THE INFLUENCE OF PERSONAL FACTORS ON CLOTHING USE PRACTICES

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Abstract: This research study examined how personal factors influence sustainable clothing use practices (wear, care, and repair) within the clothing consumption cycle as well as the potential influences of age and gender on sustainable use practices. The purpose of this quantitative study was to investigate the use phase of clothing as it relates to sustainable practices and to understand how personal factors (i.e., fashion trend sensitivity, style orientation, mindfulness, and frugality) may influence wear, care, and repair practice. Additionally, this study explored how demographic factors (i.e., age and gender) may influence the relationship between personal factors and sustainable use practices. A questionnaire was administered online. The results indicated that sustainable use phase practices are positively influenced by both fashion trend sensitivity and style orientation. The results also indicated that mindfulness does not have a positive influence on sustainable wear practices and that frugality does have a positive influence on sustainable repair, though it did not reach statistical significance. The demographics of age and gender indicated there were slight differences within each use phase practice; however, no interactional effects reached statistical significance. Understanding how these personal factors influence the use phase will be beneficial for future research as little is currently known about sustainable use phase practices.

TABLE OF CONTENTS

Chapter Page

I. INTRODUCTION 1

Statement of the Problem 7
Purpose and Significance of the Study 8
Assumptions 9
Hypotheses and Research Question 10
Variable Glossary 11
Chapter Summary 12

II. LITERATURE REVIEW 13

Clothing Consumption Cycle 13
Sustainable Clothing Consumption and the Use Phase 14
Use Phase 18
Craft of Use 20
Sustainable Wear 25
Sustainable Care 27
Sustainable Repair 29
Personal Factors Influencing Sustainable Clothing Consumption 30
Fashion Trend Sensitivity 33
Fashion Trend Sensitivity Hypotheses 34
Style Orientation 34
Style Orientation Hypotheses 35
Mindfulness 35
Mindfulness Hypothesis 37
Frugality 37
Frugality Hypothesis 38
Demographics 39
Research Question 41
Chapter Summary 42

III. METHODS 43

Research Design 43
Population and Sample 44

Chapter Page

Data Collection 44
Pilot Study 47
Final Study 51
Data Analysis 52
Reliability and Validity 52
Chapter Summary 59

IV. FINDINGS 60

Data Analysis 60
Descriptive Statistics 61
Profile and Analysis of Respondents 61
Variables Descriptive Analysis 64
Reliability and Validity 66
Sustainable Wear 67
Sustainable Care 68
Sustainable Repair 69
Personal Factors 70
Hypothesis Testing 72
Hypotheses 1, 2, and 3 73
Hypotheses 4, 5, and 6 73
Hypothesis 7 73
Hypothesis 8 74
Research Question Testing Utilizing Multivariate Analysis of Covariance 74
Chapter Summary 75

V. DISCUSSION AND CONCLUSION 77

Summary of Research Findings 78
The Role of Personal Factors in Influencing Sustainable Wear, Care, and Repair 80
Fashion Trend Sensitivity 80
Style Orientation 81
Mindfulness 82
Frugality 84
Theoretical Implications 85
Practical Implications 88
Limitations and Future Research 89
Chapter Summary 90

REFERENCES 92

Chapter Page

APPENDICES 108

List of Tables

Table Page
2.1 Summary of Use Phase Literature Highlighting Wear Practices....26
2.2 Summary of Use Phase Literature Highlighting Care Practices....28
2.3 Summary of Use Phase Literature Highlighting Repair Practices....30
2.4 Overview of Factors....38
3.5 Overview of Factor Measurement....46
3.6 Cronbach's Alpha from Pilot Testing....51
3.7 Survey Items....53
4.8 Characteristics of the Sample....61
4.9 Measurement of Latent Variable: Sustainable Wear....67
4.10 Measurement of Latent Variable: Sustainable Care....68
4.11 Measurement of Latent Variable: Sustainable Repair....69
4.12 Measurement of Latent Variable: Fashion Trend Sensitivity....70
4.13 Measurement of Latent Variable: Style Orientation....71
4.14 Measurement of Latent Variable: Frugality....71
4.15 Measurement of Latent Variable: Mindfulness....71
4.16 Summary of Structural Equation Model....72

List of Figures

Figure Page
2.1 Theoretical Model Depicting Hypotheses 1-8 and Research Question 1 42
4.2 Fashion Trend Sensitivity and Age on Sustainable Care.....75

CHAPTER I

INTRODUCTION

The fashion industry practices, such as raw material extraction, processing, material production and finished production assembly, contribute to approximately two-percent of global greenhouse gas (GHG) emissions (Sadowski et al., 2021). From 2019, the fashion industry generated over one billion tons of GHG (Sadowski et al., 2021). The practices of extraction, processing, and production for textile manufacturing are water intensive, with an estimated 24.5 trillion gallons of water used (Ellen MacArthur Foundation, 2017). The fashion industry also relies on nonrenewable resources for creating synthetic fibers and fabrics, as well as fossil-based fertilizers and pesticides for natural fibers (Ellen MacArthur Foundation, 2017). The Ellen MacArthur Foundation (2017) estimated that a total of 45 million tons of plastic-based fibers are produced for textiles. In the report by the Ellen MacArthur Foundation (2017), it is estimated that within the year 2050, the fashion industry could increase the amount of non-renewable resources used to approximately 300 million tons if the business-as-usual attitude prevails.

More concerning, clothing production has more than doubled within the last ten years and garments are now being worn 36% less often before they are disposed of (Cook & Gover, 2020). Concurrently, the average number of garments purchased annually

increased by 60% within the same time period, arguably fostered by fast fashion culture (Remy et al., 2016). Fast fashion retailing is a business model that deviates from the traditional seasonal selling profits by continually releasing new clothing collections (Cline, 2013; Niinimäki et al., 2020). This allows consumers to refresh their wardrobes quickly as retailers rapidly deliver trending styles to consumers (Remy et al., 2016). The practice of fast fashion fosters an increase in clothing consumption leading to the underutilization of clothing by consumers. Morgan and Birtwistle (2009) found that one of the reasons that young female fashion consumers stopped wearing their cheaper items was due to the low-quality of the garments. Fast fashion companies design garments with low-quality materials so the garments are worn for a limited amount of time by consumers, possibly resulting in consumers buying new garments and fueling the fast fashion cycle (Morgan & Birtwistle, 2009).

The overconsumption of clothing has resulted in an increase in garment disposal. Within one year of production, sixty-percent of all clothing produced is either incinerated or sent to landfill (Remy et al., 2016). Dahlbo et al., (2017) found that incinerated garments produced approximately the same amount of energy used for electricity and heat in Finland. One proposed solution for garment disposal is the potential to recover the energy produced through incineration, as seen in Finland (Dahlbo et al., 2017; Niinimäki et al., 2020). A second proposed solution for garment disposal is recycling and/or reusing garments/textiles to reduce production of garments with new materials (Dahlbo et al., 2017). However, the increasing rate of clothing disposal creates issues for the environment, with less than one-percent of post-consumer garments recycled into another garment of similar quality (Niinimäki et al., 2020). Furthermore, less than 13% of

garments are recycled into lower cost products or their components (e.g. cleaning cloths or mattress stuffing), because fiber blends cannot be effectively recycled without a loss of quality (Dahlbo et al., 2017; Niinimäki et al., 2020). In this situation, it would be beneficial to incinerate these garments that are difficult to recycle for energy recovery (Niinimäki et al., 2020).

Currently, the short lifespan of garments in addition to increased consumption may lead consumers to move through the consumption cycle (i.e., acquisition, use, disposal) far too quickly (Niinimäki et al., 2020). The way consumers shop for garments (acquisition), use their garments (use), and dispose of their garments all have a role to play in the reduction of environmental impacts (Geiger et al., 2018). However, the use phase is a particularly concerning component of the consumption cycle. While in use, clothing has a carbon footprint of over eight million tons of carbon dioxide with the majority of this derived from laundry practices (Waste and Resources Action Program [WRAP], 2017). Machine washing garments releases more than six million tons of carbon dioxide into the atmosphere, while machine drying releases more than two million tons of carbon dioxide (WRAP, 2017). The Waste and Resources Action Program's (2017) study explored the use phase of the clothing consumption cycle as an important environmental concern that could be reduced through behavior change.

The total lifespan of a garment begins at production and ends when the original form of the garment has changed, while service lifespan is the period of time that the garment functions for the user (Klepp et al., 2020). However, the duration in use is how long one consumer uses a garment, which is determined by the consumer and not by the construction of the garment (Klepp et al., 2020). The consumer decides how long they

will wear a garment after acquisition and when the garment no longer fulfills the consumer's needs (Klepp et al., 2020). Behaviors within the use phase have the potential to increase clothing utilization and longevity if consumers adopt sustainable behaviors (Ellen MacArthur Foundation, 2017). Underutilization of clothing has been observed in the United Kingdom as consumers reported having an average of 26 items in their wardrobe that have not been worn within the last year (Langley et al., 2013). In addition to underutilization, laundering clothing is replete with energy demanding practices (Laitala & Boks, 2012; Laitala et al., 2018; Norum, 2013; WRAP, 2017). Lastly, many consumers purchase new clothing at an inexpensive cost compared to the time, labor, and/or money it takes to repair (i.e., perform routine maintenance) to their existing wardrobe (Ellen MacArthur Foundation, 2017).

Though researchers have identified a range of behaviors (e.g. optimal laundry practices, repair, and maintenance skills, tailoring approaches, and habits of mind during use phase) to lengthen a garment's lifespan, little is known about the influence of personal factors on use phase behaviors, which may lengthen a garment's lifespan (Fletcher, 2016; Laitala & Boks, 2012; Miilunpalo & Raisanen, 2019; Norum, 2013). In comparison to the acquisition and disposal consumption phases, research is lacking in regard to what influences a consumer's sustainable clothing use behaviors.

Personal factors have been identified as predictors of consumption behaviors, primarily within the clothing acquisition and disposal stages. Four personal factors (e.g. fashion trend sensitivity, style orientation, mindfulness, and frugality) have been selected for exploration in this study from previous research (Fletcher, 2016; Gupta et al., 2019; Lang & Armstrong, 2016; Lastovicka et al., 1999; Sheth et al., 2011).

- Fashion trend sensitivity is the amount of attentiveness and consideration a consumer dedicates to the latest fashion trends (Lang & Armstrong, 2016). Fashion trend sensitivity has been measured in research concerning clothing disposal behavior, linking trend sensitive consumers to higher levels of acquisition and disposal (Lang & Armstrong, 2016).
- Style orientation is the tendency for consumers to dress according to their personal style and their own characteristics (e.g. body type) rather than adopting relevant fashion trends (Gupta et al., 2019). Style orientation has been measured in clothing acquisition research, concluding that style-oriented consumers have lower levels of acquisition (Gupta et al., 2019).
- In the context of clothing use, mindfulness is the attention that a consumer pays to their wardrobe and purpose of their wardrobe by connecting to the present moment without judgment of the experience (Kabat-Zinn, 2003). This directed attention may begin to foster a sense of self-awareness to the current experience that permits a wider perspective on their consumption practices (Bishop et al., 2004). Mindfulness has been highlighted in Fletcher's (2016) qualitative research about clothing use practices that implicates habits of mind (i.e., mindfulness) as an important attribute that could foster sustainable consumption. In relation to fashion consumption, mindfulness may make some consumers aware of the consequences that occur with frequent acquisition and disposal practices (Sheth et al., 2011).
- Frugality explains a type of consumer practice in which purchasing behaviors are restricted and consumers may be more resourceful in their use of goods and

services related to products consumed (Lastovicka et al., 1999). These consumers are systematic with spending money and often limit their impulse purchases (Lastovicka et al., 1999). Frugality has been observed in sustainable consumption research, finding greater tendencies for timeless style (i.e., style orientation), in which consumers may rely less on fashion trends (i.e., less acquisition) (Cho et al., 2015; Gupta et al., 2019).

Fashion trend sensitivity and style orientation were selected to explore the clothing use phase due to each personal factor reflecting opposing attributes in the acquisition and disposal phases. Consumers who are fashion trend sensitive tend to replace their wardrobe more frequently, disposing of garments at a rapid pace while purchasing new garments with regular frequency (e.g. fast fashion products) (McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020). Style-oriented consumers build their wardrobe around their personal style with creativity and self-awareness, buying less, keeping clothing longer, and are influenced less by popular trends compared to consumers who are fashion trend sensitive (Bly et al., 2015). This study provided an understanding about how fashion trend sensitivity and style orientation may also impact clothing use behaviors, as less is known about behaviors that occur within the clothing use phase.

Mindfulness was selected to explore clothing use practices based upon the seminal work of Kate Fletcher's *Craft of Use: Post-Growth Fashion* (2016), whose work could infer attentional capacity as a key factor that appears to encourage long-term and consumer satisfying clothing use practices. Frugality was selected as the final personal factor explored in this study. Previous research of frugality was often explored in

connection to sustainable consumption, and has been concluded as relevant to clothing purchasing behaviors (Cho et al., 2015; Evans, 2009; Pepper et al., 2009). Although there is a financial component to frugality, it is the attention to decision making within acquisition that is positively affected by green consumption values (Paco et al., 2019). Paco et al. (2019) utilized the ecologically conscious consumer behavior scale to measure buying behavior that could lead to sustainable consumption practices.

