants were randomly sampled, and (e) where participants offered anything in return for their participation in the original study, and if so, what? Getting the answers to some questions was complicated by incomplete documentation or memory on the part of the primary researchers. Had it not been for the primary researchers' assistance, the time spent gathering new data from the primary study may have been equal to the time spent to understand the secondary data (Jones, 2010).

There were other disadvantages to using secondary data. The first was the uncertainty of the original constructs. I considered whether the original constructs fit the focus of the new study. For example, the original researchers set out to perform a survey with particular research questions in mind. Fortuitously, the secondary data contained specific information that allowed answering the research questions (Pajo, 2018). Fortunately, for this study, I had contact information for the developers, and they were willing to answer all the questions listed above.

Undergraduate Students as Participants in Research Studies

Undergraduate students were essential to this study because they are everyday consumers. College students have participated in all aspects of the research process for many years. In some fields, it is an expectation of students taking a course, for example, in psychology, where enrollment in some courses carries the requirement that students participate in a survey or experiment. University students also participate in the research process in other disciplines like criminology, criminal justice (Payne and Chappell,

2008), sociology, consumer behavior (Quoquab & Mohammad, 2019), and mindfulness and sustainable consumption (Armstrong, 2012; Pena-Cerazo et al., 2019).

The most common way students become involved in the research process is by providing information, typically in the form of completing a survey instrument for a professor. There are several benefits to using college students in sample populations. It is more efficient to administer a survey instrument to several hundred university students than in any other research category. Students are easily accessible and cost-effective (Hochwarter, 2014; Wheeler et al., 2014; Demerouti & Rispens, 2014). In addition, university students express the dominant culture at any given moment in time (Payne and Chappell, 2008). "Using students as subjects does not falsely represent research findings and are reasonable surrogates for other consumers" (Ok et al., 2008, p. 4). Payne and Chappell (2008, p. 184) stated that "students are people too," meaning that some topics are appropriately understood and should be studied using this population. College students are justified in theory-application research because similar groups enable the researcher with a more accurate theoretical prediction than using heterogeneous respondents (Quoquab & Mohammad 2019). However, compared to the general population, college students are younger, have a different set of life experiences, have distinct pursuits, come from different income brackets, and have a specific subculture (Payne & Chappell, 2008).

Of course, there are limitations to using a student sample, including concerns about validity and generalizability (Payne and Chappell, 2008). For example, researchers might question whether or not the students completed the survey instrument honestly and/or if respondent fatigue occurred due to many items on the survey. Another important

issue has to do with social desirability. College students might not be entirely truthful if they believe that their professors somehow have access to their responses. From an ethical perspective, some students might feel the need to participate because they are students, and this imagined obligation creates ethical considerations that should not be ignored. Some researchers might also feel a social stigma using university undergraduate students as participants. In addition, some researchers believe that data from student populations are less valuable and have a lesser chance of being published. However, Calder et al. (1981) have argued that findings from studies that had university students as participants do not differ significantly in generalizability from the results of other groups of consumers.

Data Collection

Participant Selection

During the fall semester of 2017, a convenience sample was used to gather data via a survey from nine classes across various college undergraduate programs at a large public university in the southern United States (G. Siebert, personal communication, October 21, 2020). The college professors were first sent an email by the primary researchers introducing them to the proposed study, hoping that students would be offered extra credit to participate. Professors who agreed to provide this option for their students were given the freedom to choose an alternative extra credit assignment for students who did not wish to participate in the study. If a professor was a part of the primary research study (e.g., collaborated with researchers to include survey items of interest to them), the survey was not offered to students in their courses to prevent a conflict of interest (G. Siebert, personal communication, October 19, 2020).

The college selected had approximately 3000 undergraduates, from which researchers recruited 1117 students, with 552 completing the survey instrument (R. May, personal communication, October 19, 2020). Before participation in the study, participants signed an informed consent form and then completed the survey online. Partners and friends of the students were allowed to complete the survey instruments because the original study focused on dyadic relationships. There were conditional branching questions for participants identified as a friend or partner of students completing the survey. If the participant identified as a student's partner, they received a $20 gift card for the completed study. The primary researchers asked all participants if they were taking the survey for extra credit. If so, the student provided the course name so the extra credit could be provided (G. Siebert, personal communication, October 9, 2020).

Survey Instrument

Dr. Gregory Siebert and Dr. Ross May developed the overall survey instrument. As part of the instrument, the primary researchers used the 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) to measure mindfulness. Dr. Myriam Rudaz and Dr. Thomas Ledermann developed six questions to investigate sustainable consumption awareness and practice, in a segment on the survey designed to research overall well-being (G. Siebert, personal communication, October 9, 2020). Permission to use the survey data came from all survey developers. The authorizing university where the primary researchers are employed required a signed agreement to use the data for this study. In addition, the primary researchers labeled each variable with a quantitative code to construct the conceptual models and entered the data into Statistics Package for the

Social Sciences (SPSS), version 26. For this particular study, 35 out of the 567 survey

items from the original survey instrument were selected for use. The complete set of the

35 survey questions used in this study is available in the Appendix.

Mindfulness

As shown in Table 1, the 15 items on the survey that measured mindful attention

were initially taken from Mindful Attention Awareness Scale (MAAS; Brown & Ryan,

2003) (G. Siebert, personal communication, October 9, 2020). These items used a 5-point

Likert scale (1 = *almost never* to 5 = *almost always*), and a composite measure of

mindfulness was formed from the average score on all 15 questions. Having been used in

many studies, the MAAS is a reliable and valid measurement of mindful awareness

(Ajmal & Shahida Batool, 2020; Karadere et al., 2020; MacKillop & Anderson, 2007;

Osman et al., 2016; Phang et al., 2016; Ruiz et al., 2016).

Table 1

Survey Questions Identified as Mindfulness

Question Number	Items on the Mindful Attention Awareness Scale
Q92(1).	I could be experiencing some emotion and not be conscious of it until sometime later.
Q92(2).	I break and spill things because of carelessness, not paying attention, or thinking of something else.
Q92(3).	I find it difficult to stay focused on what's happening in the present.
Q92(4).	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
Q92(5).	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
Q92(6).	I forget a person's name almost as soon as I've been told it for the first time.

Question Number	Items on the Mindful Attention Awareness Scale
Q92(7).	It seems I am "running on automatic," without much awareness of what I'm doing.
Q92(8).	I rush through activities without being really attentive to them.
Q92(9).	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.
Q92(10).	I do jobs or tasks automatically, without being aware of what I'm doing.
Q92(11).	I find myself listening to someone with one ear, doing something else at the same time.
Q92(12).	I drive places on "automatic pilot" and then wonder why I went there.
Q92 (13).	I find myself preoccupied with the future or the past.
Q92(14).	I find myself doing things without paying attention.
Q92(15).	I snack without being aware that I have eaten.

Sustainable Consumption

Rudaz and Ledermann developed survey items for the original survey instrument that dealt with sustainable consumption awareness and practice as part of a section investigating well-being (M. Rudaz, personal communication, October 13, 2020). Well-being was also one of the concepts put forth by Fischer et al. (2016) as a mechanism for mindfulness. There were six items regarding sustainable consumption on the original survey instrument, and these items were rated on a 5-point Likert scale (1 = *rarely* to 5 = *regularly*). Three of these questions were related to sustainable consumption awareness, and three questions were related to sustainable consumption practice. Since items used for awareness and practice are not from a previously validated scale on sustainable

consumption (M. Rudaz, personal communication, October 15, 2020), the reliability for these two sets of questions (as well as all six together) was statistically evaluated by calculating the Cronbach's Alpha for each of the sub-constructs as well as the overall construct as Cronbach's alpha was used to estimate the reliability, or internal consistency, of the composite score.

In addition to the two sub-constructs (awareness and practice), sustainable consumption was analyzed as a composite score of all six items on the instrument. Given that awareness and practice were considered in the overall metric of sustainable consumption, the two sub-constructs and the overall construct were used as dependent variables in the analysis. As shown in Table 2, the sustainable awareness questions measured students' understanding of the importance of the environment, environmental resources, and human dependency on the environment. Sustainable practice items examine behaviors that protect the environment and natural resources.

Table 2

Survey Questions Identified as Sustainable Consumption

Characteristics	Question Number	Statement
Awareness		
	Q91(8).	I am fully aware of environmental problems.
	Q91(18).	I am fully aware of the finite nature of environmental resources.
	Q91(21).	Q91(21). I am fully aware that humans depend on the environment.
Practice		
	Q91(4).	I try to avoid extra waste and pollution.
	Q91(12).	I try to reuse and recycle waste (e.g., paper, glass, plastic).

Question Number	Statement
Q91(15).	I buy environmentally friendly products (e.g., organic, energy-saving, local).

Meditation

May and Siebert used three survey questions to investigate meditation. These items were designed to examine if students had experience with meditation and how often they practiced it. The first question asked, "How much experience do you have meditating (mindfulness, transcendental meditation, etc.)? For this question, participants chose one of the following responses: no experience, a little experience, some experience, and a lot of experience. The second question listed was, "In the past year, about how frequently have you mediated (mindfulness, transcendental meditation, etc.)? The participants had the following response options: not at all in the past year, less than monthly, monthly, weekly, daily, or almost daily. The third question asked, "In the past month, about how often have you meditated (mindfulness, transcendental meditation, etc.)? Participants responded to this question with the following options: 0 times per week, 1-2 times per week, 3-4 times per week, 5-6 times per week, or 7+ times per week.

Meditation as either a mediator or moderator variable was evaluated using the three questions discussed on the survey instrument. An index was created based on the questions; however, since the scoring differed between questions one and questions two and three, each item was scored on 0-1 interval. The first question with four possible responses was scored as 0, 1/3, 2/3, and 1, while the last two questions with five possible choices were scored as 0, .2, .4, .6, .8, and 1. In addition to meditation, other predictors

were used in the regression models to include grade level, gender, and additional selected demographics.

Data Analysis

The standards for evaluating a quantitative study reflect the type of research design and data collection methods and analysis (Creswell & Plano Clark, 2011). To understand how each of the three research questions were analyzed, the next section presents the methods used to address the study's three research questions.

Research Question 1: In a sample of college undergraduates, what are their levels of mindfulness and sustainable consumption awareness and practice?

To address this first research question, descriptive statistics were used to understand the levels of mindfulness and sustainable consumption awareness and practice among the 552 undergraduates in the sample. Specifically, means and standard deviations were evaluated for all 15 mindfulness questions and the overall construct formed from them. The two sub-constructs associated with sustainable awareness and practice and the overall construct were analyzed. The distributions underlying the questions, sub-constructs, and constructs, medians, modes, and ranges are presented when appropriate.

Research Question 2: To what extent, if any, can mindfulness and demographic variables explain variation in sustainable consumption practices among students?

Multiple regression analysis was used to address this question, with three different measures of sustainable consumption used as dependent variables; these included the overall construct and the two sub-constructs. The independent variables employed in the analysis included either the individual mindfulness questions or the overall mindfulness construct and all the demographic measures collected in the original survey instrument.

Throughout the analysis, the p=.05 level was applied to test for statistical significance, and estimated coefficients, their associated t-statistics, and levels of statistical significance are presented in tabular form. In addition, R-square measures and the adjusted R-square were utilized to understand the extent of variation and variance, respectively, and explained by the various models estimated.

Research Question 3: **To what extent, if any, does meditation operate as a mediating or moderating variable between mindfulness and sustainable consumption practice and awareness?**

Meditation was investigated as a mediating or a moderating variable. Two competing theoretical models were tested, one of which postulated meditation as a mediating variable. The second model proposed mediation as a moderating variable (see Figures 1 and 2). The dependent variables used in the theoretical models were the sub-constructs and overall construct measuring sustainable consumption. The primary independent variable was various formulations of mindfulness and significant demographic variables identified in the analysis surrounding the second research question.

The purpose of mediation analysis was to evaluate if the mediator's influence was stronger than the independent variable's direct effect. The model represented in Figure 1 depicts a process in which a student's sustainable consumption awareness and practices could have resulted from their mindfulness—in this case, the more mindful a student is, the more they practice sustainable consumption. The impact of their mediation practice mediates part of the effect of their mindfulness on their sustainable consumption. Note, however, only part of the effect of mindfulness on sustainable consumption is mediated

by meditation in this model. The model uses the same variables but shows students' sustainable consumption is related to meditation and is influenced by mindfulness. Their mindfulness is mediating some of this impact. Both models were used to determine which model best accounts for the observed associations.

Figure 1

Meditation as a Mediator
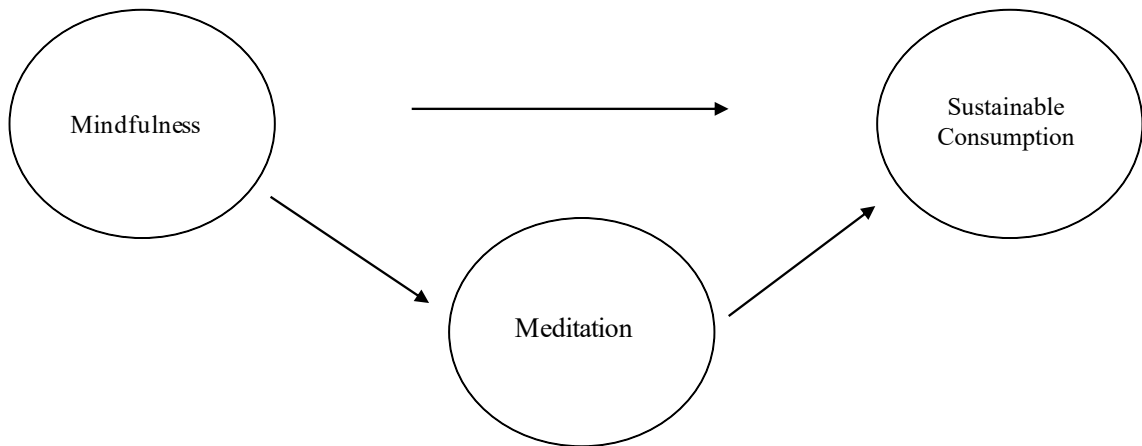
Three conditions were established to determine whether mediation has occurred:

1. The Independent Variable predicts the Dependent Variable

2. The Independent Variable predicts the mediator

3. The mediator predicts the Dependent Variable

Correlation coefficients were obtained to test whether these three conditions were met (Pierce, 2003). The next part of the analysis conducted the Sobel test for mediation. The regression coefficient and the standard error for this regression coefficient were computed to obtain the association between the Independent Variable and the mediator and the association between the mediator and the Dependent Variable (adjusting for the Independent Variable) (Edwards, n.d.).

The model depicted in Figure 2 investigated meditation as a possible moderator. A moderating variable can strengthen, diminish, negate, or otherwise alter the association between independent and dependent variables ("Variables, Moderating Types," 2017).

Figure 2

Meditation as a Moderator
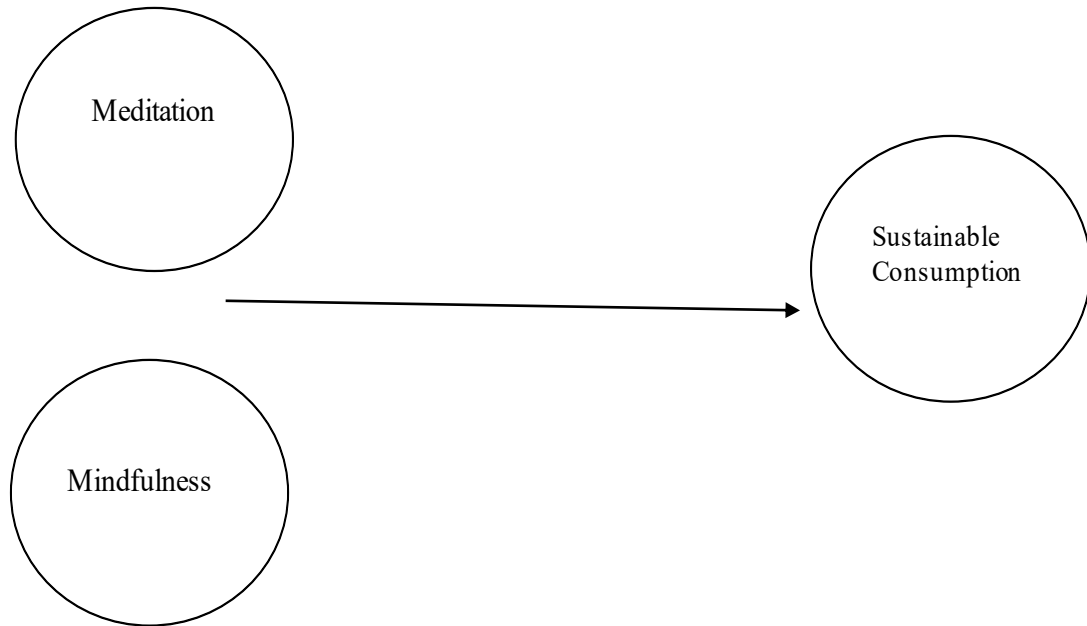
Analysis of the meditation as a moderating variable indicated if, when, or under what conditions the relationship occurred. The effects of a moderating variable were assessed using hierarchical multiple regression. I investigated the interaction effect between mindfulness and meditation and determined whether such an outcome is significant in predicting sustainable consumption (Barron & Kinney, 1986). Results for the models shown in Figures 1 and 2 are displayed and discussed in Chapter 4.

Assumptions, Limitations, and Delimitations

This study has its limitations and delimitations. First, the study is delimited in its scope. The survey instrument was only offered to students taking classes in the fall of

2017 in the College of Family and Child Sciences. Students who were not studying in that College were only provided the opportunity if they were friends of a student taking a course there. The study was conducted on a particular population of university undergraduates who share considerable privileges compared to other 18–22-year-old individuals in the United States who do not attend college. The students surveyed were from one large public university in the southeastern United States. Different results may be found if the survey was given to students at another university, such as a small, private, religious college located in a different part of the country or elsewhere in the world. Thus, generalizability is limited.

Though the study yielded a 48.1% response rate, which is considered successful for online surveys, it still represents less than half of the population in the College. The original study was designed to investigate dyadic relationships, and selection bias may have been why some students chose to participate and others did not.

The use of secondary data was the primary limitation of this study. I did not have input into participant selection. There was no control over how the prior researchers developed the survey instrument nor how the data was collected, coded, or entered into the Statistical Package for the Social Sciences 26. There might have been unintentional errors in some of the coding or data entry made by persons responsible for these tasks.

The original survey contained over 500 items. The survey was exceptionally lengthy for students whose time was already limited because of the demands of school. Participants completing the survey instrument might have experienced respondent fatigue, a well-documented occurrence in which survey participants become tired of the task. Thus, the quality of the data begins to deteriorate, or some respondents do not

complete all the survey (Ben-Nun, 2008). Because the data used in this study was obtained from the original research, the secondary data used for analysis may have been affected.

Social desirability may be a limitation. It is a common method bias and suggests respondents may be likely to provide answers that cast themselves in a positive light, despite their true feelings and understanding of the situation. Biased responses may cover up the actual relationships between variables and hinder researchers from interpreting data objectively (Podsakoff et al., 2003). Even though the survey was anonymous, students may have been afraid to decline the offer of extra credit because they may have thought it mattered in some way to the professor offering it. From an ethical perspective, this imagined obligation creates moral considerations that should not be ignored.

Not unlike other studies, there are limitations to using a student sample. There are potential weaknesses that include, but are not limited to, concerns about validity and ethical considerations (Ok et al., 2008). In some academic circles, there is a stigma in using student samples. Compared to the general population, college students are younger, have a different set of life experiences, have distinct pursuits, come from different income brackets, and have a specific subculture (Payne & Chappell, 2008).

There is no way of knowing how truthful students were about their practice of mindfulness, meditation, or sustainable consumption. Though researchers can assume participants answer truthfully and accurately to items on the survey instrument based on their personal experience, they have no way of knowing definitively. In this study, respondents might have indicated they engage in sustainable practice; however, there was no way to observe this to determine if it was true and to what extent (Creswell, 2014).

The definition of meditation was left to the respondents. Meditation is what it meant to them. It could have meant transcendental meditation or mindful meditation or breathing exercises or yoga or sitting still. It was not defined for the participants in the survey. Other students may have considered prayer as a form of meditation.

It has been over 3 years since the original research study was concluded. Data should be used within 1 to 3 years for studies that are not longitudinal (Pajo, 2018). Problems can arise if too much time has passed. For example, the primary researchers had trouble recalling some details about the original research study. However, between the four researchers, given some time, they answered all my questions.

Finally, there are limitations involved in conducting a cross-sectional study. Causality cannot be established in this type of study, and the results are not generalizable because a temporal sequence cannot be established. The data was taken at a single point in time, providing only a snapshot. Another point in time might give differing results if another time frame had been chosen. The timing of the administration of the survey instrument is not guaranteed to be representative. It is important to note the world has changed a lot in the time passed, particularly over this past year due to the global pandemic. Perhaps mindful attention, sustainable consumption awareness, and practices and/or attitudes have changed dramatically.

CHAPTER FOUR

RESEARCH FINDINGS

This study aimed to determine the levels of mindfulness and sustainable consumption awareness and practice in a sample of university undergraduates. I investigated the extent to which mindfulness and select demographic variables explained variation in sustainable consumption awareness and practice. Meditation operating as a mediating or moderating variable was also explored.

This chapter presents the findings for the study. First, I describe details about participant personal demographics. Next, I offer reliability analysis for the results from the questionnaire. Then, results for each of the research questions are presented, including key quantitative results. The chapter concludes with a summary of these findings.