Previous global literature investigating sustainable fashion consumption behavior identified age and gender to have influence on consumption behavior (Birtwistle & Moore, 2007; Bulut et al., 2016; Cavender & Lee, 2018; Henninger et al., 2018; Morgan & Birtwistle, 2009; Park et al., 2006). In prior studies, sustainable consumption was primarily examined with young, female consumers as the sample, likely due to the implications that women make 80% of the decisions for their household consumption (Birtwistle & Moore, 2007; Bulut et al., 2016; Cavender & Lee, 2018; Park et al., 2006). However, more work is necessary to understand sustainable consumption of consumers beyond young females (i.e., men and older consumers), starting with U.S. consumers (Henninger et al., 2018; Morgan & Birtwistle, 2009).

Statement of the Problem

In general, there is a lack of research pertaining to sustainable use phase practices, though globally researchers and laypeople agree that something must be done to help increase sustainability efforts of fashion (Ellen MacArthur Foundation, 2017). Of the limited research existing, most has been limited primarily to European countries, with a few studies in Asian and North American countries. In the United States and North America, the clothing market relies on frequent, impulsive acquisition, which persuades

consumers to prematurely dispose of their clothing to keep up with current trends (Ha-Brookshire & Hodges, 2009; Joung & Park-Poaps, 2013; Lang et al., 2013). Underutilization and frequent disposal of clothing shortens the use phase of the wardrobe possibly due to the consumer not adopting sustainable use behaviors. The experiences, habits, and practices that occur within the use phase have an impact on clothing longevity, which in turn, may impact the rate of clothing disposal. With limited research in this area and increasing reliance on non-sustainable use phase behaviors, the world of fashion and the planet may not be able to continue on as it has. This study explored the directional influences of personal factors on sustainable use phase practices within the clothing consumption cycle and the potential influences of age and gender, in an effort to add to the literature to reach fellow researchers, practitioners, and consumers.

Purpose and Significance of the Study

The purpose of this quantitative study was to investigate the use phase of clothing as it relates to sustainable practices and to understand how personal factors (i.e., fashion trend sensitivity, style orientation, mindfulness, and frugality) may influence these practices. Additionally, this study explored how demographic factors (i.e., age and gender) may influence the relationship between personal factors and sustainable use practices. The objective of this study was to understand the personal attributes that influence engagement in sustainable clothing use behaviors. The research took place in the United States with an online consumer panel, Centiment, which surveyed U.S. consumers.

This research may be significant for general increased understanding of sustainable use phase practices for fashion marketers, fashion education curriculum,

future research, and beyond. Understanding the directionality of how personal factors may influence use behaviors may help fashion marketers to target specific consumers who are or are not engaging with sustainable fashion. The importance of these personal factors could also help guide sustainable fashion education curriculum regarding the use phase by clearly defining sustainable use practices and may provide scholars with a complete understanding of which types of consumers practice sustainable behaviors within the consumption cycle.

Lastly, understanding how these personal factors influence the use phase will be beneficial for future research as little is currently known about use phase practices. This research may help set the stage for identifying consumer groups within sustainable consumption research outside of acquisition and disposal. It is important to understand how personal factors influence the clothing use phase as little is known about what occurs between post-purchase and disposal consumption phases. This research identified who engages with sustainable clothing use practice and what behaviors are associated with personal factors, which was previously unknown within the literature. The clothing acquisition (See Chekima et al., 2016; Kaur & Luchs, 2021; Kim & Seock, 2019) and disposal phases (See: Arangdad et al., 2019; Bianchi & Birtwistle, 2010; Degenstein et al., 2020) are heavily researched within the sustainable clothing consumption literature, which has largely neglected the use phase. This research answered questions of personal factors and their influence on sustainable practices.

Assumptions

For this study, the following is assumed:

1. It is assumed that participants will answer questionnaire items truthfully.

2. It is assumed that the sample will be a random sample of the U.S. consumers that closely aligns with the U.S. population in age and gender.
3. It is assumed that participants understood the questionnaire items to ensure proper responses.
4. It is assumed that the degree of environmental awareness, knowledge, and concern will be randomly distributed in the sample.

Hypotheses and Research Question

To understand sustainable consumption behaviors within use phase practices within wearing, caring, and repairing clothes the following hypotheses and research question were formulated:

Hypothesis 1 (H_1): Fashion trend sensitivity negatively influences sustainable wear.

Hypothesis 2 (H_2): Fashion trend sensitivity negatively influences sustainable care.

Hypothesis 3 (H_3): Fashion trend sensitivity negatively influences sustainable repair.

Hypothesis 4 (H_4): Style orientation positively influences sustainable wear.

Hypothesis 5 (H_5): Style orientation positively influences sustainable care.

Hypothesis 6 (H_6): Style orientation positively influences sustainable repair.

Hypothesis 7 (H_7): Mindfulness positively influences sustainable wear.

Hypothesis 8 (H_8): Frugality positively influences sustainable repair.

Research Question 1 (R_1): How does age and gender influence wear, care, and repair behaviors?

Variable Glossary

- **Sustainable clothing use practice** for the purposes of this study is defined by wearing, caring, and repairing clothing in a way that extends the life of the garment.
    - **Sustainable wear** is defined as interacting with one's wardrobe by wearing items consistently and finding new ways to wear lesser worn garments (Fletcher, 2016; Joyner Armstrong et al., 2017; Laitala & Boks, 2012; Lopes & Gill, 2015).
    - **Sustainable care** is defined through individuals' laundry practices and how they prolong the wearing capabilities of garments through attention to early stain removal, lower washing frequency and/or lower washing temperatures for washing and drying (Choudhury, 2014; Cline, 2019; Daystar et al., 2019; Joyner Armstrong et al., 2017; Laitala et al., 2011; Laitala et al., 2018).
    - **Sustainable repair** is defined as repairing all garment seams, lost buttons, zippers, etc., to the extent of one's capabilities as well as seeking services when repair is beyond one's capabilities (Cline, 2019; Fletcher, 2016; Laitala & Boks, 2012; Laitala & Klepp, 2018; McNeill, Hamlin, McQueen, Degenstein, Wakes, et al., 2020).
- **Fashion trend sensitivity** is the amount of attention a consumer dedicates to the latest fashion trends (Lang & Armstrong, 2016).

- **Style orientation** is the tendency for consumers to dress according to their personal style and their own characteristics instead of adopting relevant fashion trends (Gupta et al., 2019).
- **Mindfulness** in the context of clothing use relates to a consumer's attention to the wardrobe with a sensibility to meaning and longevity. Mindfulness is defined as connecting to the present moment without judgment of the experience that happens (Kabat-Zinn, 2003) and creating a sense of self-awareness to the current experience allowing a wider perspective (Bishop et al., 2004).
- **Frugality** explains consumer behavior that restricts purchasing and encourages resourcefulness of using goods and services, such as being systematic with spending money and limiting impulse purchases (Lastovicka et al., 1999).

Chapter Summary

This chapter has laid the foundation for the thesis acknowledging an existing gap in the literature. With little known about the use phase in sustainable clothing consumption the goal of this study is to identify relationships between personal factors and the use phase. The next chapter will provide an overview of prior research and the derived hypotheses supporting the study.

CHAPTER II

LITERATURE REVIEW

The literature review has been organized into three main sections: the clothing consumption cycle, sustainable clothing consumption and the use phase, and personal factors influencing sustainable clothing consumption. The first section explains the major phases of the clothing consumption cycle. The second section describes how clothing consumption can be sustainable and the importance of the use phase in sustainable consumption as it manifests in wear, care, and repair practices. The third and final section explores how personal factors (i.e., fashion trend sensitivity, style orientation, mindfulness, and frugality) as well as demographic factors (i.e., age and gender), could influence sustainable clothing consumption behaviors.

Clothing Consumption Cycle

The lifecycle of a garment within the fashion industry has five main phases beginning with design, followed by production, distribution, use, and end-of-life (Gwilt, 2014). Consumers interact with the garment in the distribution, use and end-of-life phases. In the distribution phase, products are delivered to retailers and retailers replenish stock for consumer purchase. Once goods are purchased, the consumer engages with the garment in the use phase, consisting of "wearing, laundering, repair and alteration"

(Gwilt, 2014, p. 32). When the consumer no longer wishes to wear and/or take care of their garment, the end-of-life portion of the cycle is initiated by disposing of the garment, repurposing its original use, or recycling the garment (Gwilt, 2014). These phases come from a designer's point of view within the fashion industry; however, Evans (2018) takes an approach from a consumer's point of view, proposing that consumption consists of three 'A's (acquisition, appropriation, and appreciation) with a counterpart of the three 'D's (devaluation, divestment, and disposal). While acquisition is the act of purchasing goods, appropriation is what happens to goods after individuals purchase them, and appreciation is the positive outcome experienced through use. Evans (2018) adds "devaluation" in which the original value of the garment decreases through inattentive wear, "divestment" as negative feelings toward the garment, and "disposal" that results in the end of use or re-selling of the garment for another person to appropriate (p. 507). Similarly, the Sustainable Fashion Consumption Network, in 2021, created a conceptual framework for sustainable fashion consumption within a circular fashion system, labeling acquisition, use, and end-of-use as consumer choices (see Appendix A). Within this circular fashion system model, wear, care, and repair are presented within the use phase and are presented as major activities for what Evans (2018) would refer to as appropriation. For the purpose of this study the terms acquisition, use, and disposal are used to define the consumption cycle of a garment within the consumer domain, while wear, care, and repair are used to further identify appropriation practices in the use phase.

Sustainable Clothing Consumption and the Use Phase

Sustainable clothing consumption is defined as "*individual acts of satisfying needs in different areas of life by acquiring, using and disposing goods and services that*

do not compromise the ecological and socio-economic conditions of all people (currently living or in the future) to satisfy their own needs" (Geiger, 2018, p. 20). Consumers may enact sustainable clothing consumption when they begin to change elements of their existing habits to more sustainable choices via a diverse array of practices (Spurling et al., 2013). Research suggests that sustainable clothing consumption within the acquisition phase is re-crafted through practices such as buying less, buying quality over quantity, shopping secondhand, and renting a portion of their wardrobe rather than purchasing (Armstrong et al., 2016; Cline, 2019; Lundblad & Davies, 2016; Norum & Norton, 2016).

In Elizabeth Cline's, *The Conscious Closet: The Revolutionary Guide to Looking Good While Doing Good* (2019), the author argues that clothing of good quality is beneficial for the planet since it is created to last, endure many wears, and hold shape over time, therefore avoiding frequent purchases. Alternatively, consumers may shop secondhand, resisting the current fashion system (Bly et al., 2014) by keeping clothing in circulation which is considered essential to creating more options for sustainable consumption (Norum & Norton, 2016). Renting or swapping clothing may also avoid the harmful effects of clothing production and waste by eclipsing over-consumption of garments by relieving the consumer of personal ownership and by providing a combination of garments and services that serve the consumer's end goal: a specialized wardrobe (Armstrong et al., 2016).

Consumers may also engage in slow consumption, which is buying higher quality garments while also buying less, shopping secondhand markets, or taking part in clothing swaps (Cataldi et al., 2010; Ertekin & Atik, 2015). Modeled after the slow food industry,

slow fashion focuses on fashion production on smaller scales that highlight traditional craft techniques created with local materials from local markets (Fletcher, 2010). This slow approach offers a way for consumers to stay fashionable while engaging in sustainable and ethical consumption practices and use behaviors (Clark, 2008).

Beyond buying less and buying quality fashion items, slow fashion encourages reflection among consumers about their mindless consumption through fast fashion (Cavender & Lee, 2018). This habit of mind brings into question the existing fashion industry practices, prompting consumers to question the hierarchies that exist between the designer, producer, and the consumer, as well as challenging the notion of fashion's centrality on always buying new garments (Clark, 2008; Fletcher, 2010). Research has observed that consumers engage in slow consumption habits and practices, such as the awareness of their consumption habits and their ecological and social consequences (Clark, 2008; Fletcher, 2016; Jung & Jin, 2014; Pookulangara & Shephard, 2013).

Slow fashion practices signify a detachment from the current fast fashion industry, that is in opposition to the ideals and principles of expansion-based development of fast fashion products (Fletcher, 2010). Consumers may believe that slow fashion is the opposite of fast fashion, being that slow fashion has more to do with pace of production (Hall, 2018). Although pace is a sector of slow fashion, it is more than slowing down the supply chain. Slow fashion is about smaller scale production; generally producing hand-crafted designs by local artisans that utilize local, as opposed to global, materials, as well as designs that are made to last and withstand many seasons of use (Fletcher, 2010). Engaging with slow fashion becomes a creative choice instead of following the mandate of fashion trends (Clark, 2008).

Sixty-percent of all clothing produced is either incinerated or in a landfill within a year of production; therefore, sustainable clothing consumption behavior may also manifest via a variety of disposal practices (Remy et al., 2016). A fundamental step in preventing fashion waste is to avoid garments traveling to the landfill (Binotto & Payne, 2017). Donating unwanted clothing has been observed across previous literature as a common sustainable disposal habit, that is either resold or recycled (Bianchi & Birtwistle, 2012; Birtwistle & Moore, 2007; Cline, 2019; Domina & Koch, 1999). McNeill, Hamlin, McQueen, Degenstein, Wakes, et al. (2020) found that while consumers may engage in disposal avoidance (e.g. selling, donating, gifting, or alter clothing) clothing that is severely damaged is often thrown in the trash.

Cline (2019) suggests that consumers create a "clothing reuse plan" that may aid in the decision-making process of which clothing garments should be donated, could be sold or swapped, and/or what clothing should be recycled or reused (p. 27). Within this clothing reuse plan, consumers should learn about the donation bins in their area, as well as ensuring garments are in clean, wearable conditions (Cline, 2019). Clothing that the consumer wants to sell or swap must also be in clean, wearable conditions (these items generally yield the highest value). Selling or swapping clothing commonly occurs through online platforms or consignment stores (Cline, 2019). The rate at which consumers acquire and then dispose of their clothing determines a garment's longevity, and both of these consumer decision domains are inherently influenced by use phase behaviors, discussed next.

Use Phase

Clothing may be worn repeatedly throughout generations; however, clothing is observed as only being worn for short period of time or not worn at all (Laitala et al., 2018). One of the leading ways to reduce the environmental impact of clothing is to extend the amount of time it is worn and used (Klepp et al., 2020; Whitson-Smith, 2018). Fletcher (2012) argues that garment longevity can be achieved through the attachment created with individual garments; each garment provides a specific purpose to the user and influences longevity. Therefore, the use phase of the consumption cycle is a significant component of sustainable consumption, especially since this phase is brimming with energy-demanding and polluting practices (Laitala & Boks, 2012). For instance, washing a polyester blouse requires six times as much energy as was required to originally produce the blouse (Fletcher, 2014). As of 2017, laundering garments made from synthetic fibers (e.g. polyester, nylon, or acrylic) collectively contribute nearly 35% of micro-plastic waste found in the ocean (Boucher & Friot, 2017). Although awareness of micro-plastic waste within the clothing industry has been on the rise, little change has been observed concerning large scale production (Ellen MacArthur, 2017). However, the outdoor clothing industry has begun to respond to the micro-plastic waste by seeking out better solutions (Ellen MacArthur, 2017). For example, outdoor retailing brands such as Patagonia, Arc'teryx, and Mountain Equipment Company are investing textile pollution research, specifically in the sources of micro-plastic waste entering the oceans, with a goal of solutions for micro-plastic waste (Ellen MacArthur, 2017).

Underutilized garments may also be a culprit of pollution when they are prematurely disposed (Ellen MacArthur, 2017). Consumers today purchase an abundance

of clothing that they will seldom wear or wear for a short period of time before throwing it away (Ellen MacArthur Foundation, 2017). Minor wear and tear have been found as reasons for premature garment disposal, even though the garment could easily be repaired (Birtwistle & Moore, 2007; McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020). Motivations to wear garments longer may include wearing garments with a comfortable fit or fabric, garments that are easy to care for as well as maintaining a tidy wardrobe so that garments are easily seen by the user, which may decrease garments being overlooked (Whitson-Smith, 2018). Extending the product's lifespan by continued use may begin to decrease the potentially negative effects of other consumption phases (Whitson-Smith, 2018).

Following Gwilt's (2014) aforementioned lifecycle of a garment, the Sustainable Fashion Consumption Network created a conceptual framework for a circular fashion economy by linking the end of use stage back to the acquisition phase through peer-to-peer collaborative consumption, upcycling, and buying second hand (Vladimirova et al., 2021). The network broke down use phase behaviors within this circular fashion economy into three components: wear, care, and repair (see Appendix A) (Vladimirova et al., 2021). These three components were adapted from the UN's Environment Program Sustainability and Circularity in the Textile Value Chain (Notten, 2020). Vladimirova et al. (2021) claims that after distribution and retail, acquisition occurs followed by use and end-of-use. Unfortunately, the use phase has generally received the least attention from researchers (Daystar, 2019; Klepp et al., 2020; Laitala & Boks, 2012). Of the three components (wear, care, and repair), most of what is known about clothing use regards care, which is primarily centered on laundry habits (see Boucher & Friot, 2017; Cline,

2019; Daystar et al., 2019; Miilunpalo & Raisanen, 2019). Other researchers have explored repair and maintenance skills of mending a garment's seam or button or using the expertise of a tailor for repair (see Cline, 2019; De Castro, 2021; Koch & Domina, 1997; Laitala & Boks, 2012; Laitala et al., 2018; McNeill, Hamlin, McQueen, Degenstein, Wakes, et al., 2020; Norum, 2013). Even less literature, most of which is anthropological in nature, has focused on wearing habits, studying the unique history each wearer has with their garments (Fleetwood-Smith et al., 2019; Fletcher, 2012; Fletcher, 2016).

This study focused on consumer practice within the use phase domains of wearing, caring, and repairing garments. These domains of the use phase have not been operationalized as a combined measure within the current literature. Thus, to specifically articulate the behavior of each use phase domain, both scientific and non-fiction sources have been utilized to define sustainable habits and practices within each of these categories in the following discussion.

Craft of Use

In one of the most comprehensive studies of clothing use practice, Kate Fletcher (2016), in her book *Craft of Use: Post-Growth Fashion,* provided an extensive overview of how clothing is used after initial purchase. Fletcher uses an anthropological approach to explore how individuals wear, care, and repair their clothing beyond the fashion industry's original intention (make, take, dispose). Kate Fletcher has over 70 scholarly and popular publications and has begun to define sustainability through design thinking over the last two decades (University of the Arts London, n.d.). Fletcher's (2016) work examines the use phase, specifically in regard to the usership of consumers, beyond

laundry habits and repair skills. Fletcher (2016) argues that the use phase provides a comprehension of how garments are maintained and loved through the stories of users in a way that extends the life of garments. This story-making exists far outside the involvement of the industry and supply chain. Within the use phase, consumers "foster attentiveness to garments" changing the attention from "ownership to usership" (Fletcher, 2016, p. 272). This fostering of attentiveness infers that mindfulness may have a role to play within the use phase.

In Fletcher's (2016) book, she shares stories of usership through six themes that embody highly idiosyncratic ways of using clothing that are distinct from fast fashion culture: material resourcefulness, alternative dress code, garment co-operation, attentiveness, shared use, and intensive use. In the first theme, material resourcefulness, the user's stories explain the use of found materials to wear or create clothing beyond the narrow mindset established by the fashion industry. These users transform found or underutilized materials such as old pillowcases or tablecloths, left over yarn from previous projects, random leather skins, and old quilts. These new garments are story pieces that the user creates new memories with or continues a loved one's memory (Fletcher, 2016). The creation of new garments from found or repurposed materials deviates from consumerism and allows an alternative form to take place in the transformation of materials into a new garment (Fletcher, 2016).

The second theme, alternative dress code describes an alternative dress code as wearing the garment through each season or wearing the garment in different ways each time the consumer wears it (Fletcher, 2016). On a deeper level, an alternative dress code may be wearing a garment for personal and emotional reasons, regardless of trends

dominating the fashion industry. The user's may wear their chosen garment because someone special gave it to them and in their absence, they feel connected to them, or that the user lives by the rule that one should wear something every day that makes them smile (Fletcher, 2016). Garment co-operation, the third theme, is when the division between the clothing and users intertwine. This co-operation is beyond having clothing on the body and is centered around how the garment aids the user either through utility or confidence (Fletcher, 2016). Attentiveness, the fourth theme, Fletcher (2016) argues, is a use practice to influence the satisfaction with our garments. These practices may see intangible but within the reach of each user (Fletcher, 2016). The attentiveness to garments may become a use practice, which uses tools as an "extension of our creative expression" (Fletcher, 2016, p. 259). Meaning that consumers have the skills to prolong the life of their garments by creating connections and experiences with each garment. Skills can be classified in two ways, mending and cherishing. Mending is a taught skill (i.e., sewing or darning practices) taught by others or through experience. While cherishing is attention a consumer gives to each garment, attaching emotion and feelings in each worn experience. With dedication and passion, use practices may lead to new ways of wearing loved garments, rendering the garments ageless (Fletcher, 2016).

The fifth theme, shared use is exactly that - sharing garments, but does extend beyond simply lending out a piece to a friend. Shared use includes a connection between users who share garments with each other because of their similar values and sensibilities. Sharing garments helps save resources used and may create the perception of a new garment for the secondary user (Fletcher, 2016). Lastly the sixth theme, intensive use, includes wearing a garment iteratively due to its original story, emotional

connection, or due to its utilization for everything. The users who follow these six themes engage with their garments with longevity in mind that the end of use phase is well within the future (Fletcher, 2019).

Beyond the fashion marketplace, users perform idiosyncratic ways of wearing, caring, and repairing their clothes in ways that shift social normative behaviors for fashion, creating an affinity to what already exists in their closet (Fletcher, 2016). User stories in Fletcher's (2016) work are about how they wear their clothing, how it makes them feel, and the emotional connections that are attached to their wardrobes. Fletcher's (2016) work offers some potential dimensions about the garment use phase that may be both easy and challenging to operationalize. For instance, the stories of usership provide clear methods of sustainable wear, including wearing garments longer, wearing what is in the closet rather than purchasing more garments, wearing owned garments in new ways, carefully wearing garments, remaking garments into something new, wearing aged clothing, and repurposing found materials into worn objects (Fletcher, 2016). More difficult items to operationalize are: wearing a garment as if it were the last time to ever wear it, wearing something to be different, wearing something that makes you smile, and wearing something with a great amount of emotional attachment (e.g. a garment passed through multiple generations or something endowed to the user) (Fletcher, 2016). These potential measurement items are difficult to operationalize due to the unique experiences of each user and their individual behavior, as compared to operationalizing the length of time garments are worn, wearing garments from one's closet, wearing owned garments in new ways, carefully wearing garments, remaking garments into something new, wearing aged clothing, and repurposing found materials (Fletcher, 2016).

Other aspects of Fletcher's (2016) work provide some other measurable habits of sustainable practice (e.g. laundering and repair), though these aspects are far more limited. Within Fletcher's (2016) work the user's stories have very limited care practices, such as laundry. An example includes users' laundry practices in which they chose not to wash their garments for various reasons. Delaying or opting out of washing of garments is a way that memories are preserved. Several of the user's garments have been passed down from loved ones, with the stains and smells as the reminders and connections to their memories. For example the set-in smell in a passed down sweater reminds them of their traditional camping trip, or each stain marks the time when their mother laughed (Fletcher, 2016).

For repair, users share how mending practices are a function to continue the life of a garment (Fletcher, 2016). Although several consumers mention their repair skills, the story travels beyond having the skill to repair something to illuminate how consumers use mending techniques to give the garment life. The repair items that may be easily operationalized are; replacing buttons, sewing when damaged, fixing a zipper for a better fit, mending as a feature, repairing worn jeans, replacing the knees in jeans, and mending for preservation (Fletcher, 2016). The more difficult items to operationalize for repair items include; sewing, darning, patching, and mending. Some users may want invisible mending while others may want their mending to be visible to share the story of the garment's evolution of ongoing use. In addition, repairing a garment may change the whole look of a garment, which is welcomed by some and not by others, thereby influencing repair practices (Fletcher, 2016).

Sustainable Wear

Sustainable wear may be the most unclear domain in the use phase for scholars and other people to operationalize, as it has been researched and synthesized in a variety of ways. Fletcher (2014) describes wearing clothing as a practice influenced by the knowledge, skills, and stories of the owner, fulfilling the use of the garment. Fletcher's (2016) qualitative, anthropological view of how clothing is influenced through the stories of a consumer's life demonstrates the idiosyncrasy of use phase research (e.g. the continual wearing of a garment due to emotional attachment, wearing a garment to stand out, or wearing a garment/outfit to make you smile). Other researchers have attempted to determine how consumers wear their clothing when measuring a garment's lifecycle analysis, which measures the environmental impact of a garment from cradle to grave (Choudhury, 2014; Daystar, 2019; Klepp et al., 2020; Laitala et al., 2018).

Some research explains how consumers are involved with sustainable wear behaviors through engagement with their wardrobe (Joyner Armstrong et al., 2017; Lopes & Gill, 2015). According to Joyner Armstrong et al. (2017) engaging with one's wardrobe consists of having an awareness of what resides in one's closet with the goal of increasing utilization while regularly categorizing items to keep or remove. Similarly, Lopes and Gill (2015) refer to honing the skill of a 'maintaining eye,' noticing cumulative changes in one's wardrobe to assess how and when to intervene with longevity practices. Consumers achieve this 'maintaining eye' through observing and wearing garments through the daily practice of wear (Lopes & Gill, 2015). However, wearing worn, damaged, or faded clothing is an additional aspect of sustainable wear behaviors as wear and tear is accepted with certain types of clothing (e.g. ripped jeans)

(Laitala & Boks, 2012). Continuing to wear clothing that show signs of patina is a way of recording time (Fletcher 2016). The signs of wear, such as stretch marks on jeans or along the back of a shirt, mark memories, lessons learned and the evolution of appearance in the garment itself (Fletcher, 2016). Fletcher (2016) shared a user's story about how their sweater changed appearance every time they wore it, where once they put too many items in the pocket, which changed the shape of the sweater and showed signs of wear. The user liked it this way as it marked a time in their life where they were in control and did not have to alter clothing according to their body, rather the sweater changed form (Fletcher, 2016). Refashioning a garment is another way to prolong the wear of a garment (Fletcher, 2016). Fletcher (2016) describes refashioning garments (i.e., wearing garments in new ways/forms) as taking action instead of continuing consumption. Several of the user's stories are about refashioning current garments in their wardrobe to fit current needs instead of purchasing a new garment (Fletcher, 2016). A summary of wear practices can be seen below in Table 2.1.

Table 2.1

Summary of Use Phase Practices: Wear

Wear Practices	Literature
life cycle analysis (environmental impact)	Daystar et al., 2019
wardrobe engagement	Joyner Armstrong et al., 2017 Lopes & Gill, 2015
material resourcefulness alternative dress code garment co-operation attentiveness flexible thinking shared use intensive use	Fletcher, 2016
wearing worn/damaged/patinaed clothing	Laitala & Boks, 2012 Fletcher, 2016
refashioning	Fletcher, 2016

Sustainable Care

Sustainable care behaviors may be more easily defined in comparison to wear habits and practices, as they are more easily observed through a consumer's laundry habits of machine washing and drying (Choudhury, 2014; Daystar et al., 2019; Laitala et al., 2018). The process of laundering clothing consists of pre-washing (collecting, sorting, and organizing), washing (washing and drying), and post-washing (occasional ironing and putting clothing away) (Pink et al., 2015). Consumers may wash clothing less by wearing garments numerous times before laundering, resulting in a lower environmental footprint for laundering (Daystar et al., 2019). Washing machine use requires over five trillion gallons of water per year around the world (Ellen MacArthur Foundation, 2017). Within the average North American household approximately 38 gallons of water is used per wash cycle, which is the highest amount of water used (out of all countries surveyed) (Pakula & Stamminger, 2010).