Participants and Procedures

As described in Chapter 3, the individuals invited to participate in the original study were students in the College of Family and Child Sciences at a large university. Participants completed an anonymous online survey that investigated dyadic relationships in undergraduate students. Secondary data was obtained from the original study to gather demographic information, statistics from the 15-item Mindful Attention Awareness Scale (MAAS), and data on sustainable consumption awareness and practice.

The college selected had approximately 3,000 undergraduates, from which researchers recruited 1,117 students, with 809 completing the survey instrument. Larger sample sizes are important as they increase the reliability of reported effects and increase statistical power (Baer, 2003). While there is no consensus on the optimal sample size for

quantitative research, Fowler (2009) expressed the common sentiment that increasing sample size increases the survey estimates' reliability.

Of the students invited to participate, 809 responded, completed the online consent to participate, and answered at least one of the questions related to this study. Before the data were analyzed, 205 respondents were removed because the survey they had completed did not include the six questions that pertained to sustainable awareness and consumption (G. Siebert, personal communication, January 15, 2021). Twenty-nine other students were eliminated for non-completion of the survey instrument. In the "Other" section under grade level, one student stated they were in graduate school and was removed. Twenty-two more participants did not indicate if they were college students, so they were eliminated, leaving a final $n = 552$. A sample size greater than 500 is sufficient, suggesting this sample of 552 is more than adequate (Meyers et al., 2006).

Participating professors in the College of Family and Child Studies gave extra credit to most students. They also offered an alternative assignment for extra credit if a student chose not to complete the survey. Respondents who did not receive extra credit from a university professor were also still included in the study in an effort to diminish any sample selection bias associated with the promise of extra credit. The following sections describe the demographic makeup of the survey respondents.

Participant Demographics

In this section, I present the demographics of the 552 participants included in my final sample. The discussion begins with personal demographics, followed by data on health, education, and various other predictors used in the analysis. For each of the

demographic questions, descriptive statistics are presented in a series of tables. Where

appropriate, these statistics include means, medians, frequencies, and standard deviations.

Personal Demographics

Respondents were asked questions regarding personal demographics, including

age, gender, racial/ethnic background, and health.

Age

Table 3 lists the distribution of respondents based on their age.

Table 3

Age Category

Age	N	% of respondents	M	SD	Mdn
18 years old	63	11.4			
19 years old	182	32.9			
20 years old	148	26.8			
21 years old	114	20.6			
22 years old	32	6.0			
23 years old	4	0.7			
25 years old	5	0.9			
28 years old	1	0.2			
34 years old	1	0.2			
39 years old	1	0.02			
Total	552	100.00	24.9	6.87	22.5

All participants provided their age. Ages ranged from 18–39, with an average age

of 24.9 years old ($SD = 6.87$) and a median age of 22.5 years old.

Gender

The distribution of students based on gender is displayed in Table 4.

Table 4

Distribution of Gender

Gender	N	% of respondents
Male	97	17.5
Female	454	82.3
Transgender male	0	0.0

Gender	N	% of respondents
Transgender female	0	0.0
Prefer not to say	1	0.2
Total	552	100.00

Most students were female (82.3%), and 17.5% identified as male. One

participant preferred not to disclose their gender.

Racial/Ethnic Background

Table 5 lists the distribution of respondents based on race and ethnic background.

Table 5

Race/Ethnicity Category

Race/Ethnicity	N	% of Respondents
African American/Black	81	14.7
Asian/Pacific Islander	20	3.6
Latino/Hispanic	84	15.2
White/Caucasian/European American	355	64.3
More than one of the above categories	8	1.4
Other	3	0.5
Prefer Not to Say	1	0.2
Total	552	100.0

In response to the question related to the respondent's race, all participants

responded. For this question, candidates could select from five descriptive categories:

African American/Black, Asian/Pacific Islander, Latino/Hispanic, or

White/Caucasian/European American. Additionally, respondents could choose "Prefer

Not to Say" or "More than one of the above categories" or "Other" and then provide

further explanation. Of the seven students listing "More than one of the above"

categories, two students listed Asia/Caucasian, one student each stated from the

following categories: Black/White, Latino/Caucasian, Indian/White, Italian/Asian/other,

and Mixed. Three students listed "Other," two as Jamaican and White Cuban, and one

participant preferred not to disclose any information.

Health

The perceived health of the participants is displayed in Table 6.

Table 6

Health Category

In general, how is your health?	Frequency	% of Respondents
Excellent	81	14.7
Very good	235	42.6
Good	167	30.3
Fair	41	7.4
Bad	5	0.9
Missing	23	4.2
Total	529	95.8

Eighty-one participants stated they were in "Excellent" health. However, most of the students indicated they were in "Very Good" or "Good" health. Forty-one students indicated they were in "Fair" health, and five said they were in "Bad" health. Twenty-three students did not answer this question. Perceived health falls into the provided frameworks of mindfulness and sustainable consumption and awareness proposed in Chapter 2. Individual mental and physical well-being are essential to these constructs (Fischer et al., 2017; Geiger et al., 2019; Thiermann & Sheate, 2020).

Educational Demographics

The following sections describes the education-related responses from the participants. This section includes the percentage of students receiving extra credit for participation in the research, enrollment status in college, student's GPA, and year in school.

Extra Credit

Table 7 lists the distribution of students based on whether they received extra credit for completing the survey.

Table 7

Extra Credit Category

Did you receive extra credit?	N	% of Respondents
Yes	330	59.7
No (I'm the student or student's friend)	222	40.3
Total	552	100.00

Not all students taking the survey received extra credit for their efforts. Many of the students enrolled in the College of Family and Child Sciences were incentivized to take the study with extra credit. Of the 552 participants, 222 respondents completing the survey instrument did so for no extra credit and indicated that their participation was because they were a partner or friend of a student who received extra credit. They participated and did not want or did not need the extra credit.

Enrollment Status

Student enrollment status in college is displayed in Table 8.

Table 8

Enrollment Status Category

Enrollment Status	N	% of Respondents
Part-time less than 12 hours	11	2.0
Full-time more than 12 hours	541	98.0
Total	552	100.00

Most students (98%) completing the survey instrument were enrolled in school as full-time students.

Grade Point Average (GPA)

Table 9 lists the distribution of respondents based on their grade point average.

Table 9

GPA Category

GPA	*N*	% of Respondents
3.0 and above	450	81.6
2.0 to 2.9	81	14.6
Below 2.0	3	0.5
Missing Responses	18	3.3
Total	552	100.00

Participants were asked to provide their cumulative grade point average (GPA).

Student GPA was self-reported and unverified. Eighteen respondents did not provide

their GPA, and it is not known if it was because the participants did not know their GPA

or chose not to disclose it. Of the 552 students, 450 had a GPA of 3.0 or higher.

Year in College

The distribution of participants based on year in college is described in Table 10.

Table 10

Year in College

Grade Level	*N*	% of Respondents
1st year (Freshmen)	62	11.2
2nd year (Sophomore)	208	37.6
3rd year (Junior)	154	27.8
4th year (Senior)	124	22.4
Non-degree Student	1	0.2
Other	3	0.7
Total	552	100.00

All respondents provided their grade level. One participant stated they were

enrolled in a non-degree program. Three students indicated "Other" and explained in the

comment section the reason for the response. One student was working on their second

bachelor's degree, and one was a 5th-year senior. The last student indicated that they

were in their second year of school but had accumulated enough credits to be a junior.

Other Predictors

Other predictors analyzed were the number of hours students worked per week, parents' income level, living situation, relationship status, religious affiliation, religiosity, meditation, and prayer frequency. As discussed in Chapter 2, there is literature supporting associations between mindfulness and sustainability and many of the above factors. These predictors were available for analysis from the original study and of interest to this research.

Employment

Table 11 lists the distribution of respondents based on their employment status.

Table 11

Employment Category

How many hours a week do you work?	*N*	% of Respondents
Do not work	326	59.1
1-10 hours a week	67	12.1
11-20 hours a week	96	17.4
21-31 hours a week	33	6.0
32 hours a week or more	22	4.0
Missing response	8	1.4
Total	552	100.00

Of the 552 students surveyed, over half of the students indicated that they do not work, and eight participants did not answer this question.

Family Income Level

Table 12 lists the distribution of respondents based on their family's annual income.

Table 12

Family Income Category

Level of Annual Income	N	% of Respondents
Below 30k	77	13.9
30k-50k	78	14.1
50k-100k	165	30.0
Above 100k	223	40.3
Other (please specify)	9	1.6
Total	552	100.00

Participants were asked, "What is your family's income?" The median annual income for student families was $50,000–$100,000. Of the 552 respondents, nine students indicated "Other." The reasons for participants not using the income levels provided on the survey were: "I am independent," "Prefer not to say," "Unknown," "Not sure," "I live with my mom, and her income is 30-50k, but my dad, whom I do not live with is over 50-100k," "Unaware," "Prefer not to answer," "Dad died, mom in jail," and "Y?"

Living Situation

Students were asked to describe their living situation. The distribution of participants is displayed in Table 13.

Table 13

Living Situation Category

Do you currently live with your parents?	N	% of Respondents
Yes	94	17.0
No	458	83.0
Total	552	100.00

The majority of students (83%) did not live with their parents.

Relationship Status

Table 14 displays the distribution of respondents based on their relationship status.

Table 14

Relationship Status Category

Current relationship Status	*N*	% of Respondents
Single, not in a committed relationship	250	45.2
Single but in a committed relationship	261	47.4
Living with partner	24	4.3
Engaged	1	0.2
Prefer not to say	2	0.4
Missing	14	2.5
Total	552	100.00

Participants were asked their current relationship status when they completed the

survey, and 14 students did not respond. Most of the students were single. Involvement in

a committed relationship (47.4%) and a non-committed relationship (45.2%) was nearly

equal in numbers.

Religious Affiliation

The distribution of respondents based on religious affiliation is listed below.

Table 15

Religion Category

Religious Affiliation	*N*	% of Respondents
Christian (e.g., Protestant, Catholic, Evangelical, Methodist, Adventist, etc.)	406	73.37
Jewish	42	7.6
Muslim	1	0.2
Atheist	11	2.0
Agnostic	31	5.6
Other	7	1.27
None	54	9.78
Total	552	100.00

All participants answered the question on religious affiliation. The majority of

respondents reported a Christian affiliation, 9.78% of participants indicated "None,"

while seven students indicated "Other." Other religions included the following

comments. Three participants practiced Hinduism; two students stated "Theistic," one

entered "Buddhist," one stated, "a god exists only as much as people believe in god."

Religiosity

Table 16 lists the distribution of participants based on religiosity.

Table 16

Religiosity Category

How important is religion in your life?	N	% of Respondents
Very important	123	22.2
Pretty important	150	27.3
A little important	166	30.0
Not important	113	20.4
Total	552	100.00

The majority of students indicated that religion had some importance to them,

with 20.4% indicating that religion was not important.