The amount of energy required to dry clothing in an electric dryer per U.S. household (967 kWh annually) is more energy than is required for machine washing (Energy Star, 2011; Laitala et al., 2018). In addition to saving energy, consumers who wash their clothing less also increase the longevity of their clothing due to laundry machines causing clothing to shrink, fade the colors, and creating tears in clothing if laundry practices are incongruent with garment requirements (Cline, 2019). Using cold water to wash garments contributes to energy reduction (cooler temperatures requires less energy to heat), and reduces the wear and tear that occurs when washing at higher temperatures (Choudhury, 2014; Laitala et al., 2011). In addition, these consumers may be saving money on their utility bills, as running the washing machine 10% less than

before, decreases electricity and water usage and saves an average of five thousand gallons of water annually (Choudhury, 2014; Cline, 2019). Sustainable care behaviors may also occur when consumers reduce machine drying (or air-dry) their clothing, as less machine drying or air-drying instead decreases the energy requirement, as well as possibly removing clothing when damp to lay it flat to dry, and not over drying the clothing (Cline, 2019; Laitala et al., 2011; Laitala et al., 2018).

In addition to laundry habits, sustainable care practices are observed through wardrobe preservation, which is maintaining one's wardrobe through longevity practices of garment rotation, careful laundering practices, repairing if needed, and proper storage (Joyner Armstrong et al., 2017). Garment rotation is important for longevity as it can reduce the wear and tear on garments, as WRAP reported a key issue of clothing failure was due to fraying hems, general wear, and holes in seams (Cooper et al., 2014). The breakdown of garments (wear and tear) occurs when garments are worn and laundered (Cline, 2019; Klepp et al., 2020). Careful laundering practices suggested in wardrobe preservation are practices that extend further than simply washing garments. These practices include delaying the washing of clothes that have been worn minimally and immediately taking proper care of spots/stains/spills on garments to avoid damage setting in (Pardue, 2005). A summary of care practices can be seen below in Table 2.2.

Table 2.2

Summary of Use Phase Literature Highlighting Care Practices

Care Practices	Literature
washing clothing less	Cline, 2019 Daystar et al., 2019
washing clothing in cold temperatures	Choudhury, 2014 Cline, 2019 Laitala et al., 2011

air dry clothing/reduce machine drying	Cline, 2019 Laitala et al., 2018
wardrobe preservation	Joyner Armstrong et al., 2017

Sustainable Repair

When simple repair skills are adopted by all consumers and repeated often, what once seemed like a minor action, has now turned into a positive environmental impact (Laitala et al., 2018). In Orsola de Castro's book, *Loved Clothes Last* (2021), she considers clothing repair as a way to challenge the typical fashion system, arguing that mending garments that were created to be disposable extends the life of the garment beyond the industry's intention. For some consumers, mending garments rather than disposing of them is a way to stand against the traditional clothing consumption cycle, demonstrating how they value quality products (De Castro, 2021). To begin engaging with sustainable repair behaviors, Cline (2019) suggests building a mending kit that includes items from hand-sewing needles to scrap fabric. The most basic sustainable repair behaviors can be observed through relatively simple clothing repairs such as replacing a button, sewing an undone seam, and patching holes (Cline, 2019; Laitala & Boks, 2012).

Sustainable repair behaviors may also involve enlisting the help of a skilled professional to help tailor/alter items to extend wear life and/or increase fit (McNeill, Hamlin, McQueen, Degenstein, Wakes, et al., 2020). A quality tailor can also be utilized beyond increasing fit, through restoring threadbare lining in clothing such as coats and jackets and any waistbands that have been stretched out (Cline, 2019). Consumers may reallocate their clothing beyond its original function by deconstructing them to use as materials when repairing other garments or repurposing them into cleaning rags (Cline,

2019; Koch & Domina, 1997). Many times, reallocation is utilized due to the consumer deeming the garment beyond repair and donation (Cline, 2019). Upcycling garments, as in tailoring or augmenting to personalize and retain the garment's quality level when damaged, has been observed as a popular activity within the crafting and do-it-yourself community with the goal of extending the garments life span (Laitala & Klepp, 2018). Fletcher's (2016) work shares the user's story of mending their garments with visible repairs to show off that their decision to prolong their original garment instead of purchasing something new. Some user's shared the decision to continue mending their garments comes from an emotional attachment, that if they stopped mending a certain piece that it would stop the memories that live with every wear (Fletcher, 2016). A summary of repair practices can be seen below in Table 2.3.

Table 2.3

Summary of Use Phase Literature Highlighting Repair Practices

Repair Practices	Literature
challenging the fashion system	De Castro, 2021
mending kit readily available	Cline, 2019
replacing buttons	Cline, 2019
sewing undone seams	Fletcher, 2016
patching holes	Laitala & Boks, 2012
using a tailor	McNeill, Hamlin, McQueen, Degenstein, Wakes, et al., 2020 Cline, 2019
reallocation	Cline, 2019 Koch & Domina, 1997
upcycle garments	Laitala & Klepp, 2018

Personal Factors Influencing Sustainable Clothing Consumption

Personal factors have been shown to influence sustainable clothing consumption behaviors, with a large concentration of research focused on clothing acquisition and

disposal phases of activity (Bianchi & Birtwistle, 2012; Kim & Seock, 2019; Lang & Joyner Armstrong, 2018; Park et al., 2017; Shim, 1995). What is lacking within use phase research is evaluations of personal factors within use phase behaviors and how personal factors may have a positive or negative relationship with wear, care, or repair practices. In comparison, many researchers have explored the influence of environmental and social values as well as social norms on clothing and eco-friendly clothing purchasing, renting, and swapping (See Armstrong et al., 2016; Kim & Seock, 2019; Lang & Joyner Armstrong, 2018) While others have investigated the influence of environmental attitudes on sustainable clothing disposal habits (See Bianchi & Birtwistle, 2012; Shim, 1995).

Understanding the directionality of how personal factors may influence use behaviors may help fashion marketers to target specific consumers who are or are not engaging with sustainable fashion. The importance of these personal factors could also help guide sustainable fashion education curriculum regarding the use phase by clearly defining sustainable use practices and providing students with a complete understanding of sustainable behaviors with regard to the complete clothing consumption cycle. Previous literature has established the influence of personal factors in many acquisition and disposal phase studies while less is known about the role of personal factors within the use phase behaviors (Cho et al., 2015; Gupta et al., 2019; Lang & Armstrong, 2016; Lopes & Gill, 2015). Lastly, understanding how these personal factors influence the use phase will be beneficial for future research as little is currently known about use phase practices. This research helps set the stage for identifying consumer groups within sustainable consumption research outside of acquisition and disposal. For this study there

were five factors of interest: fashion trend sensitivity, style orientation, mindfulness, frugality, and demographics of age and gender.

Fashion trend sensitivity and style orientation are important to investigate within the use phase because each has the potential to influence the longevity of clothing, which is the goal of the use phase (WRAP, 2017). Specifically, fashion trend sensitivity has the potential to negatively influence longevity while style orientation has the potential to positively influence longevity (Gupta et al., 2019; Lang & Armstrong, 2016). Fashion trend sensitivity has been shown to fuel over consumption of clothing and frequent disposal, meaning it would be unlikely that someone who is fashion trend sensitive would engage in sustainable wear, care, and repair practices that would preserve and prolong garment life (Birtwistle & Moore, 2007; O'Cass, 2004). This negative relationship between fashion trend sensitivity and garment longevity is especially evident among young, female populations (Bianchi & Birtwistle, 2012; Birtwistle & Moore, 2007; O'Cass, 2004; Shim, 1995). Style orientation has been shown to decrease over consumption of clothing and prohibit premature disposal habits, which increases the likelihood consumers would engage in sustainable wear, care, and repair practices to preserve and prolong garment life (Cho et al., 2015; Gupta et al., 2019).

To gain further insight into how use practices are influenced by personal factors, mindfulness and frugality are also important to investigate (Cho et al., 2015; Lopes & Gill, 2015). These personal factors may help develop an understanding of why consumers do or do not engage in sustainable use practices (Cho et al., 2015; Sheth et al., 2011). Mindfulness and frugality have the potential to positively influence longevity through sustainable wear and repair (Fletcher, 2016; Haines & Lee, 2021; Lopes & Gill, 2015). A

consumer who has higher levels of mindfulness may attribute deeper meaning to their clothing wear in a way that extends the life of a garment, as compared to consumers with lower levels of mindfulness (Amel et al., 2009; Lopes & Gill, 2015; Sheth et al., 2011). It is possible that consumers who are more frugal may find ways to avoid wasting clothing or financial resources and keep a garment beyond its 'normal' life by repairing it as needed (Young, 2000).

Fashion Trend Sensitivity

Fashion trend sensitivity is the amount of attentiveness and consideration a consumer dedicates to the latest fashion trends, and this amount of attention may impact one's wear, care, and repair practices with clothing (Lang & Armstrong, 2016). Lang and Armstrong (2016) investigated the effect that fashion trend sensitivity, shopping frequency, price consciousness and demographics (e.g., age, gender, and income) may have on disposal frequency and reasons for disposal (e.g., out of fashion, boredom, poor fit, cleaning out closet and worn out). Akin to fashion trend sensitivity is fashion involvement, where it has been observed that consumers are more likely to make fashion-oriented impulse purchases combined with a higher rate of clothing disposal (Lang & Armstrong, 2016; Park et al., 2006). Birtwistle and Moore (2007) It has been reported that consumers who were influenced by fashion trends wore garments for social events and only for a few times before disposal or disuse (Birtwistle &Moore, 2007). Furthermore, it was found that consumers who had higher levels of fashion trend sensitivity were only willing to repair and maintain items within their fashion wardrobe if they had an emotional connection to the garment or if it was a higher priced item, suggesting other garments (of lower cost and no emotional connection) might be

discarded if in need of repair (McNeill, Hamlin, McQueen, Degenstein, Garrett et al., 2020).

Fashion Trend Sensitivity Hypotheses. Based on this literature, the following three hypotheses were created and can be seen in Figure 2.1:

Hypothesis 1 (H_1): Fashion trend sensitivity negatively influences sustainable wear.

Hypothesis 2 (H_2): Fashion trend sensitivity negatively influences sustainable care.

Hypothesis 3 (H_3): Fashion trend sensitivity negatively influences sustainable repair.

Style Orientation

A consumer with style orientation has an attitude and lifestyle around timeless silhouettes that the consumer wears for a long period of time rather than rushing from trend to trend (Gupta et al., 2019). In contrast, a fashion orientated consumer is motivated by a desire for novelty and newness of fashion trends currently on the market (Cho et al., 2015). Consumers are more likely to buy trendy clothing that showcases a new style (Park et al., 2006). Both fashion and style-oriented consumers have intentions of wearing clothing in regard to supporting body image, functions of clothing, self-esteem, and enjoyment of shopping with each orientation having a different emphasis (i.e., following personal style or fashion trends) (Tiggemann & Lacey, 2009). Style orientation has been positively associated with sustainable apparel consumption, with higher levels of style orientation leading to lower rates of clothing acquisition (Gupta et al., 2019; Cho et al., 2015). Regarding wear practices, style-oriented consumers may keep their clothing

longer and demonstrate a strong positive relationship to sustainable apparel consumption behaviors (e.g., shopping in secondhand markets, including secondhand shops and swapping practices) (Gupta et al., 2019). Style-oriented consumers may be less materialistic in their shopping values than fashion-oriented consumers, finding a relief and comfort from the social pressures of consuming materialistic things through their sustainable fashion consumption (Bly et al., 2014; Gupta et al., 2019).

Another important aspect of style orientation is clothing style confidence (CSC). Findings from Joyner Armstrong et al. (2017) show that CSC is associated with a more thoughtful and perceptive approach to clothing use and strongly influenced wardrobe preservation and wardrobe engagement behaviors. Style longevity is a feature of CSC that aligns with style orientation (Joyner Armstrong et al., 2017). Style longevity is achieved when consumers choose garments with timeless attributes that harmonize with the consumer's personal style (Joyner Armstrong et al., 2017). This aspect of style orientation, CSC, is important to note as it has a focus on use phase behaviors as well as acquisition and disposal phases.

Style Orientation Hypotheses. Based on the literature, the following three hypotheses were developed and can be seen in Figure 2.1:

Hypothesis 4 (H_4): Style Orientation positively influences sustainable wear.

Hypothesis 5 (H_5): Style Orientation positively influences sustainable care.

Hypothesis 6 (H_6): Style Orientation positively influences sustainable repair.

Mindfulness

Mindful consumption is the practice of paying attention to and accepting one's internal (emotions and thoughts) and external (objects and people) stimuli (Bahl et al.,

2016). Mindful consumption is also based on the consumer's awareness of their thoughts, behaviors, and choices while consuming goods and services as well as contemplating the accountability for the impact of their consumption behaviors (Sheth et al., 2011). Research has shown that mindful consumers are more likely to pursue options that have less environmental harm, regardless of barriers (e.g., financial, time, etc.) (Amel et al., 2009). This type of mindfulness assumes that consumers can choose exactly what and how much they consume without the influences of the marketplace (Li et al., 2021; Sheth et al., 2011). Previous literature has explored mindfulness and consumption through an environmental lens with a subscale of "acting with awareness," which was found to have a positive correlation with sustainable behavior (Amel et al., 2009, p. 14).