Prayer

The distribution of respondents based on prayer frequency is described in Table

17.

Table 17

Prayer Category

Prayer Frequency	N	% of Respondents
Very Frequently	59	10.7
Frequently	129	23.5
Sometimes	167	30.2
Rarely	113	20.4
Never	84	15.2
Total	552	100.00

Most students indicated they prayed at least with some level of frequency, while

15.2% stated they did not.

Meditation

Table 18 lists the distribution of students based on their experience with meditation.

Table 18

Meditation Category

How much experience do you have meditating (e.g., mindfulness, transcendental meditation etc.)?	N	% of Respondents
A lot of experience	19	3.4
Some experience	65	11.9
A little experience	244	44.1
No experience	224	40.5
Total	552	100.00

Most of the participants indicated they rarely meditated or had no experience with mediation at all.

In summary, the demographic analysis revealed most respondents were female, identified as White/Caucasian/European American, and with a median age of 22.5 years old. Educationally speaking, the majority of participants who completed the survey instrument for extra credit were full-time students with a GPA over 3.0 and were sophomores or juniors in college. In addition, most of the respondents did not work, came from a family that made upwards of $50,000 a year (40.3% earned more than $100,000), and did not live at home with their parents. The majority were single, with 47.4% indicating they were in a committed relationship and 4.3% stating they lived with a partner. The majority identified as Christian (73.4%) but indicated various levels of religiosity. Most stated they prayed, except for the 15.2% who said they never prayed. When asked if they meditated frequently, 84.6% indicated they had never or rarely practiced meditation.

Reliability Analysis

Cronbach's Alpha measures how well a group of survey items reliably measure a characteristic or construct (Creswell & Plano Clark, 2011). The MAAS instrument used in this study is historically reliable and valid in several studies mentioned in Chapter 2. The reliability of the MAAS was calculated again for this study (see Table 19). Cronbach's Alpha was used to measure whether the constructs of sustainable consumption awareness and sustainable consumption practice proved to be reliable.

Cronbach's Alpha for the Mindful Attention Awareness Scale is listed in Table 19.

Table 19

Cronbach's Alpha Mindful Attention Awareness Scale

Construct/Variable	α	Number of items
Mindfulness	0.88	15

Cronbach's Alpha for sustainable consumption awareness and sustainable consumption practice is displayed in Table 20.

Table 20

Cronbach's Alpha Sustainability Constructs on Sustainable Consumption

Construct/Variable	α	Number of items
Awareness	0.83	3
Practice	0.82	3

Cronbach's Alpha is high for all three scales indicating that the items in the scales are reliable. The MAAS had the highest reliability of the scales, followed by sustainable awareness and practice. All the aggregate and construct reliability scores were above the generally recommended minimum of 0.70 and below 0.90 (Peterson, 1994).

Research Question 1

The first research question of this study asked: In a sample of college undergraduates, what are their levels of mindfulness and sustainable consumption awareness and practice?

Descriptive Statistics

This research question was addressed quantitatively using descriptive statistics. In this section, average scores and standard deviations for the mindfulness, sustainable consumption awareness, and practice scales and individual questions are reported. Table 21 provides the mean (*M*) and standard deviation (*SD*) for all scales used in this study.

Table 21

Descriptive Statistics Summary

Scale	*M*	*SD*
Mindfulness Scale	3.59	0.79
Sustainable Consumption Awareness	2.62	0.90
Sustainable Consumption Practice	2.11	0.90

Note. N=552

The MAAS had 15 items calculated using a six-point Likert scale to measure mindful awareness and attention. The MAAS had six possible responses ranging from "Almost Always" to "Almost Never" with a M=3.59 and a SD=0.79.

The sustainable consumption questions were calculated based on a five-point Likert scale. The sustainable consumption awareness scale had a M= 2.62 and a SD=0.90 with five possible responses ranging from "Regularly" to "Never." The sustainable consumption practice scale had a M= 2.11 and a SD=0.90 with five possible choices ranging from "Regularly" to "Never." Table 22 describes detailed item statistics for mindfulness.

Table 22

Mindful Awareness Item Statistics

Statement	M	SD
I could be experiencing some emotion and not be conscious of it until sometime later.	3.60	1.19
I break or spill things because of carelessness, not paying attention, or thinking of something else.	4.03	1.28
I find it difficult to stay focused on what's happening in the present.	3.75	1.18
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	3.19	1.22
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	3.86	1.36
I forget a person's name as soon as I've been I've it for the first time.	3.21	1.49
It seems I am "running on automatic," without much awareness of what I'm doing.	3.48	1.23
I rush through activities without being really attentive to them.	3.61	1.18
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	3.52	1.22
I find myself listening to someone with one ear, doing something else at the same time.	3.37	1.27
I drive places on "automatic pilot" and then wonder why I went there.	4.10	1.44
I find myself preoccupied with the future or the past.	3.10	1.29
I find myself doing things without paying attention.	3.45	1.23
I snack without being aware that I'm eating.	3.92	1.47

Note. N = 552

Results from the MAAS suggest that students might be living life habitually and not spending time being present or thinking about their future or past. Table 23 shows detailed item statistics for sustainable consumption awareness and practice.

Table 23

Sustainable Consumption Item Statistics

Statement	M	SD
Awareness		
8. I am fully aware of the environmental problems.	2.50	1.03
18. I am fully aware of the finite nature of environmental resources.	2.40	1.10
21. I am fully aware that humans depend on the environment.	2.96	0.96
Practice		
4. I try to avoid extra waste and pollution.	2.28	1.05
12. I try to reuse and recycle waste (e.g., paper, glass, plastic).	2.23	1.07
15. I buy environmentally friendly products (e.g., organic, energy saving, local).	1.83	1.03

Note. N = 552

For sustainable consumption awareness, the highest mean ($M = 2.96$) was on the statement "I am fully aware that humans depend on the environment." The lowest mean was ($M = 2.4$) with the statement "I am fully aware of the finite nature of environmental resources." For practice, the highest mean ($M = 2.28$) with the statement, "I try to avoid extra waste and pollution." The lowest mean was ($M = 2.4$) "I buy environmentally friendly products (e.g., organic, energy saving, local).

Broadly translated, these findings indicate that though the students are aware that they are dependent on the environment, they may not be fully conscious that natural

resources are extremely limited. These findings are generally in agreement with research showing evident inconsistency in a person's attitude about sustainable product consumption, and what consumers believe is not always exhibited in their behavior. Closing the gap between attitude and behavior is necessary for an individual to practice mindfully aware consumption (Fischer et al., 2017).

Research Question 2

The second research question of this study asked: To what extent, if any, can mindfulness and demographic variables explain variation in sustainable consumption awareness and practice among students?

Regression Analysis

Linear regression analysis was used for understanding the correlative relationship between the model's independent and dependent variables. To explain variation in sustainable consumption awareness and practice among students, mindfulness was analyzed as a predictor along with personal demographics such as age, gender, health, race, and ethnicity. The educational demographics used in the analysis were enrollment status, GPA, and year in school. Other demographics investigated were employment status, family income level, frequency of meditation, relationship status, prayer frequency, religion, and religiosity.

In specifying the actual models, stepwise regression techniques were used to build models by adding or removing predictor variables in succession and testing for statistical significance after each reiteration. Stepwise regression often has many possible predictor variables but too little data to estimate coefficients meaningfully (Johnsson, 1992). For example, while analyzing one model, being 28 years old showed significance; however,

out of the 552 students, there was only one student of that age in the study. Consequently, that variable was removed, as well as several others. Variables were removed due to too little data to estimate coefficients meaningfully.

Stepwise regression had advantages. It is faster than other automatic model-selection methods. It offered the ability to manage many potential predictor variables and adjust the model to choose the best predictor variables from the available options. Observing the order in which variables were added or removed provided valuable information about the quality of the predictor variables (Żogała-Siudem & Jaroszewicz, 2021).

Mindfulness, Predictors, and Sustainable Consumption Awareness

Mindfulness was calculated as an average using the participant's responses to the MAAS scale. Then, regression analysis was used with mindfulness as the independent variable and sustainable consumption awareness as the dependent variable.

Summary of Models

Table 24 lists the model summary for mindfulness and sustainable consumption awareness.

Table 24

Mindfulness and Sustainable Consumption Awareness

	B	t	Sig.
Mindfulness	0.17	3.50	.000

Note. Dependent Variable: Sustainable Consumption Awareness
     Independent Variable: Mindfulness Average
     F = 12.3, *Sig* = .000, *R²* = .022, *Adjusted R²* = .020

The model summary for mindfulness and sustainable consumption awareness shows only 2.2% of the variation in sustainable consumption awareness can be attributed to mindfulness. In addition, the estimated coefficient of mindfulness suggests that a one-

point increase on the mindfulness scale is associated with a .17 increase on the

sustainable consumption awareness scale. Table 25 displays the estimated coefficients for

mindfulness and sustainable consumption awareness.

Table 25

Mindfulness and Predictors of Sustainable Consumption Awareness

Predictors	B	t	Sig.
Acknowledged Religion- Atheist	0.64	2.4	.02
Religion- Not Important	0.43	4.2	.00
Acknowledged Religion- Agnostic	0.37	2.2	.03
GPA over 3.0	0.22	2.4	.02
Prayer Frequency- Sometimes	0.20	2.4	.02
Mindfulness Average	0.19	4.2	.00
Family Income- 50-100k	0.19	2.4	.02
Meditation- No Experience	- 0.22	- 3.0	.03

Note. Dependent variable: Sustainable Consumption Awareness
$F = 12.3$, *Sig.* $= .000$, $R^2 = .136$, *Adj.* $R^2 = .123$

   In specifying these models using stepwise techniques, there were 15 demographic

options available for students, and dummy variables were created for each. All were

analyzed as independent variables along with mindfulness and sustainable consumption

awareness as the dependent variable.

   When mindfulness and demographic variables were included in the model, 13.6%

of the variation in sustainable consumption awareness was explained – a significant

improvement over mindfulness alone. As described in Tables 24 and 25, mindfulness

remained significant and stable as a predictor of sustainable consumption awareness, moving from 1.7% when computed alone as the independent variable to 1.9% when included with demographics. Having no meditation experience made students approximately 1/5 of a point less sustainably aware.

As Table 25 illustrates, there are seven positive predictors of sustainable consumption awareness and one negative predictor. Mindfulness has positive effect on sustainable consumption awareness. Lack of religious affiliation, religiosity, and prayer frequency also surfaced as positive predictors. Students who specified their acknowledged religion was atheism had the highest positive effect. Respondents who stated religion was not important to them had a positive relationship. Undergraduates who identified as agnostic had a positive impact. Respondents who stated they prayed sometimes demonstrated a positive association with sustainable consumption awareness. Students with a GPA of over 3.0 showed a positive association. Undergraduates whose family's annual income is $50,000– $100,000 had a positive relationship with sustainable consumption awareness.

One predictor had a significant adverse effect on mindfulness and sustainable consumption awareness. Students who indicated they had no experience with meditation had a negative association with mindfulness and sustainable consumption awareness.

Mindfulness, Predictors, and Sustainable Consumption Practice

Mindfulness was calculated as an average using the participants responses to the MAAS scale. Then, regression analysis was used to calculate mindfulness as the independent variable, and sustainable consumption practice was the dependent variable.

Summary of Models

Table 26 lists the model summary for mindfulness and sustainable consumption practice.

Table 26

Mindfulness and Sustainable Consumption Practice

	Unstandardized Coefficients		
Mindfulness	*B*	*t*	*Sig.*
	0.12	2.38	.02

Note. Dependent Variable: Sustainable Consumption Practice
$F = 5.65$, *Sig* = .02, $R^2 = 0.116$, *Adjusted* $R^2 = 0.01$

The model summary for mindfulness and sustainable consumption practice shows only 2% of the variation in sustainable consumption awareness can be attributed to mindfulness. In addition, the estimated coefficient of mindfulness suggests that a one-point increase on the mindfulness scale is associated with a .12 increase on the sustainable consumption practice scale. Table 27 displays the estimated coefficients for mindfulness and sustainable consumption practice. In specifying these models using stepwise techniques, there were 15 demographic options available for students, and dummy variables were created for each. All were analyzed as independent variables along with mindfulness and sustainable consumption practice as the dependent variable. The model summary for mindfulness, demographics, and sustainable consumption awareness are listed in Table 27.

Table 27

Mindfulness, Demographics and Sustainable Consumption Practice

Predictors	*B*	*T*	*Sig.*
Mediation Frequency-Over 7 times in past month	1.1	2.12	.04

Predictors	B	T	Sig.
Acknowledged Religion- Atheist	0.63	2.4	.02
Mediation Frequency- Weekly in the past year	0.55	2.8	.01
Acknowledged Religion -None	0.25	2.0	.04
Mindfulness Average	0.13	2.7	.01
Prayer Frequency- Frequently	- 0.26	- 2.9	.00
Meditation- No Experience	- 0.26	- 3.5	.00
Race/Ethnicity- Black	- 0.37	- 3.5	.00

Note. Dependent variable: Sustainable Consumption Practice
Predictors (Constant) Mindfulness Average
Mindfulness Average $F = 5.65$ Sig. $= 0.02$ $R^2 = 0.116$ *Adj.R²* $= 0.01$

When mindfulness and demographic variables were included in the model, 11.6% of the variation in sustainable consumption practice was explained – a significant improvement over mindfulness alone. Mindfulness remained significant and stable as a predictor of sustainable consumption practice moving from 1.2% when calculated alone to 1.3% when added to demographics.

Results of the analysis indicate that there are eight predictors of sustainable consumption practice. Five of the predictors had a positive association, and three had a negative association. Students who stated they had meditated more than seven times in the last month showed the highest positive association. Respondents who specified their acknowledged religion as an atheist had a positive effect. Undergraduates who indicated they had meditated weekly over the past year had a positive association. Students who

specified they acknowledged no religion showed a positive impact. Mindfulness also positively impacted sustainable consumption practice.

Predictors that had a negative effect on sustainable consumption practice were prayer frequency, meditation experience, and race/ethnicity. Racial/ethnic identity as Black had the highest association. No experience with meditation had a negative effect. Interestingly, praying frequently also had a negative association on sustainable consumption practice.

Aspects of religion and religiosity appeared in all models as positive indicators, while no experience with meditation had a negative impact. However, results suggest that lack of or not declaring a religious affiliation positively impacts sustainable consumption and awareness. Implications of these findings and suggestions for future research will be discussed in detail in Chapter 5.

Research Question 3

The third research question of this study asked: To what extent, if any, does meditation operate as a mediating or moderating variable between mindfulness and sustainable consumption practice and awareness?

In this study, meditation was investigated as either a mediating or a moderating variable. Two competing theoretical models were tested, one of which postulated meditation as a mediating variable; the specifics of this are discussed in the next section.

Mediation

Mediating variables explain how and why the outcome and predictor variables are related, suggesting underlying processes across behaviors (MacKinnon & Fairchild, 2009). The primary independent variable was mindfulness. The dependent variable in the

theoretical models was sustainable consumption, analyzed separately as sustainable consumption awareness and sustainable consumption practice.

Three conditions determined whether mediation occurred:

1. Mindfulness predicts sustainable consumption.

2. Mindfulness predicts meditation.

3. Meditation predicts sustainable consumption.

Mindfulness, Meditation, and Sustainable Consumption Awareness

The Sobel test completed the analysis of mediation as a mediator. The Sobel test is a method of testing the significance of a mediation effect and works well only in large samples (Preacher & Leonardelli, 2021). The Sobel test, a specialized *t* test, offered a way to determine whether the reduction in the independent variable (mindfulness) effect is significant after the mediator (meditation) is included in the model. The regression coefficient and the standard error for this regression coefficient were computed to obtain the association between the independent variable and the mediator, and the association between the mediator and the dependent variable (sustainable consumption awareness), adjusting for mindfulness (Edwards, n.d.).

In preparation for the Sobel test, the first coefficients investigated whether the three conditions described previously demonstrated that requirements were met (Pierce, 2003). Table 28 displays the correlations obtained for meditation, awareness, and mindfulness.

Table 28

Correlations for Mediation, Sustainable Consumption Awareness, and Mindfulness

		Meditation	Awareness	Mindfulness
Meditation	*PCC*	1.00	0.13**	0.00
	Sig. (2 - tailed)		0.00	0.99
Awareness (DV)	*PCC*	0.13**	1.00	0.15**
	Sig. (2 - tailed)	0.00		0.00
Mindfulness (IV)	*PCC*	0.00	0.15**	1.00
	Sig. (2 - tailed)	0.99	0.00	

Probability note. ** Correlation significant at 0.01 level (2-tailed)

The correlation coefficients for paths between each of the variables were statistically significant. At the bivariate level, the results indicated that each of the conditions necessary to test for a mediator's possible role was met. Second, the unstandardized regression coefficient for the association between mindfulness and sustainable consumption awareness was determined. Table 29 displays the unstandardized coefficients for mindfulness as the dependent variable and sustainable consumption awareness.

Table 29

Coefficients Mindfulness and Sustainable Consumption Awareness

	Unstandardized Coefficients	
	B	*SE*
Constant		0.10
	3.24	
Awareness		0.04
	0.13	

Note. Dependent Variable: Mindfulness

The unstandardized regression coefficient indicated that the association between

mindfulness and awareness was 0.13. The standard error for this unstandardized

regression coefficient was 0.04. Next, the unstandardized regression coefficient was

calculated for the association between sustainable consumption awareness and

meditation, controlling for mindfulness. Table 30 shows the unstandardized coefficients

for mindfulness and meditation.

Table 30

Coefficients Mindfulness and Meditation

	Unstandardized Coefficients	
	B	*SE*
Constant		0.11
	0.45	
Awareness		0.04
	0.07	
Mindfulness	- 0.10	0.03

   Note. Dependent Variable: Meditation

The unstandardized regression coefficient for the association between sustainable

consumption awareness and meditation was calculated, controlling for mindfulness, as -

0.01, and the standard error for this regression coefficient was 0.03.

Sobel Test for Mindfulness, Meditation, and Sustainable Consumption Awareness

There are three principal versions of the Sobel test. The Aroian versions added the

third denominator term and were promoted by Baron and Kenny (1986) as the Sobel test.

The Goodman test subtracts the denominator, and the last test that does not include it at

all. The values obtained for the Sobel test were derived from the regression analysis with

the independent variable predicting the mediator. The regression analysis with the

independent variable and mediator predicting the dependent variable provided additional

values. Preacher and Leonardelli (2021) at Vanderbilt University provided a calculator

that completed the Sobel test with the values determined with the analyses in Tables 33
and 34.

The appropriate values were entered in their respective places in the calculator.
Table 31 displays the results of the Sobel, Arion, and Goodman tests.

Table 31

Sobel Test Results for Mindfulness and Sustainable Consumption Awareness

Test	*t statistic*	*SE*	*p-value*
Sobel	1.33	0.97	0.18
Arion	1.33	0.97	0.18
Goodman	1.33	0.97	0.18

Probability note. Correlation significant at 0.05

The results show that the test statistic for the Sobel test was 1.3, with an
associated *p*-value of 0.18. The observed *p*-value was above the established alpha level
of .05 (1.96) and indicated the association between mindfulness and sustainable
consumption awareness was not significantly mediated by the inclusion of the
meditation in the model; in other words, there was no evidence of mediation. The
results were not statistically significant and indicated meditation does not mediate the
relationship between mindfulness and sustainable awareness

Mindfulness, Meditation, and Sustainable Consumption Practice

In preparation for the Sobel test, Pearson's coefficients (PCC) were obtained and
investigated whether the three conditions described previously were met (Pierce, 2003).
Table 32 illustrates the correlations for meditation, sustainable consumption practice, and
mindfulness.

Table 32

Correlations for Meditation, Sustainable Consumption Practice, and Mindfulness

		Meditation	Practice	Mindfulness
Meditation	*PCC*	1.00	0.17**	0.00
	Sig. (2 - tailed)		0.00	0.99
Practice (DV)	*PCC*	.17**	1.00	0.10*
	Sig. (2 - tailed)	.00		0.02
Mindfulness (IV)	*PCC*	.00	0.10*	1.00
	Sig. (2 - tailed)	.99	0.02	

Probability note. **Correlation significant at .01 level (2 - tailed).
*Correlation significant at .05 level (2 - tailed)

The correlation coefficients for paths between each of the variables were statistically significant. The results indicate at the bivariate level, each of the conditions necessary to test for a mediator's possible role was met. Second, the unstandardized regression coefficient for the association between mindfulness and sustainable consumption practice was determined. Table 33 displays the unstandardized coefficients for mindfulness as the dependent variable and sustainable consumption practice.

Table 33

Coefficients Mindfulness and Sustainable Consumption Practice

	Unstandardized Coefficients	
	B	*SE*
Constant	3.34	0.09
Practice	0.09	0.04

Note. Dependent Variable: Mindfulness

The unstandardized regression coefficient was 3.34 and indicated the association between mindfulness and practice as 0.09. The standard error for this unstandardized regression coefficient was 0.04. Then, the unstandardized regression coefficient was

calculated for the association between sustainable consumption practice and meditation, controlling for mindfulness.

Sobel Test for Mindfulness, Meditation, and Sustainable Consumption Practice

Next, the Sobel test for analyzing mediation was conducted using results from Table 36 and Table 37. The Sobel test determined the significance of a mediation effect of meditation on mindfulness and sustainable consumption practice. The test determined whether the reduction in the independent variable (mindfulness) impact was significant after the mediator (meditation) was included in the model. The regression coefficient and the standard error for this regression coefficient were computed to obtain the association between the independent variable and the mediator, and the association between the mediator and the dependent variable (sustainable consumption practice), adjusting for mindfulness (Edwards, n.d.). Table 34 displays the results of the Sobel, Arion, and Goodman tests.