Understanding a garment's influence on one's thoughts permits a more realistic view of the impact one's interactions with their garments (Joyner Armstrong, 2021). In this way, mindfulness allows individuals to gain insight into their own habits and practices, so they may more intentionally choose their behavior rather than reacting blindly or unconsciously; for instance, engaging in frequent acquisition and disposal without a recognition of its potential consequences (Bahl et al., 2016; Fletcher, 2016; Joyner Armstrong et al., 2017). For the purposes of this study, mindfulness was considered within sustainable wear practices in the use phase of clothing consumption.

Joyner Armstrong, et al. (2017) argued that sustainable wear practices include both wardrobe engagement and preservation behaviors, both of which reflect a more mindful disposition in which attentiveness and care can be deployed. Having a mindful disposition may aid consumers' awareness through garment learning during wear (e.g. how the garment reacts to the body and surrounding environments) (Lopes & Gill, 2015).

Fletcher's (2016) *Craft of Use* research study demonstrated that mindful clothing awareness is essential in the development of consumption habits that are fostered through garment wear, including how garment use impacts the environment. Sustainable choices that are made with a mindful disposition may lead consumers to create connections with their garments that effectively increase the longevity of their wardrobe (Fletcher, 2016).

Li et al. (2021) argued that engagement in responsible consumption practices can be facilitated by mindfulness, influencing consumers to adopt more simplistic lifestyles through potentially relying on fewer material objects and demonstrating more frugal acquisition. Mindful habits may help consumers establish sustainable consumption behaviors through the disruption of routines (Li et al., 2021; Sheth et al., 2011). This disruption occurs in two parts: first when consumers notice subconscious consumption habits, and second, when consumers direct their attention to their consumption choices that disengage from subconscious decisions (Bishop et al., 2004; Fischer et al., 2017; Geiger et al., 2019, p. 23; Grossman, 2010; Rosenberg, 2004). Sustainably acquiring, using, and disposing of garments within the consumption cycle can be a focal point for consumers to start practicing mindful habits (Joyner Armstrong, 2021).

Mindfulness Hypothesis. Based on the literature, the following hypothesis was developed and can be seen in Figure 2.1:

Hypothesis 7 (H_7): Mindfulness positively influences sustainable wear.

Frugality

Frugality is the amount of caution and restriction a consumer exhibits with each monetary decision and the attention given to prolong the use of that product (Lastovicka et al., 1999). Although there is a financial component to frugality, Lastovicka et al.

(1999) conclude that frugality can explain a consumer's resourcefulness in their usage behaviors (e.g., time spent in a shower in the morning or eating leftovers instead of buying lunch). Evans (2009) agrees that frugality is about more than restricting acquisition and argues that frugality can also include a moral constraint against excess and waste accumulated through consumption. Frugality is of interest in this study due to the findings that frugal consumers have a high probability of engaging with sustainable apparel consumption practices through style consumption (Cho et al., 2015).

In a study that segmented consumers based on their sustainable fashion behavior, it was found that the 'warm and thrifty' group of consumers reported higher levels of frugality and indicated they would repair their garments to invest in the longevity of their garments (Haines & Lee, 2021, p. 392). Inversely, the 'cold and frivolous' group of consumers with lower levels of frugality would not repair their garments for increased longevity (Haines & Lee, 2021, p. 392).

Frugality Hypothesis. Based on the literature, the following hypothesis was developed and can be seen in Figure 2.1:

Hypothesis 8 (H_8): Frugality positively influences sustainable repair.

Table 2.4
Overview of Factors

Factor	Consumption Phase	Method	Direction for Hypotheses	Author
Fashion trend sensitivity	Disposal	Quantitative	Negative influence with sustainable use phase practices	Lang & Armstrong, 2016
Fashion trend sensitivity	Disposal	Qualitative	Negative influence with sustainable wear	Birtwistle & Moore, 2007
Fashion trend sensitivity	Disposal	Quantitative	Negative influence with sustainable repair	McNeill, Hamlin, McQueen,

				Degenstein, Garrett, et al., 2020
Style orientation	Acquisition	Quantitative	Positive influence with sustainable wear	Cho et al., 2015
Style orientation	Acquisition	Quantitative	Positive influence with sustainable wear	Gupta et al., 2019
Style orientation	Acquisition	Quantitative	Positive influence with sustainable wear	Tiggemann & Lacey, 2009
Style orientation	Use phase	Mixed methods	Positive influence on sustainable use practice	Joyner Armstrong et al., 2017
Mindfulness	Sustainable consumption	Literature Review	Positive influence on sustainable wear	Bahl et al., 2016
Mindfulness	Use	Qualitative	Positive influence on sustainable wear	Fletcher, 2016;
Mindfulness	Use	Conceptual	Positive influence on sustainable wear	Lopes & Gill, 2015
Mindfulness	Sustainable consumption	Framework development?	Positive influence on sustainable use practice	Sheth et al., 2011
Frugality	Use	Quantitative	Positive influence on sustainable repair	Haines & Lee, 2021
Frugality	Acquisition	Quantitative	Positive influence on sustainable use practice	Cho et al., 2015

Note. This table summarizes the literature which supports each hypothesis and research question, while also summarizing the nature of the literature.

Demographics

It is reasonable to presume that demographic factors such as age and gender may moderate the strength of associations between personal factors of fashion trend sensitivity and style orientation with wear, care, and repair practices, as well as mindfulness with wear practices and frugality with repair practices (Cho et al., 2015; Gupta et al., 2019; Lopes & Gill, 2015; McNeill, Hamlin, McQueen, Degenstein, Garrett et al., 2020). In previous research the effect of fashion trend sensitivity on sustainable consumption behaviors, the sample studied were predominately young consumers, age 18-34 years of age with a majority of the sample group being 18-24 years old (McNeill, Hamlin,

McQueen, Degenstein, Garrett et al., 2020). A similar sample was analyzed in a style orientation study; particularly young female consumers, age 16 to 35 years of age with a mean age of 26.2 years (Gupta et al., 2019). Regarding frugality in sustainable consumption research, females had a greater tendency in frugal apparel consumption compared to males (Cho et al., 2015). Cho et al. (2015) study sought to extend previous research by providing a clearer picture of the impact of age and gender specifically on these personal factors (fashion trend sensitivity, style orientation, mindfulness, and frugality) for sustainable consumption.

Within sustainable consumption literature, researchers have considered how sustainable consumption habits differ between generational cohorts, but did not discuss how sustainable consumption could vary by different age groups (Brough et al., 2016; Bulut et al., 2016; Costa Pinto et al., 2014). In acquisition research, Park et al. (2017) used age and gender to segment sustainable consumers into four groups: traditioners, apathetic shoppers, holistic shoppers, and concerned shoppers. Traditioners and concerned shoppers consisted of primarily 51 years and older and predominately female, while apathetic and holistic shoppers, had a higher percentage of males under the age of 40 (Park et al., 2017). Age and gender have also been influential in clothing disposal studies, with findings that clothing disposal frequency and methods of disposal can be influenced by age, observing that the younger group of participants disposed of clothing more frequently compared to the older participants (Lang & Armstrong, 2016). The researchers also observed differences in gender pertaining to reasons for clothing disposal. Females were likely to dispose of clothing because they were bored with the

item, or it was out of fashion while males were likely to dispose of their items because it was worn out or had an incorrect fit (Lang & Armstrong, 2016).

Within clothing use phase research, observations about the effect of age and gender on domains of wear, care, and repair have been made. Variances in repair skills based on age demographics was observed in Norum's (2013) research through self-reported scales of 1-poor to 4-excellent and 0 having never learned the skill. Finding that Baby Boomers have a higher self-reported hemming and button score as well as higher self-reported sewing skills compared to Generation Y (Norum, 2013). Regarding clothing longevity, males are more prone to keep their clothing in active use longer than the average use of 3.3 years (Langley et al., 2013). To further understand the use phase of the consumption cycle it is important to understand how personal factors influence a consumer's behavior.

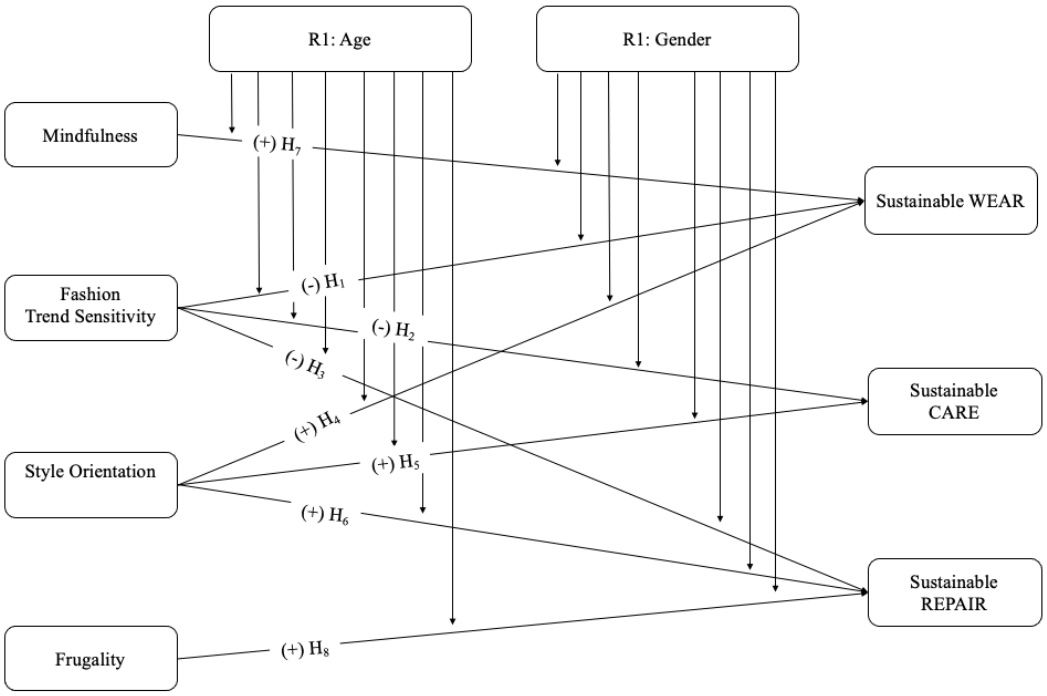
Research Question

Considering previous literature within the acquisition and disposal phases as well as the limited literature on the use phase, the following research question has been formulated:

Research Question 1 (R_1): How does age and gender influence wear, care, and repair behaviors?

Figure 2.1

Theoretical Model Depicting Hypotheses 1-8 and Research Question 1



Note. This conceptual model provides an illustration and summary of all the aforementioned hypotheses and research questions implicated in this study.

Chapter Summary

This chapter reviewed literature of sustainable clothing consumption within general consumption and the phases, with an emphasis on the use phase detailing the aspects of sustainable wear, care, and repair practices. The literature review discussed the importance of personal factors on consumption research and how it can be applied to the use phase based on previous research about acquisition and disposal. The eight hypotheses and one research question were proposed within this chapter to explore the research gap.

CHAPTER III

METHODS

This section discusses the research methods that were utilized to collect and analyze data. The research methods were utilized to reach a clearer understanding about the role of fashion trend sensitivity, style orientation, mindfulness, and frugality on sustainable wear, care, and repair practices that have been defined in the previous chapter. This chapter begins with a description of the research design followed by data collection and a description of the targeted population. This chapter concludes with the data analysis strategies.

Research Design

This research involved an online survey administered through Qualtrics with a structured questionnaire and cross-sectional design. An online survey may facilitate timely collection of participants opinions compared to other research methods such as focus groups and in-depth interviews while increasing the number or respondents. Online studies are also relatively inexpensive compared to paper and pencil questionnaires and can be standardized and confidential/anonymous (Mills & Gay, 2016). A cross-sectional study design was chosen because it captures a specific point in time about current attitudes and behaviors within a population (Mills & Gay, 2016). The sampling frame for

this study consisted of a consumer panel purchased from an online research company, Centiment.

Population and Sample

This study analyzed a population of consumers who live in the United States. The sample group for this research consisted of males and females, aged 19 years and older. The sample was limited to a population of individuals that participated in online consumer panels, which may exclude consumers without access to the internet or those of such high socio-economic status that they may not respond to paid panel surveys. The desired sample size for this study was determined to be 400 participants and requested by the researcher to be collected through the online consumer panel. This sample size was based on a confidence level of 95%, a confidence interval of +/- 5, and the composition of the United States population gathered from the Census (U.S. Department of Commerce, 2020). A sample of this size is necessary to avoid skewing the data that may occur from small sample sizes, such as 200 or lower (Kline, 2010).

Data Collection

A questionnaire was developed in Qualtrics and administered online via Centiment, a third-party consumer panel. The questionnaire was separated into eight sections to collect data for analysis in supporting the hypotheses and research questions (see Table 3.7 for survey items).

Sections 1-3 included items related to sustainable wear, care, and repair practices. Section one measured sustainable wear. This section used the measurement of wardrobe engagement adopted from Joyner Armstrong et al. (2017) measuring a consumer's attention to their wardrobe and how they utilize each garment. For the purpose of this

study sustainable wear is defined as prolonging the wear of clothing by interacting with one's wardrobe through wearing items consistently, finding new ways to wear lesser worn garments, expanding the number of outfits with the same number or garments, and utilizing closet/wardrobe organization.