Table 34

Sobel Test Results for Mindfulness and Sustainable Consumption Practice

Test	*t statistic*	*SE*	*p-value*
Sobel	0.44	0.31	.66
Arion	0.44	0.31	.66
Goodman	0.44	0.31	.66

Probability note. ** Correlation significant at 0.01

The test statistic for the Sobel test is .01, with an associated *p*-value of .66. The observed *p*-value was above the established alpha level of .05 (1.96), which indicated the association between mindfulness and sustainable consumption practice was not significantly mediated by the inclusion of meditation in the model; in other words, there is evidence of mediation. The results were not statistically significant and indicated

meditation does mediate the relationship between mindfulness and sustainable consumption practice.

These results indicate meditation does not mediate the relationship between mindfulness and sustainable consumption awareness and practice. Measurement errors and incorrect assumptions about the meditation variable may have impacted the analysis. Specifically, this study's premise was that meditation was the influencer variable on mindfulness, but this may not be the case. Measurement error can underestimate the mediator's effect and an overestimation of the predictor variable's impact (Baron & Kenny, 1986). There may be an incorrect assumption about which variable is the predictor and the mediator in the model (p. 1177).

Moderation

The second model proposed mediation as a moderating variable. A moderating variable can strengthen, diminish, alter, or negate the association between the independent and dependent variables (Quoquab & Mohammad, 2020).

A moderator is classified as being related to the outcome variable and interacting with the predictor variable. This analysis determined the type and strength of the relationship between the dependent (outcome) variable and independent (predictor) variable (Sharma et al., 1981). In this study, the dependent variable was sustainable consumption, separately investigated as sustainable consumption awareness and sustainable consumption practice. The independent variable was mindfulness, and meditation was being explored as a moderator. Analysis of meditation as a moderating variable indicated if, when, or under what conditions the relationship occurred (Baron &

Kenny, 1986). Table 35 displays the statistics for Models 1 and 2. Table 36 provides the

statistics for mindfulness, meditation, and sustainable consumption awareness.

Mindfulness, Meditation, and Sustainable Consumption Awareness

Table 35

Meditation as a Moderator of Mindfulness and Sustainable Consumption Awareness

Model		*B*	*t*	*Sig.*
Model 1 Including Meditation				
	Mindfulness	0.19	4.2	.00
Model 2 Excluding Meditation				
	Mindfulness	0.19	4.2	.00

Note. Dependent variable: Sustainable Consumption Awareness
Predictors (Constant) Mindfulness
Mindfulness *F* = 12.3, *Sig.* = .000, R^2 = .02, *Adj.R^2* = .02

Adding meditation as a moderator tested to see if it improved the prediction of

sustainable consumption awareness. The analysis of Models 1 and 2 shows no change in

the coefficients with the addition of meditation as the *B* values remained the same. As

such, meditation was not a moderator between mindfulness and sustainable consumption

awareness.

Mindfulness, Meditation, and Sustainable Consumption Practice

Table 36 provides the statistics for mindfulness, meditation, and sustainable

consumption practice. Model 1 includes meditation and Model 2 excludes meditation.

Table 36

Meditation as a Moderator of Mindfulness and Sustainable Consumption Practice

Model		B	t	Sig.
Model 1				
Including Meditation				
	Mindfulness	0.13	2.7	.01
Model 2				
Excluding Meditation				
	Mindfulness	0.14	2.8	.05

Note. Dependent variable: Sustainable Consumption Practice
    Predictors (Constant) Mindfulness
    Mindfulness $F = 5.65$ Sig. $= 0.02$ $R^2 = 0.12$ $Adj.R^2 = 0.01$

Examination of Table 36 shows a 1% decrease in sustainable consumption practice from Model 1 to Model 2 as a result of the addition of meditation. Since this decrease was statistically significant ($p < .05$), I can conclude that meditation was a moderator between mindfulness and sustainable consumption practice.

Summary

The demographic analysis revealed that most respondents were sophomores or juniors, female, and identified as White/Caucasian/European American. The students were primarily full-time students with a GPA over 3.0. Most of the undergraduates did not work, came from families that were at least middle class, and did not live with their parents. The majority indicated their religion was Christian, but their levels of religiosity varied. The respondents stated they prayed, and they had never or rarely practiced meditation.

Aspects of religion and religiosity appeared as positive indicators of sustainable consumption awareness and practice. However, less experience with meditation had a negative impact. Interestingly, the lack of religious affiliation, not declaring a religious

affiliation, and religion not being important positively impacted sustainable consumption and awareness. Findings suggest the less religious one is, the more likely they are to be aware and practice sustainable consumption. The more an individual practices meditation, the more likely they are sustainably aware and likely to practice sustainable consumption.

There was no significant mediation effect in mindfulness and sustainable consumption awareness or practice. A moderating effect of meditation between mindfulness and sustainable consumption awareness was not found. Results indicated that meditation has a moderating impact between mindfulness and sustainable consumption practice. I discuss the implications of these findings and suggestions for future research in detail in Chapter 5.

CHAPTER FIVE

DISCUSSION

While there is currently little research on the effect of mindfulness on sustainable consumption awareness and practice among university undergraduates, this study was designed to begin to address the issue. Given the significant impact of overconsumption, the search for strategies to promote more sustainable behavior has become a goal for many colleges and universities. Toward that end, this research quantitatively examined the problem using secondary data from an existing survey instrument previously administered to university undergraduates. This study investigated the impact of mindfulness on sustainable consumption among undergraduate students at a large public university in the southern United States.

In this final chapter, the results presented in Chapter 4 are summarized and discussed in reference to their contribution to existing literature and research. The chapter concludes with implications, limitations, and delimitations of the study and recommendations for future research.

Review of the Methodology

This study gathered secondary data from an online survey given to university undergraduates in the College of Family and Child Sciences. The College had approximately 3000 undergraduates, from which researchers recruited 1,117 students, with 809 submitting the survey instrument, yielding an initial 70.5% response rate. However, of the participants that submitted the survey not all were completed, and as a result not used in the analysis, leaving a final sample size of 552 (48.1%) for this study. The survey consisted of demographic questions, the MAAS 15-Item Scale, three

questions regarding sustainable consumption awareness, and three items regarding sustainable consumption practice.

Summary of Findings

The original survey provided a wealth of demographic information used in this research study. The demographic analysis revealed that most respondents were White females in their second or third year of college. The students were primarily full-time students with a GPA over 3.0. Most of the undergraduates did not work, came from families that were at least middle class, and did not live with their parents. The majority indicated their religion was Christian, but their levels of religiosity varied. The respondents stated they prayed, and they had never or rarely practiced meditation.

The first research question investigated the levels of mindfulness and sustainable consumption awareness and practice. Results from the MAAS suggested that students are living life on automatic, not being present or thinking about their future or past. The findings indicated that though the students are aware they are dependent on the environment, they may not be totally conscious that natural resources are extremely limited. The results also indicate though participants try to avoid waste and pollution, they are less likely to buy environmentally friendly products.

The second research question examined the extent to which mindfulness and demographic variables explained variation in sustainable consumption awareness and practice. While aspects of religion and religiosity appeared as predictors of sustainable consumption awareness and practice, interestingly, the lack of a religious affiliation and less religiosity were positively associated with sustainable consumption and awareness. Additionally, individuals who stated they were atheist or agnostic were more likely to be

sustainably aware and likely to practice sustainable consumption. Of the students who indicated a religious affiliation, the less they practiced that religion, the more likely they would be sustainably aware. In addition, the more an individual practices meditation, the more likely they are to be aware and practice sustainable consumption.

Meditation was explored as both a mediating and moderating variable with the third research question. There was no significant mediation effect in mindfulness and sustainable consumption awareness or practice. A moderating effect of meditation between mindfulness and sustainable consumption awareness was not found. However, meditation has a moderating impact between mindfulness and sustainable consumption practice

Discussion of Findings

Through investigating the research questions using quantitative methods, a series of findings emerged, and three aspects of the results will be discussed in this section. The topics include (1) demographics, (2) the attitude-behavior gap in sustainability awareness and practice, and (3) the predictors of sustainable consumption and awareness.

Demographics

When considering educational, personal, and other demographic variables, descriptive statistics revealed that the respondents had a median age of 22.5 years, were female, and identified their race as White. Most of the participants had a GPA over 3.0, were sophomores and juniors in college, and claim they are in very good or good health. The majority of respondents did not work, came from a family that made upwards of $50 thousand a year, and did not live at home with their parents. Most participants were

single, with nearly half indicating they were in a committed relationship and stating they lived with a partner.

It is not surprising that most students were female in this study. A professor in the College of Family and Child Sciences reported that 85−90% of the students are female (R. May, personal communication, April 10, 2021). Most individuals who attend college in the United States are female, which is expected to increase (Marcus, 2017). This finding may have positive implications based on previous research that found female college students held more favorable attitudes and behaviors toward sustainable lifestyles, had more ecocentric values, and took more sustainable actions than their male counterparts (Sahin et al., 2012).

In this study, a student's declared major was not investigated because of oversampling in the College of Family and Child Sciences. However, college majors and gender were important factors in explaining sustainability-related attributes in some studies, making a significant difference in sustainable consumption practice (Pena-Cerazo et al., 2019).

The majority of respondents identified as Christian but showed various levels of religiosity. Most indicated they prayed, with a majority indicating they had never or rarely practiced meditation. These findings are significant to this study and will be discussed in detail with mindfulness and several other predictors of sustainable consumption awareness and practice later in this chapter.

The Attitude-Behavior Gap

The attitude-behavior gap is the misalignment between a person's intentions to participate in sustainable behavior and actually carrying it out. This phenomenon became

evident in the analysis of the first research question. The question explored the levels of

mindfulness and sustainable consumption awareness and practice in participants and was

addressed using descriptive statistic comparisons. The results indicated that although the

students are aware they are dependent on the environment, they may not be totally

conscious that natural resources are limited. The findings indicated though participants

try to avoid waste and pollution, they are less likely to buy environmentally friendly

products. It is unknown if participants in this study are rationalizing their inaction, or not

taking responsibility for their actions, or not acting because of obstacles, e.g., lack of

access to organic products because they are unaffordable. While the attitude-behavior gap

was not a focus of this study, these findings are generally consistent with research

showing an apparent inconsistency in a person's attitude about sustainable consumption

and what consumers believe not being exhibited in their behavior (Fischer et al., 2017).

Closing the gap between attitude and behavior is necessary for an individual to practice

mindful consumption (Zrałek, 2017).