Section two measured the sustainable care habits of the consumer. Due to the majority of existing literature using multi-dimensional scales to measure laundry habits, the single dimension of the wardrobe preservation measurement adapted from Joyner Armstrong et al. (2017) was used to evaluate the second factor. This measurement required one item to be deleted, as it involved repair behaviors and this section only measured sustainable care behaviors. Sustainable care is defined through individuals' laundry practices and how they prolong the wearing capabilities of garments through attention to early stain removal, lower washing frequency and/or lower washing temperatures for washing and drying.

Section three measured sustainable repair practices. The questionnaire utilized the adoption of the impacts of fashion trend sensitivity on garment repair behavior from McNeill, Hamlin, McQueen, Degenstein, Garrett, et al. (2020) to measure sustainable repair. In this study sustainable repair is defined as repairing all garment's seams, lost buttons, zippers, etc., to the extent of one's capabilities and sought out through a tailor when repair is beyond one's capabilities.

Sections 4-7 included items related to personal factors of fashion trend sensitivity, style orientation, mindfulness, and frugality. Fashion trend sensitivity was measured with the construct measurement of fashion trend sensitivity adopted from Lang and Armstrong (2016). The fifth factor measured style orientation with the construct measurement of

personal style consciousness adopted from Tai (2005). The sixth factor measured mindfulness, utilizing the cognitive and affective mindfulness scale – revised (CAMS-R) from Feldman et al. (2007). Frugality, the seventh factor, measured frugal apparel consumption, adapted from Cho et al., (2015).

Table 3.5

Overview of Factor Measurement

Factor	Consumption phase	Method	Cronbach's alpha	Author
Wear (Wardrobe engagement)	General consumption	Mixed method	α= .72	Joyner Armstrong et al., 2017
Care (Wardrobe preservation)	General consumption	Mixed method	α= .71	Joyner Armstrong et al., 2017
Repair	Disposal	Quantitative	Not provided by authors	McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020
Fashion trend sensitivity	Disposal	Quantitative	α= .92	Lang & Armstrong, 2016
Revised Style Orientation (Style longevity)	General consumption	Mixed method	α= .85	Joyner Armstrong et al., 2017
*Original Style Orientation (Personal style consciousness)	Acquisition	Quantitative	α= .61	Tai, 2005
Mindfulness	Not consumption literature	Quantitative	α= .74	Feldman et al., 2007
Frugality	Acquisition	Quantitative	Not provided by authors	Cho et al., 2015

Note. This table summarizes the original measurements used in the questionnaire.

**Measurement was replaced after pilot study*

Finally, demographic data was collected in the last section of the questionnaire including age and gender, as well as other demographic items such as household income,

education, ethnicity, and household composition. For the purpose of this study, only age and gender were used in exploration of influences on sustainable use practices.

The first seven sections of the questionnaire have response options formatted in a 5-point Likert scale with response options following level of agreement (1 = *strongly disagree*, 2 = *somewhat disagree*, 3 = *neither agree or disagree*, 4 = *somewhat agree*, and 5 = *strongly agree*). One screening question at the beginning of the questionnaire was utilized prompting participants to confirm that they were 19 years of age or older. If the participant answered that they were not 19 years or older, they were taken to the end of the survey. In the sixth section of the questionnaire, the mindfulness factor, an attention check question was added, asking the participant to select a specific answer choice (Chakraborty & Sadachar, 2022). The use of this item aided the researcher to eliminate participants who may randomly select answers throughout the questionnaire. If the participant answered incorrectly to the attention check question, they were taken to the end of the questionnaire. Upon completing the survey, the participant was paid $3.75 by the consumer panel, Centiment, and not the researcher. The questionnaire was distributed in April 2022. The procedures, questionnaire and consumer panel were reviewed and approved by the Institutional Review Board (IRB) with Oklahoma State University's (OSU) Office of University Research Compliance prior to distribution of the questionnaire (IRB-22-60). The respondents for this study were contacted via email by Centiment.

Pilot Study

To ensure validity and reliability of the scales adapted from the literature, a pilot study was conducted prior to collecting data for the final study. The data from the pilot

study was collected through Qualtrics via emails provided by OSU's LISTSERV during March 2022. The LISTSERV, which was formally requested through the IRB process, allowing mass distribution of emails to reach students, staff, and faculty populations at the university. The parameters requested for the participants through the LISTSERV was all faculty, staff and students who were at least 19 years with a distribution of 50% male and 50% female. From the responses, 167 were usable after preparing the data, resulting in a 33.4% response rate. The pilot study was distributed to males and females equally, which means the pilot study sample was not representative of the U.S. population gender proportions. This data set consisted of primarily female participants (65.3%) and participants that were age 19 to 39 (73.1%), which is over the US population of 52% female and 40% 19 to 39 years (U.S. Census Bureau, 2019).

Response data from the pilot study was imported from Qualtrics into Statistical Package for the Social Sciences (SPSS) and prepared to eliminate incomplete responses. Preparation of the data included necessary editing, such as deleting any participant that did not 100% complete the survey. Deleting responses with less than 100% progress also eliminated any participants who did not consent to the study. The approach of eliminating incomplete responses was chosen for simplicity, as using linear interpolation was beyond the scope of the exploratory study. Out of 202 responses, only one participant accessed the study without participating, however, only 167 responses were completed in full. The participants demonstrated that they were attentive to the survey by selecting "*strongly agreed* (5)" on the attention check question of "Please select Strongly Agree of you are reading this statement". Failure to do so resulted in the deletion of that response. After confirming that all responses passed the attention check question, the attention check

question and data were removed from analysis. With the data remaining, the reverse-coded items were re-coded to reflect the same Likert scale as the remainder of the questionnaire. The questionnaire had three items that were reverse-coded within in the mindfulness factor that needed to be re-coded (Table 3.7, section 6).

Analysis of the pilot study data began with descriptive statistics such as composite scores, median split, and frequency tables. Next, scale reliability was analyzed through SPSS to determine the Cronbach's alpha score of each measurement. Then, the validity was examined through CFA through Mplus 7.0 software. Confirmatory factor analysis was utilized to determine if the items were loaded with factor loadings higher than a minimum value of 0.40, and to their respective factors as the original scale from where it was adapted/adopted (Fornell & Larcker, 1981). Alpha scores are generally considered across social science disciplines at the level of alpha = 0.7 as acceptable, 0.8 as good and 0.9 as excellent (George & Mallery, 2010). Sustainable wear had a Cronbach's alpha score of 0.57, sustainable care with 0.43, style orientation with 0.53, and mindfulness score of 0.83. Although mindfulness fell within a good range of an alpha score, some of the items, if deleted would increase the alpha score. Due to these findings, the questionnaire survey items used in the pilot study were revised to increase the Cronbach's alpha score within the 0.7 – 0.9 range for the final study.

To increase the Cronbach's alpha score for sustainable wear, the measurement needed to reflect the prolonging of wearing a garment. An aspect of prolonging the wear of a garment can consist of wardrobe/closet organization. Although the original measurement does reflect some organization habits, the original measurement used language such as 'clean' when actually questioning about 'organizing' the

wardrobe/closet. This may have been confusing to participants as another factor in the study was sustainable care, which had aspects of cleaning/laundering. The measurement for sustainable wear originally consisted of five items. With the new revisions, eight items were utilized to measure sustainable wear. These revisions consisted of language that may be considered more use phase centered. For example, item one was "I clean my wardrobe regularly to get rid of the items I don't want" and revised to "I organize my wardrobe regularly to make sure I'm wearing all clothing items." Similar to sustainable wear, the revised items for sustainable care consisted of use phase language such as delaying laundry habits. The original sustainable care measurement consisted of four items. The new sustainable care measurement consisted of seven items, with revisions that consisted of removing the word 'try' to pair better with the Likert scale answer choices (*strongly disagree* to *strongly agree*). A more complex revision included revising the original item "I store clothing properly" to "I carefully store lightly worn clothing items to re-wear before washing it."

Sustainable repair's Cronbach's alpha score (0.68) was just under the acceptable level of 0.70. The original measurement and revised measurement both contained four items. The revisions included using more specific and detailed language, such as revising item one to "I repair when I really like the garment" to "I re-sew buttons, patch holes, or make other repairs to damaged garments."

The measurement for style orientation was removed altogether and replaced with a new measurement from Joyner Armstrong et al. (2017). The new measurement required revisions of replacing the purchasing language with 'wearing' specific language, such as "I prefer to purchase clothing I know I can utilize for a long time" to "I prefer wearing

clothing I know I can utilize for a long time." One original item, with purchasing language, was retained since style orientation consists of use phase and acquisition phase practices. Lastly, the majority of the mindfulness scale was retained with two items receiving a small revision. The words 'usually' and 'try' were removed to increase agreement with the Likert scale answer choices (*strongly disagree* to *strongly agree*). All revisions to the survey items can be seen in Table 3.7.

Table 3.6

Cronbach's Alpha from Pilot Testing

Measurement	Cronbach's alpha	Before revision	After revision
		Number of items	Number of items
Sustainable wear	.57	5	8
Sustainable care	.43	4	7
Sustainable repair	.68	4	4
Fashion trend sensitivity	.87	5	5 (No revisions)
Style Orientation	.53	3	4
Mindfulness	.83	12	12
Frugality	.78	4	4 (No revisions)

Final Study

The final questionnaire was conducted at the end of April 2022 through the third-party research panel, Centiment, in the United States. Centiment solicited responses to an online survey by targeting the sample population through emails and push notifications to their own database of participants. The participants responses were anonymized through Centiment's distinct tagging system that designated a custom variable to each respondent, which also ensured avoidance of participant duplication. Participants were compensated by Centiment through PayPal or could choose to donate their earnings to a nonprofit organization. Depending on the participants answer, they were redirected to the end of the study with no compensation or the end of the study with compensation.

Data Analysis

The collected data was imported from Qualtrics into Microsoft Excel where the data was coded, into numerical values from the Likert scale responses: *strongly disagree* = 1, *somewhat disagree* = 2, *neither agree or disagree* = 3, *somewhat agree* = 4, and *strongly agree* = 5. All reverse coded items were re-coded and open-ended questions were transcribed. For the descriptive statistics, composite scores, median split, and frequency tables were compiled through SPSS version 27. Assuming the data was normally distributed and met the assumptions of maximum likelihood estimation, CFA was utilized to test the hypotheses through structural equation modeling (SEM) within Mplus 7.0. The analysis method utilized to test the research question was a multivariate analysis of covariance (MANCOVA) within SPSS 27.

Reliability and Validity

Similar to the pilot study, CFA was utilized to ensure that the scale items loaded successfully and evaluate the validity of the questionnaire. To ensure reliability only Cronbach's alpha scores between 0.7-0.9 were accepted, which indicates adequate internal consistency for each measurement. This range was established from a general rule of thumb where an alpha score of 0.7-0.79 is acceptable, 0.8-0.89 is good and 0.9 or higher is excellent (George & Mallery, 2010).

Table 3.7

Survey Items

Construct	Original scale item	Revised item (Post-pilot)	Related hypothesis/ Research question
Section 1: Sustainable Wear *Joyner Armstrong et al., 2017	I clean my wardrobe regularly to get rid of the items I don't want.	I organize my wardrobe regularly to make sure I'm wearing all clothing items.	H1: Fashion trend sensitivity negatively influences sustainable wear.
	I organize my wardrobe regularly to find ideas about how to mix and match my clothes.	I wear my clothing items multiple ways to increase their use.	
	I can always dig into my wardrobe and find some items I can use.	I mix and match my clothing items to increase their use.	H4: Style Orientation positively influences sustainable wear.
	I like to go through my wardrobe when I don't know what to wear.	I shop my wardrobe before buying new clothing item.	
	I utilize many items in my wardrobe.	I utilize many items in my wardrobe.	H7: Mindfulness positively influences sustainable wear.
		I like to go through my wardrobe when I don't know what to wear.	
		I can always dig into my wardrobe and find some items I can use.	R1: How does age and gender influence wear, care, and repair behaviors?
		I organize my wardrobe regularly to find ideas about how to mix and match my clothes.	

Section 2: Sustainable Care *Joyner Armstrong et al., 2017	I try to rotate wearing clothing items, so they do not get worn out. When a clothing item gets stained from food or a spill, I take immediate action and clean the stain right.	I rotate wearing my clothing items, so they do not get worn out.	H2: Fashion trend sensitivity negatively influences sustainable care.
		I air out worn clothing items, so I can re-wear it before washing it.	
	I store clothing properly.	I carefully store lightly worn clothing items to re-wear before washing it.	H5: Style Orientation positively influences sustainable care.
	I avoid laundering and/or dry cleaning my clothing unnecessarily.	I keep unnecessary laundering and/or dry cleaning to a minimum.	
		I do not wash lightly worn clothing right away.	R1: How does age and gender influence wear, care, and repair behaviors?
		I wear clothing carefully so as to not get it dirty (so I can delay washing it).	
		I avoid laundering and/or dry cleaning my clothing unnecessarily.	
Section 3: Sustainable Repair *McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020	I repair when I really like the garment	I re-sew buttons, patch holes, or make other repairs to damaged garments.	H3: Fashion trend sensitivity negatively influences sustainable repair.
	I repair high priced garments	I repair my garments	
	I use a seamstress when I cannot repair myself	I use a professional service when I cannot repair a garment myself.	H6: Style Orientation positively influences sustainable repair.

	I repair fast fashion garments	When a garment is damaged, I repair it/have it repaired.	R1: How does age and gender influence wear, care, and repair behaviors?
Section 4: Fashion Trend Sensitivity Lang & Armstrong, 2016	I am usually the first to know the latest fashion trends.	No Change	H1: Fashion trend sensitivity negatively influences sustainable wear.
	I am usually the first among my friends to buy the latest styles.	No Change	H2: Fashion trend sensitivity negatively influences sustainable care.
	Friends regard me as a good source of fashion advice.	No Change	H3: Fashion trend sensitivity negatively influences sustainable repair.
	I like to buy new clothing that just came out.	No Change	H8: Frugality positively influences sustainable repair.
	I usually have one or more outfits of the very latest styles.	No Change	
Section 5: Style Orientation	When buying clothes, I like to buy those which emphasize my own characteristics.	Removed from study completely	None

Tai, 2005	I prefer to buy things that reflect my personal taste and interests instead of choosing trendy products. When buying clothes, I will consider whether they suit my occupational characteristics.		
Revised Section 5: Style Orientation *Joyner Armstrong et al., 2017	I prefer to purchase clothing I know I can utilize for a long time.	I prefer wearing clothing I know I can utilize for a long time.	H4: Style Orientation positively influences sustainable wear.
	I typically purchase clothing I know will fit my personal style for a long time.	I typically wear clothing that fits my personal style for a long time.	
	When purchasing clothing, I like to know it will work with my personal style for a long time.	When purchasing clothing, I like to know it will work with my personal style for a long time.	H5: Style Orientation positively influences sustainable care.
	I prefer to purchase clothing that is more timeless.	I wear clothing that is more timeless.	H6: Style Orientation positively influences sustainable repair
Section 6: Mindfulness *Feldman et al., 2007	It is easy for me to concentrate on what I am doing.	No Change	H7: Mindfulness positively influences sustainable wear.
	I am preoccupied by the future. R	No Change	
	I can tolerate emotional pain.	No Change	

	I can accept things I cannot change.	No Change	
	I can usually describe how I feel at the moment in considerable detail.	I can describe how I feel at the moment in considerable detail.	
	I am easily distracted. R	No Change	
	I am preoccupied by the past. R	No Change	
	It's easy for me to keep track of my thoughts and feelings.	No Change	
	I try to notice my thoughts without judging them.	I notice my thoughts without judging them.	
	I am able to accept the thoughts and feelings I have.	No Change	
	I am able to focus on the present moment.	No Change	
	I am able to pay close attention to one thing for a long period of time.	No Change	
	I discipline myself to get the most from my money when buying clothes.	No Change	
Section 7: Frugal Apparel Consumption *Cho et al., 2015	I believe in being careful in how I spend my money on clothes.	No Change	H8: Frugality positively influences sustainable repair.
	When buying clothes, there are clothes I resist buying today so I can save for tomorrow.	No Change	
	I am willing to wait on a purchase of clothes I want so that I can save money.	No Change	

Section 8: Demographics	What gender do you identify as?	No Change	R1: How does age and gender influence wear, care, and repair behaviors?
	What is your exact age? (in years)	No Change	
	What is your annual household income?	No Change	
	What is the highest degree or level of education you have completed?	No Change	Additional information collected
	Please specify your ethnicity.	No Change	
	Number of family members within the household.	No Change	

Note. R = Reverse coded item

*Adapted measure

Chapter Summary

This chapter established the design of the study, the sampling plan, and the construction of the questionnaire. After reviewing the previous literature, reliability and validity were addressed within the study and the data analysis plan was established.

CHAPTER IV

FINDINGS

The previous chapter explained the method used to collect data and plan for analysis. The results of data analysis are presented in this chapter. This chapter starts with descriptive statistics, including the profile and analysis of the respondents and analysis of the main variables. The data analysis reported contains reliability testing of the measurements utilizing CFA, hypotheses testing utilizing SEM and the research question testing utilizing MANCOVA.

Data Analysis

With the revised questionnaire from the pilot study, data was collected for the final study during the last week of April 2022 through the first week of May 2022. With the approval of the IRB (IRB-22-60) the questionnaire was administered through a third-party consumer panel, Centiment, which is hosted via Qualtrics. In five days of data collection, 668 responses were collected. Out of the 668 responses, 625 participants accessed the study but did not participate and only 419 responses collected were valid. The data collected was imported from Qualtrics into Excel for preparation. Data preparation was conducted to confirm the data and to perform any necessary editing, coding, reverse coding, and transcribing. After preparation, the data was imported into SPSS for analysis.

Descriptive Statistics

To begin in understanding the findings of the study composite scores, median split and frequency tables were utilized through SPSS version 27. Below is the analysis of the descriptive statistics for the respondents and the variables.

Profile and Analysis of Respondents

Demographic information including age, gender, highest level of education, household income, ethnicity, and household composition were collected. Descriptive and frequency analyses were utilized with this demographic information. The targeted population sought for this study were consumers whose age and gender mirrored the U.S. population. To develop a representative sample similar to the U.S. population, a consumer panel of the targeted population was purchased from an online consumer panel, Centiment, who mirrored census data for participants of the study. The results closely aligned with 2019 census data, with ages 19-39 years comprising 40% of the population, ages 40-64 years comprising 40% of the population, ages 65 years and older comprising 20% of the population, and gender makeup consisting of 48% male and 52% female (U.S. Census Bureau, 2019). The summary of the demographics for study participants is presented in Table 4.8 and discussed below.

Table 4.8

Characteristics of the Sample (N=419)

Demographics		Mean	*SD*	Frequencies	
				N	%
Age		1.83	0.75		
	18-39			160	38.2
	40-64			171	40.8

	65 +			88	21.0
Gender		1.53	0.51		
	Male			198	47.3
	Female			218	52.00
	Non-Binary/Third Gender			3	0.7
Education		3.39	1.51		
	Some High School, No Diploma			20	4.8
	High School			138	32.9
	Some college			92	22.0
	2-year degree			44	10.5
	4-year degree			84	20.0
	Masters/MBA			33	7.9
	Doctorate			8	1.9
Income		5.55	3.47		
	less than or equal to $10,000			47	11.2
	$10,001 - $19,999			48	11.5
	$20,000 - $29,999			50	11.9
	$30,000 - $39,999			50	11.9
	$40,000 - $49,999			41	9.8
	$50,000 - $59,999			43	10.3
	$60,000 - $69,999			19	4.5
	$70,000 - $79,999			28	6.7

	$80,000 - $89,999			13	3.1
	$90,000 - $99,999			18	4.3
	$100,000 - $149,999			36	8.6
	More than or equal to $150,000			18	4.3
	Prefer not to say			8	1.9
Ethnicity		1.55	1.31		
	White			311	74.2
	Black or African American			64	15.5
	American Indian or Alaska Native			8	1.9
	Asian			20	4.8
	Hispanic Latino			6	1.4
	Mixed Race			2	0.5
	Other			7	1.7
Household Composition		2.71	2.13		
	1			90	21.5
	2			146	34.8
	3			87	20.8
	4			46	11.0
	5			31	7.4
	6			8	1.9
	7			9	2.1
	8			1	0.2
	35			35	0.2

As shown in Table 4.8, of the 419 participants, 160 were aged 18-39 years (38.2%), 171 were aged 40-64 years (40.8%), and 88 were aged 65 years or older (21.0%). A greater percentage of the participants (52.0%) were female (*N*=218) while 47.3% were male (*N*=198) and a small percentage (0.7%) of the participants identified as non-binary or a third gender (*N*=3). The majority of the participants were college-educated, as 169 participants earned a college degree and beyond (40.3%). Regarding household income, 195 participants reported that they annual household income of less than US$39,999 (46.5%), and 131 participants reported their annual household income was between US$40,000-$79,000 (31.3%). A majority of the participants in this sample were Caucasian/white (74.2%) followed by African American/Black (15.5%) and Asian (4.8%) participants. For household composition a majority of the participants (88.1%) reported four or less people living in the home, including themselves, while 50 participants (11.8%) reported five or more people living in the home, including themselves.

Variables Descriptive Analysis

This study was designed to test eight hypotheses and provide evidence for one research question. The variables measured within the research used a 5-point Likert scale of 1 = "strongly disagree" to 5 = "strongly agree." Table C-1 to C-7 (see Appendix C) presents the minimum, maximum, mean scores, and standard deviation of each variable.

In this study, sustainable use practices were measured within three domains: sustainable wear, care, and repair. The overall mean for sustainable wear was 3.68 (SD=0.80). This suggests that the consumers in the study engaged in sustainable wear practices. The sustainable wear item with the highest mean (*M*=3.83, *SD*=1.12) was "I

wear my clothing items multiple ways to increase their use." The item "I organize my wardrobe regularly to make sure I'm wearing all clothing items" had the lowest mean score (*M*=3.21, *SD*=1.32). Three items were removed during CFA to increase validity and model fit totaling of five items remaining after revisions. Revisions of the measurement can be seen in Table 4.9.

The overall mean for sustainable care was 3.50 (SD=0.94). This suggests that the consumers in the study engaged in sustainable care practices. The item "I keep unnecessary laundering and/or dry cleaning to a minimum" had the highest mean (*M*=3.80, *SD*=1.19), while the item with the lowest mean (*M*=3.16, *SD*=1.40) was "I air out worn clothing items, so I can re-wear it before washing it." After CFA, two items were removed to increase validity and model fit totaling five items remaining after revisions (Table 4.10).

The overall mean for sustainable repair was 3.14 (SD=1.17). This suggests that the consumers in the study did not practice sustainable repair behaviors. The item with the highest mean (*M*=3.25, *SD*=1.46) was "I re-sew buttons, patch holes, or make other repairs to damaged garments" and "When a garment is damaged, I repair it/have it repaired" had the lowest mean (*M*=3.22, *SD*=1.40). After CFA one item was removed to increase validity and model fit totaling three items remaining after revisions (Table 4.11).

Personal factors measured in this study were fashion trend sensitivity, style orientation, mindfulness, and frugality. The overall mean for fashion trend sensitivity was 2.64 (SD=1.29). This suggests that the consumers in the study were not sensitive to fashion trends. The item with the highest mean (*M*=2.81, *SD*=1.47) was "I usually have one or more outfits of the very latest style" and the item with the lowest mean (*M*=2.43,

SD=1.42) was “I am usually the first among my friends to buy the latest styles.” The overall mean for style orientation was 4.12 (SD=0.74). This suggests that the consumers in the study were oriented to a personal style instead of following fashion trends. The item with the highest mean (*M*=4.28, *SD*=0.84) was “I prefer wearing clothing I know I can utilize for a long time” and the lowest mean (*M*=3.88, *SD*=0.97) was “I wear clothing that is more timeless.”

The overall mean for mindfulness was 3.53 (SD=0.69). This suggests that the consumers in the study exhibited mindfulness behaviors. The item with the highest mean (*M*=3.94, *SD*=1.05) was “I am able to focus on the present moment” and the lowest mean (*M*=3.56, *SD*=1.12) was “I notice my thoughts without judging them.” After analysis, three items were removed to increase validity and model fit, totaling nine items remaining after revisions.

The overall mean for frugality was 4.05 (SD=0.81). This suggests that the consumers in the study were frugal in their purchasing habits. The item with the highest mean (*M*=4.21, *SD*=0.89) was “I believe in being careful in how I spend my money on clothes” and the item with the lowest mean (*M*=3.85, *SD*=1.11) was “When buying clothes, there are clothes I resist buying today so I can save for tomorrow.” No revisions were made to the frugality items within the measurement. Any revisions to the personal factor measurements examining model fit can be seen in Table 4.12 to Table 4.15.

Reliability and Validity

To perform CFA Mplus (version 7.0) was utilized. To determine the CFA model fit, the χ^2/df, root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker Lewis fit index (TLI), and standardized root mean square residual (SRMR)

were utilized for analysis. Indicators of a good model fit suggested by Hooper et al. (2008), are a χ^2/df ratio < 3, RMSEA < 0.07, CFI and TLI > 0.90 and SRMR < 0.08. Therefore, the CFA model fit the data well (χ^2 = 1,033.42, df = 543, p < 0.001; χ2/df = 1.90; RMSEA = 0.05; CFI = 0.94, TLI = 0.93, SRMR = 0.06). Factor loadings of the items ranged between 0.57 and 0.92 (see Table 4.9-4.14). The Cronbach's alpha of all the scales were above 0.80, which are considered good alpha scores, above the minimum acceptable level of 0.70 (George & Mallery, 2010). Additional validity for the measures utilized in the study comes from the existing research that validated the item scales used in the measure (Cho et al., 2015; Feldman et al., 2007; Joyner Armstrong et al., 2017; Lang & Armstrong, 2016; McNeill, Hamlin, McQueen, Degenstein, Garrett et al., 2020) (see Table 3.5).

Sustainable Wear

The standardized factor loadings for the items W3, W4, and W7 were higher than 0.4; however, the factor loadings were lower compared with the other five wear items. The description of these three items (W3, W4, W7) were more reflective of delaying clothing acquisition, while the other five wear items were related to garment utilization and wardrobe organization. Considering this scale was to measure sustainable wear, W3, W4, and W7 were eliminated, which improved the model fit (see Table 4.9).

Table 4.9

Measurement of Latent Variable: Sustainable Wear (α=.83), after removing W3, W4, and W7 (α=.81)

Sustainable wear item			Remove W3, W4, and W7	
	Standardized factor loading	S.E.	Standardized factor loading	S.E.