Consumption behavior is influenced by a wide range of individual, social and

institutional factors. This research had an individualistic focus on the link between

mindfulness and sustainable consumption. This study did not look at the social and

cultural dimensions involved in the attitude-behavior gap. It is plausible that when

mindfulness and sustainable consumption are practiced communally as a social tradition,

it might instill changes at the collective level. However, we will need a shift at the

societal level from our current way of life to a sustainable way of life. This could be

accomplished by renegotiating normal standards in current consumption practices,

changing them, and through changes in governmental policy. People's actions sometimes

contradict their stated attitudes and values, which is critical to keep in mind when thinking about policy interventions (Power and Mont, 2010).

Predictors of Sustainable Consumption Awareness and Practice

To explain variation in sustainable consumption awareness and practice among students, mindfulness was analyzed as a predictor along with personal demographics such as age, gender, health, race, and ethnicity. The educational demographics researched were enrollment status, GPA, and year in school. Other demographics investigated were employment status, family income level, frequency of meditation, relationship status, prayer frequency, religion, and religiosity. Both traditional regression analysis and stepwise regression techniques were used in the analysis, depending on the particular research question.

Predictors of Sustainable Consumption Awareness

As described in detail in the previous chapter, there were seven positive predictors of sustainable consumption awareness and one negative predictor. Mindfulness has a positive effect on sustainable consumption awareness, as did lack of religious affiliation, religiosity, and prayer frequency. Students who specified they were atheist had the highest positive effect on sustainable consumption awareness. Respondents who stated religion was not important to them also had a positive relationship, as did undergraduates who identified as agnostic. Respondents who stated they sometimes prayed also demonstrated a positive association with sustainable consumption awareness.

These findings contradicted much of what was described in the literature in the second chapter of this document. The results of this study suggested that an individual's religion might not be as important to sustainable consumption as previously thought. The

majority of the world's population claim to belong to a religious group (Hackett & Grimm, 2013), and most undergraduates in this study stated they were Christian. However, being a nonbeliever or not practicing a religion was a positive predictor of sustainable consumption awareness.

The most significant positive predictor of sustainable consumption awareness was identifying as an atheist or being agnostic. These results cast a new light on the role of religion in sustainable consumption. The findings are consistent with research showing atheists and agnostics are less conformist and more individualistic (Silver, 2013). Their lack of interest beyond this world leaves a nonbeliever to focus their moral concerns on the here-and-now. Atheists are overrepresented among academics, and their intellectual achievement may stem in part from their preference for logic and rational reasoning (Caldwell-Harris, 2012). This here-and-now attitude and the understanding of consequences may account for the awareness necessary for sustainable consumption.

In the United States, nonbelief is growing, with nearly half of the population uninvolved in religious services for over two years, with teenagers and young adults being predominant (Silver, 2013). A low level of religiosity is not surprising, as college students are often no longer living with their parents, which may mean they are not obligated to follow parental rules, and this may include religious rituals and practices. These results are contrary to past research that provided evidence that in religious groups that hold a pro-environmental standard about a given behavior (e.g., recycling), members are more likely to carry out this behavior, especially those who identify most with the group (Orellano et al., 2020).

Pope Francis and other religious leaders regularly point out that caring for the environment is essential. However, those who participate in many of the world's religions believe in the afterlife. For some individuals, because they believe this life is temporary there is less reason to be concerned about this world, including the environment. However, respondents who stated they prayed sometimes demonstrated a positive impact on sustainable consumption awareness. Thus, it is possible that these students might feel that their submission of a prayer to a higher power might have a direct effect on what is wrong in this world.

The findings provide additional information about other predictors. A student with a GPA over 3.0 was another positive predictor, consistent with being a dedicated student who may be more educated on world events and more environmentally aware. It might be expected that a student with a higher GPA has a good grade point average because they were attending class regularly. If students were in class, it is more likely they heard about the opportunity to take the survey for extra credit.

Undergraduates who indicated their family's income is $50,000–$100,000 a year showed a positive relationship. This finding is noteworthy because members of the middle-class are the biggest consumers in industrialized nations and increasingly so in other regions of the world (United Nations Environmental Programme, 2016). As future consumers, university graduates will likely have more discretionary income over their lifetimes to spend than their counterparts without degrees (Ahamad & Ariffin, 2018). However, though a student's family income level is a positive predictor of sustainable consumption awareness, their consumer behavior could negatively impact the environment (Pena-Cerezo et al., 2019).

When mindfulness was identified as a predictor, it showed a positive effect on awareness. Conversely, students who indicated they had no experience with meditation had a negative association with mindfulness and sustainable consumption awareness. Undergraduates who did not meditate were less aware of the need for sustainable consumption. This result supports the discussion in the literature review on the differences between mindfulness and meditation. One does not have to meditate to be mindful and contrariwise.

Predictors of Mindfulness and Sustainable Consumption Practice

The analysis indicated that there are eight predictors of sustainable consumption practice; five of them had a positive association, and three had a negative association. Students who stated they had meditated more than seven times in the last month showed the highest positive association with sustainable consumption practice. Respondents who specified that they were atheists also had a positive effect, as did mindfulness. Additionally, undergraduates who indicated they had meditated weekly over the past year had a positive association with sustainable consumption practice, as did students who specified no acknowledged religion.

Predictors that had a negative effect on sustainable consumption practice were prayer frequency, meditation experience, and race/ethnicity. The strongest negative effect was for those who stated their racial/ethnic identity as Black. However, demographic and socioeconomic characteristics influence sustainability in complex ways. Higher education levels and populations of young adults produce a more favorable setting for sustainability initiatives. Sustainability does not appear to be an issue associated with a typical division based on race, class, or community. For example, cities with homogeneous White, highly

educated residents are more likely to practice sustainable consumption, but as income and homeownership rates rise, there are negative effects (Svara et al., 2013).

Summary of Predictors

Aspects of religion, religiosity, and mindfulness appeared in all models as positive indicators of sustainable consumption awareness and practice, while no experience with meditation had a negative impact. However, results suggest that lack of or not declaring a religious affiliation positively impacts sustainable consumption awareness and practice.

The results established that being an atheist and not having declared religion were positive predictors of sustainable consumption practice. These findings are contradictory to previous research. Previous scholarship suggested religion is a factor motivating consumer behaviors, ethics, and practice. In the discussion of the attitude-behavior gap, it was pointed out that it is possible that when mindfulness and sustainable consumption are experienced communally as a social practice, it might instill changes at a collective level. Earlier scholarship has concluded that religious beliefs, ideas, and rituals can drive the adoption of sustainable consumption practices by promoting intrinsic motivation for changing behavior (Orellano et al., 2020; Rolston III, 2009). However, college students may claim a religious denomination, and it was likely the religion of their parents. As teenagers become independent, some no longer adhere to their parent's religious rituals and practices, and at college-age, students are trying to devise their belief system.

Opportunities for students to learn about and practice meditation might be considered in educational institutions, as having no experience with meditation had a negative effect on sustainable consumption practice. Being mindful was a positive

predictor of both sustainable consumption awareness and practice. Respondents who prayed sometimes demonstrated a positive impact on sustainable consumption awareness. These results imply that mindfulness and meditation could lead to environmentally friendly awareness and behavior and should be considered in curriculum decisions or as extra-curricular options in educational institutions.

Implications

Universities and other institutions might consider these results when they revisit their mission, vision statement, and strategic plan to incorporate sustainability, making awareness and practice part of their standard operating procedures.

Educational Interventions

The United Nations Member States developed the 2030 Agenda for Sustainable Development, which aims to coordinate efforts to advance sustainable development. One target fosters educating and engaging citizens on sustainable consumption and lifestyles (United Nations Environment Programme, 2020a). While colleges prepare undergraduates for their future role in society, students must be made aware and able to act sustainably. Universities can certainly improve the environmental, social, and economic awareness levels among the student population. Sustainable awareness and practices need to become interdisciplinary and engrained in college programs of study. The curriculum should also provide opportunities that lead to a greater understanding of social and moral responsibilities.

Curricula in higher education can help students develop attributes required for achieving sustainability. Undergraduate students may need experiential learning to understand the relevance of sustainability in their proposed field of professional practice.

To accomplish this, the curriculum should include learning processes centered on social justice, equity, and respect for the environment (Pena-Cerazo et al., 2019). This also means that universities demonstrate to students that decisions made on campus model this awareness and practice. Faculty and staff also need to be aware of the need to reduce waste and be given opportunities to practice sustainable consumption.

Disenfranchisement

Since many university graduates will assume leadership positions after college, it is essential to note that the privileges of academic life, together with the status universities confer, have generated considerable resentment in marginalized and rural communities (Cramer, 2016). In our increasingly divided country, it is critical not to alienate further those who already feel disenfranchised. There is a complicated and mixed relationship between religiosity, environmentalism, and the political conservatives who are unlikely to support pro-environment measures (Peifer et al., 2016). Those living with the day-to-day reality of pollution do not want to be lectured by experts when they have experienced environmental harm firsthand. Their understanding is that consumption requires the destruction of something and it is a necessary economic reality (Hothschild, 2016).

Perhaps, what environmentalists can learn from this is there is nothing theoretical or statistical about natural devastation; for many people, it is a fact of life. Many political and religious conservatives deny climate change but are not oblivious to what industry and overconsumption are doing to the Earth. Many marginalized and rural communities are immersed in environmental degradation. Their rage is more often provoked by a sense of hypocrisy than injustice (Davies, 2017), even though decisions made may damage

oneself more than the object of their anger. All people must be heard, respected, and have the access necessary to be sustainable.

Limitations and Delimitations

Despite the significance of the research findings, this study has limitations and delimitations. Assumptions, delimitations, and limitations were discussed in detail in Chapter 3 and are reviewed in this section.

First, the study was delimited in its scope. The survey instrument was only offered to students taking classes in the fall of 2017 in the College of Family and Child Sciences. While this sample may be similar to other university undergraduates, it is plausible that meaningful differences exist. In other words, different results may have been found if the survey was given to students at another university, such as a small, private, religious college located in another part of the country or elsewhere in the world. The study was conducted on a particular population of university undergraduates who share considerable privileges compared to other 18-22 year-old individuals in the United States who do not attend college. Thus, generalizability is limited.

Second, the use of secondary data was the primary limitation of this study. I did not have input into participant selection. There was no control over how the prior researchers developed the survey instrument or how the data was collected, coded, or entered into SPSS. There may have been unintentional errors in some of the coding or data entry made by persons responsible for these tasks. The original study was designed to investigate dyadic relationships, and selection bias may have been why some students chose to participate and others did not.

The original survey contained over 500 items. The survey was exceptionally lengthy for students whose time was already limited because of the demands of school. Participants completing the survey instrument may have experienced respondent fatigue. The data used in this study was obtained from the original research, and the secondary data used for analysis may have been affected.

Third, there are limitations involved in conducting a cross-sectional study. The data was taken at a single point in time, providing only a snapshot. It is important to note the world has changed a lot in the time passed, particularly over this past year due to the global pandemic. Perhaps mindful attention, sustainable consumption awareness, and practices and/or attitudes have changed dramatically. Causality cannot be established in this type of study, and the results are not generalizable because a temporal sequence cannot be established.

Fourth, the study depended on self-reported information. There is no way of knowing how truthful students were about their practice of mindfulness, meditation, or sustainable consumption. The responses may have reflected some students' aspirations, more than their actual behavior, at least to some degree. In this study, respondents might have indicated they engage in sustainable practice; however, there was no way to observe this to determine if it was true or to what extent.

Fifth, social desirability is a potential limitation. Some students were likely influenced to an indeterminable degree by a desire to provide a socially acceptable response. Even though the survey was anonymous, respondents may have been afraid to decline the offer of extra credit because they may have thought it mattered in some way to the professor offering it. For some participants, the questions on the survey may have

suggested a preferred answer. Extra credit may have been the only reason some students participated, and because the survey was anonymous, they may not have given any consideration to their responses. All the above limitations may have impacted the data, which could have affected the analysis and outcomes.

Future Research

Future investigations are necessary to validate the kinds of conclusions drawn from this study. The current research focused on investigating mindfulness, meditation, sustainable consumption awareness, and practices of undergraduate students in the southeastern United States. Future research should broaden the geographic locations and sample and replicate this study to include more college students from other universities in different geographic locations throughout the United States. Further research calls for replication of the study at a small public or private institution and/or in religiously-based colleges and/or universities outside of the United States.

The current study focused on students from a 4-year university. Future research should include community colleges to expand the sample and include other students such as elementary, high school, and postgraduate students to see if the results of those students are similar to the current study or vary by grade level.

This study offered results related to specific populations, but the small proportions of some of these populations make broad conclusions a bit challenging, especially around issues of race. Additional research examining the experiences with students of color in more depth would provide valuable insights. It will be important that future research investigate historically Black colleges and universities and/or Hispanic serving institutions. While historically Black colleges and universities and Hispanic serving

institutions only represent 20 percent of all institutions in the nation, these institutions educate nearly half of all black and Latino students (United Negro College Fund, 2014). Other student populations should be examined to determine if the same findings result from studies with different ethnicities in varying contexts.

Further investigations are necessary to validate the conclusions that can be drawn from this study. This research was conducted with undergraduates in the College of Family and Child Studies, and declared majors were not investigated because of oversampling. Thus, it would be interesting to examine whether the choice of college major is a predictor or whether the training received in each degree program strengthens the relationship between the variables studied.

More work is also required to disentangle the complexities of gender differences. Female college students hold more favorable attitudes and behaviors toward sustainable lifestyles and take more sustainable actions because of their attitudes toward the environment (Sahin et al., 2012). However, this study's respondents primarily identified as female, which warrants future studies to investigate male populations.

Future research could examine actual consumption patterns of university undergraduates to investigate whether what they say they are doing to practice sustainable consumption is a reality. This type of study could shed further understanding of the attitude-behavior gap that is critical to ensuring sustainable consumption practice.

Subsequent studies should consider why White, highly educated residents in some cities are more likely to practice sustainable consumption, but, as their income increases and they become homeowners, the effect turns negative (Svara et al., 2013). Is it the

pursuit of more revenue to make a house payment leaves less time for individuals to be concerned about sustainability, or are there other factors?

In future work, investigating causal relationships would be enormously beneficial. Causal-comparative research might investigate the effect of mindfulness on sustainable consumption by comparing two or more groups of individuals. Studies could also examine pre-and post-testing after interventions using mindfulness and mindful meditation.

There is a lack of training and research on the importance of education for sustainable consumption, and it is under-researched in higher education (Pena-Cerazo, 2019). The current study excluded training and social media campaigns as interventions. It should be considered in future studies on students and non-students alike to investigate whether or not mindfulness and sustainable consumption can be influenced by either treatment.

There were multiple advantages of using a quantitative methodology for this study. However, future research should also be conducted using qualitative and mixed methods methodology. Qualitative studies should be implemented to find more effective actions to improve sustainable consumption awareness and practice. In-depth interviews or case studies would allow for a more thorough investigation of mindfulness and sustainable consumption predictors, reflecting the respondents' perspective. Mixed methods research could provide an understanding of any inconsistencies between quantitative results and qualitative findings. In addition, a mixed methods approach to studying this topic would give a voice to the participants and ensure that findings are grounded in their experiences.

Sustainability requires an understanding of causes and consequences. Religion influences internal factors of sustainable consumption (e.g., attitudes and values) and external elements, such as social norms. Religious identity, or lack thereof, appears to be important in sustainable practices, and more quantitative research measuring this relationship is needed. Further research should consider the relationship between mindfulness, spirituality in general, and sustainability and investigate the association between religious participation, religiosity, and interpersonal influences on sustainable consumption with individuals outside academia. Subsequent studies should further research the mixed relationship between religiosity and environmentalism and political conservativism, particularly in marginalized communities.

Finally, as I wrote this final paragraph, I realized that today is Earth Day, a day that serves as a reminder of the interconnectivity of humankind and the environment. Individually and collectively, people should aim to make this world a better place for future generations. Everyone deserves access to clean water, air, and soil. It is a right. Mindfulness is not a cure for the ills of this world. However, if it helps people pay closer attention to the harsh realities of climate change, the lingering effects of pollution, and their potential to slow the pace, it is a place to begin.

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APPENDIX

Survey Instrument Questions Used in Analysis

*2. Are you the participant enrolled in the ▮▮ course assigned to receive extra credit for participation in this study?

☐ Yes

☐ No (I'm the ▮▮ student's partner or friend)

*3. To ensure that you receive course credit, please fill in the information below:

[blank field]

*4. Professor's Name:

[blank field]

5. Your first name:

[blank field]

6. Your last name:

[blank field]

7. To ensure that you receive course credit, we need to have your ▮▮ e-mail address. Do

NOT enter any other e-mail address. Write the YOUR FULL address and be accurate

(e.g., abc01@my▮▮.edu).

[blank field]

15. What is your age in years?

[blank field]

16. What is your gender?

☐ Male

☐ Female

☐ Transgender male

☐ Transgender female

☐ Prefer not to say

☐ Other

17. Which of these categories best describes your racial/ethnic background?

☐ African American / Black

☐ American Indian / Native American / Alaska Native Asian / Pacific Islander

☐ Middle Eastern

☐ Latino / Hispanic

☐ White / Caucasian / European American

☐ Prefer not to say

☐ Other (please specify)

18. What is your family's annual income?

☐ Below 30k

☐ 30k-50k

☐ 50k-100k

☐ Above 100k

☐ Other (please specify)

20. Do you currently live with your parents?

☐ Yes

☐ No

21. Click the religious affiliation that applies to you

Christian (e.g. Protestant, Catholic, Evangelical, Methodist, Adventist etc.)

☐ Jewish

☐ Muslim

☐ Atheist

☐ Agnostic

☐ None

☐ Other

22. How important is religion in your life?

☐ Not important

☐ A little important

☐ Pretty important

☐ Very important

23. I pray….

☐ Never

☐ Rarely

☐ Sometimes

☐ Frequently

☐ Very frequently

24. What is your sexual orientation?

☐ Heterosexual

☐ Homosexual (gay or lesbian) Bisexual

☐ Asexual

☐ Prefer not to say

☐ Other (please specify)

25. Are you currently enrolled as a college student?

26. What is your year in college?

☐ First year (Freshman)

☐ Second Year (Sophomore)

☐ Third Year (Junior)

☐ Fourth Year (Senior)

☐ Non-Degree Student

☐ Not a College Student

☐ Other (please specify)

27. What major are you currently enrolled in?

29. How many credit hours are you currently enrolled in this semester?

30. How many employment hours do you work per week this semester?

31. What is your cumulative undergraduate GPA?

74. How much experience do you have meditating (e.g., mindfulness, transcendental meditation etc.?).

☐ No experience

☐ A little experience

☐ Some experience

☐ A lot of experience

75. In the past year, about how frequently have you meditated (e.g., mindfulness, transcendental meditation, etc.)

☐ Not at all in the past year

☐ Less than monthly

☐ Monthly

☐ Weekly

☐ Daily or almost daily

76. In the past month, about how often have you meditated (e.g., mindfulness, transcendental meditation, etc.)

☐ 0 times per week

☐ 1-2 times per week

☐ 3-4 times per week

☐ 5-6 times per week

☐ 7+ times per week

91. Please indicate, how often each of the following statements are true for you on the on the following scale.

	Never	Rarely	Sometimes	Often	Regularly
(4) I try to avoid extra waste and pollution.	☐	☐	☐	☐	☐
(8). I am fully aware of the environmental	☐	☐	☐	☐	☐

problems

(12). I try to reuse and recycle waste (e.g., paper, glass, plastic).	☐	☐	☐	☐	☐
(15). I buy environmentally friendly products (e.g., organic, energy saving, local).	☐	☐	☐	☐	☐
(18). I am fully aware of the finite nature of environmental resources.	☐	☐	☐	☐	☐
(21). I am fully aware that humans depend on the environment.	☐	☐	☐	☐	☐

92. Below is a collection of statements about your everyday experience. Please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.

	Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost Never
(1). I could be experiencing some emotion and not be conscious of it until some time later.	☐	☐	☐	☐	☐	☐

(2). I break or things because of carelessness, not paying attention, or thinking of something else.

☐ ☐ ☐ ☐ ☐ ☐

(3). I find it difficult to stay focused on what's happening in the present.

☐ ☐ ☐ ☐ ☐ ☐

(4). I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.

☐ ☐ ☐ ☐ ☐ ☐

(5). I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

☐ ☐ ☐ ☐ ☐ ☐

(6). I forget a person's name almost as soon as I've been told it for the first time.

☐ ☐ ☐ ☐ ☐ ☐

(7). It seems I am "running on automatic," without much awareness of what I'm doing

☐ ☐ ☐ ☐ ☐ ☐

(8). I rush through activities without being really attentive to them

☐ ☐ ☐ ☐ ☐ ☐

(9). I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.

☐ ☐ ☐ ☐ ☐ ☐

(10). I do jobs or tasks automatically, without being aware of what I'm doing.

☐ ☐ ☐ ☐ ☐ ☐

(11). I find myself listening to someone with one ear, doing something else at the same time.

☐ ☐ ☐ ☐ ☐ ☐

(12). I drive places on "automatic pilot" and then wonder why I went there.

☐ ☐ ☐ ☐ ☐ ☐

(13). I find myself preoccupied with the future or the past.

☐ ☐ ☐ ☐ ☐ ☐

(14). I find myself doing things without paying attention.

☐ ☐ ☐ ☐ ☐ ☐

(15). I snack without being aware that I'm eating

☐ ☐ ☐ ☐ ☐ ☐

106. What is your current relationship/marital status?

☐ Single, not in a committed relationship

- ☐ Single but in a committed relationship

- ☐ Living with partner

- ☐ Engaged

- ☐ Married

- ☐ Divorced

- ☐ Separated

- ☐ Widowed

- ☐ Prefer not to say