W1-I organize my wardrobe regularly to make sure I'm wearing all clothing items.	0.77	0.03	0.81	0.02
W2-I wear my clothing items multiple ways to increase their use.	0.65	0.03	0.59	0.04
W3-I mix and match my clothing items to increase their use.	0.50	0.04	Removed item	
W4-I shop my wardrobe before buying new clothing item.	0.54	0.04	Removed item	
W5-I utilize many items in my wardrobe.	0.63	0.03	0.57	0.04
W6-I like to go through my wardrobe when I don't know what to wear.	0.62	0.03	0.62	0.03
W7-I can always dig into my wardrobe and find some items I can use.	0.44	0.04	Removed item	
W8-I organize my wardrobe regularly to find ideas about how to mix and match my clothes.	0.76	0.03	0.81	0.02

Sustainable Care

The standardized factor loadings for C1 and C7 were higher than 0.4, although the loading was lower compared with the other five care items. The description of C1 (rotating clothes so they are not worn out) was also reflected in C6 (carefully wearing clothes). Similar to C1 and C6, the description of C7 (laundry avoidance) was reflected in C4 (laundering to a minimum). Therefore, C1 and C7 were eliminated as the factor loadings were higher in C4 and C6. The elimination of these two care items improved the overall model fit (see Table 4.10).

Table 4.10

Measurement of Latent Variable: Sustainable Care (α=.85), after removing C1 and C7 (α=8.29)

Sustainable care item			Remove C1 and C7	
	Standardized factor loading	S.E.	Standardized factor loading	S.E.
C1-I rotate wearing my clothing items, so they do not get worn out.	0.59	0.04	Removed item	
C2-I air out worn clothing items, so I can re-wear it before washing it.	0.74	0.03	0.76	0.03
C3-I carefully store lightly worn clothing items to re-wear before washing it.	0.76	0.03	0.77	0.03
C4-I keep unnecessary laundering and/or dry cleaning to a minimum.	0.61	0.04	0.57	0.04
C5-I do not wash lightly worn clothing right away.	0.72	0.03	0.73	0.03
C6-I wear clothing carefully so as to not get it dirty (so I can delay washing it).	0.67	0.03	0.68	0.03
C7-I avoid laundering and/or dry cleaning my clothing unnecessarily.	0.57	0.04	Removed item	

Sustainable Repair

The standardized factor loadings for R3 was higher than 0.4, an acceptable value, however, the standardized factor loading for R1, R2, and R4 were more than double the value of R3. Due to the disparity between the factor loadings R3 was removed. Similar to the sustainable care scale, the item R3 ("I use a professional service when I cannot repair a garment myself") was similar to item R4 ("when a garment is damaged, I repair it/have it repaired"). Therefore, R3 was eliminated as the factor loadings were higher in R4. The elimination of R3 improved the reliability of the scale and the overall model fit (see Table 4.11).

Table 4.11

Measurement of Latent Variable: Sustainable Repair (α=.83), after removing R3 (α=.90)

Sustainable repair item			Remove R3	
	Standardized factor loading	S.E.	Standardized factor loading	S.E.

R1-I re-sew buttons, patch holes, or make other repairs to damaged garments.	0.87	0.02	0.87	0.02
R2-I repair my garments	0.90	0.02	0.90	0.02
R3-I use a professional service when I cannot repair a garment myself.	0.42	0.04	Removed item	
R4-When a garment is damaged, I repair it/have it repaired.	0.82	0.02	0.82	0.02

Personal Factors

Tables 4.12-4.15 include the factor loadings of each of the scales, with 5 items for fashion trend sensitivity, 4 items for style orientation, 4 items for frugality, and 12 items for mindfulness. The first three scales (fashion trend sensitivity, style orientation and frugality) required no elimination of items to increase reliability and model fit. Fashion trend sensitivity had a Cronbach's alpha score of 0.94, style orientation had an alpha score of 0.84, and frugality had an alpha score of 0.83. Each scale's items had standardized factor loadings within an appropriate range of each other (see Tables 14, 15, and 16 respectively). Within the scale for mindfulness, 3 of the 12 items had a standardized factor loading lower than 0.4. The overall reliability and model fit increased with the elimination of these three reverse coded items (M2, M6, and M7) (see Table 4.15).

Table 4.12

Measurement of Latent Variable: Fashion Trend Sensitivity (α=.94)

Fashion trend sensitivity item	Standardized factor loading	S.E.
FTS1-I am usually the first to know the latest fashion trends	0.90	0.01
FTS2-I am usually the first among my friends to buy the latest styles	0.92	0.01
FTS3-Friends regard me as a good source of fashion advice	0.86	0.01
FTS4-I like to buy new clothing that just came out	0.83	0.02

FTS5-I usually have one or more outfits of the very latest styles	0.87	0.01

Table 4.13

Measurement of Latent Variable: Style Orientation (α=.84)

Style orientation item	Standardized factor loading	S.E.
SO1-I prefer wearing clothing I know I can utilize for a long time.	0.78	0.03
SO2-I typically wear clothing that fits my personal style for a long time.	0.82	0.02
SO3-When purchasing clothing, I like to know it will work with my personal style for a long time.	0.76	0.03
SO4-I wear clothing that is more timeless.	0.66	0.03

Table 4.14

Measurement of Latent Variable: Frugality (α=.83)

Frugality item	Standardized factor loading	S.E.
F1-I discipline myself to get the most from my money when buying clothes.	0.73	0.03
F2-I believe in being careful in how I spend my money on clothes.	0.78	0.03
F3-When buying clothes, there are clothes I resist buying today so I can save for tomorrow.	0.72	0.03
F4-I am willing to wait on a purchase of clothes I want so that I can save money.	0.73	0.03

Table 4.15

Measurement of Latent Variable: Mindfulness ($\boldsymbol{\alpha}$=.82), after removing M2, M6, and M7 (α=.88)

Mindfulness item			Remove M2, M6 and M7	
	Standardized factor loading	S.E.	Standardized factor loading	S.E.

M1-It is easy for me to concentrate on what I am doing.	0.75	0.03	0.74	0.03
M2-I am preoccupied by the future. R	-0.08	0.05	Removed item	
M3-I can tolerate emotional pain.	0.58	0.04	0.58	0.04
M4-I can accept things I cannot change.	0.63	0.03	0.63	0.03
M5-I can describe how I feel at the moment in considerable detail.	0.59	0.04	0.59	0.04
M6-I am easily distracted. R	0.26	0.05	Removed item	
M7-I am preoccupied by the past. R	0.17	0.05	Removed item	
M8-It's easy for me to keep track of my thoughts and feelings.	0.73	0.03	0.73	0.03
M9-I notice my thoughts without judging them.	0.62	0.03	0.63	0.03
M10-I am able to accept the thoughts and feelings I have.	0.75	0.03	0.75	0.03
M11-I am able to focus on the present moment.	0.70	0.03	0.70	0.03
M12-I am able to pay close attention to one thing for a long period of time.	0.67	0.03	0.66	0.03

Note: R = Reverse coded items

Hypothesis Testing

Structural Equation Modeling through Mplus (version 7.0) was utilized to test the hypotheses 1 through 8. The model fit the data well (χ^2 = 1,033.42, df = 543, p < 0.001; χ2/df = 1.90; RMSEA = 0.05; CFI = 0.94, TLI = 0.93, SRMR = 0.06).

Table 4.16

Summary of Structural Equation Model

Paths	β	SE
H1: Fashion trend sensitivity negatively influences sustainable wear.	0.68***	0.04
H2: Fashion trend sensitivity negatively influences sustainable care.	0.34***	0.05
H3: Fashion trend sensitivity negatively influences sustainable repair.	0.28***	0.05
H4: Style Orientation positively influences sustainable wear.	0.21***	0.05
H5: Style Orientation positively influences sustainable care.	0.32***	0.05
H6: Style Orientation positively influences sustainable repair.	0.24***	0.07
H7: Mindfulness positively influences sustainable wear.	-0.01	0.05
H8: Frugality positively influences sustainable repair.	0.06	0.07
R^2		
Sustainable Wear	54.3%	

Sustainable Care	24.7%
Sustainable Repair	18.9%

***p<.001

Hypotheses 1, 2, and 3

Fashion trend sensitivity did not negatively influence sustainable wear (β = 0.68, $p < 0.001$), sustainable care (β = 0.34, $p < 0.001$), or sustainable repair (β = 0.28, $p < 0.001$). Thus, H1-3 were not supported (see Table 4.16). The opposite of the proposed hypotheses was evident from data collection, with fashion trend sensitivity positively influencing sustainable wear, care, and repair significantly. This result may suggest that one's interest in fashion trends heightens a consumer's engagement with their wardrobe (e.g., sustainable wear), preserving their clothing through care, and repairing items (McNeill, Hamlin, McQueen, Degenstein, Garrett et al., 2020).

Hypotheses 4, 5, and 6

Style orientation positively influence sustainable wear (β = 0.21, $p < 0.001$), sustainable care (β = 0.32, $p < 0.001$), and sustainable repair (β = 0.24, $p < 0.001$). Thus, supporting H4, H5, and H6 (see Table 4.16). These findings are congruent with current literature (Cho et al., 2015; Gupta et al., 2019; Tiggemann & Lacey, 2009; Joyner Armstrong et al., 2017).

Hypothesis 7

Although mindfulness had a low negative path coefficient in the relationship with sustainable wear, it did not reach statistical significance (β = -0.01, $p = 0.892$). Thus, H7 was not supported (see Table 4.16). This finding was incongruent with current literature as Joyner Armstrong et al. (2017) argued that sustainable wear practices include wardrobe engagement behaviors, which reflect a more mindful disposition in which

attentiveness and care can be deployed. The measurement utilized in this study for sustainable wear, was the wardrobe engagement measurement used in a style confidence scale created by Joyner Armstrong et al. (2017).

Hypothesis 8

Frugality positively influenced sustainable repair practices; however, it did not reach statistical significance ($\beta = 0.06$, $p < 0.377$). Thus, H8 was not supported (see Table 4.16). This finding may have not been supported as there could be a factor such as style orientation meditating the behaviors between frugality and sustainable repair practices (Cho et al., 2015). Cho et al. (2015) found that frugal apparel consumption significantly affected style consumption when exploring the style consumption's role in sustainable apparel consumption.

Research Question Testing Utilizing Multivariate Analysis of Covariance

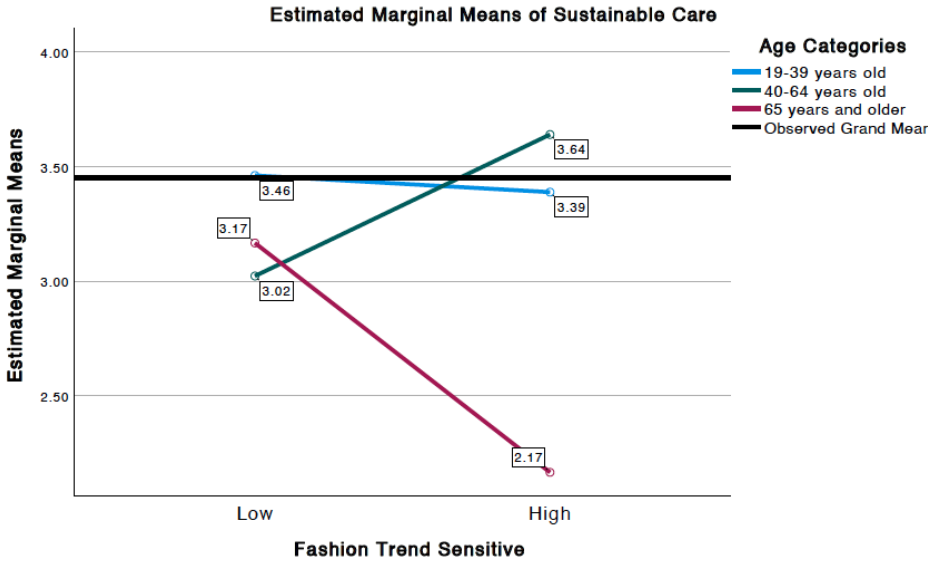
Multivariate analysis of covariance was utilized to explore the proposed research question within version 27 of SPSS. There was a significant main effect (meaning significant difference) of fashion trend sensitivity on sustainable wear ($F = 18.08$, $p<0.001$, $\eta_p^2 = 0.05$, Observed power = 0.99) and style orientation on sustainable repair ($F = 0.11$, $p=0.01$, $\eta_p^2 = 0.21$, Observed power = 0.78) There was a marginally significant main effect of mindfulness on sustainable repair ($F = 3.74$, $p=0.054$, $\eta_p^2 = 0.01$, Observed power = 0.49) and frugality on sustainable wear ($F = 2.90$, $p=0.09$, $\eta_p^2 = 0.01$, Observed power = 0.40).

Only one interaction reached marginal significance. There was a marginal significant interaction effect for fashion trend sensitivity and age on sustainable care practices (Figure 4.2). Consumers from ages 19 to 39 years old had a mean of 3.46 when

fashion trend sensitivity was low and a mean of 3.39 when fashion trend sensitivity was high, which were not significantly different to the grand mean (*M*=3.45). Consumers from ages 40 to 64 years old had a mean of 3.02 when fashion trend sensitivity was low and a mean of 3.64 when fashion trend sensitivity was high, placing the observed grand mean (*M*=3.45) in the middle. Consumers from ages 65 years and older scored lower than the observed grand mean when fashion trend sensitivity was low (*M*=3.17) and even lower when fashion trend sensitivity was high (*M*=2.17). All differences without significance in the interaction effect can be seen in plots within Appendix D.

Figure 4.2

Fashion Trend Sensitivity and Age on Sustainable Care



Chapter Summary

This chapter presented the data analysis results of this research. To begin the final data analysis, data preparation was conducted to ensure the data had the necessary editing, coding, reverse coding, and transcribing. After the data was prepared, the profile of the participants was analyzed, followed by descriptive statistics and reliability testing

utilizing SPSS 27. Next, the data was transferred to Mplus 7.0 for validity and hypotheses testing. From the statistic results of CFA, a number of items were removed from original measures for sustainable wear, sustainable care, sustainable repair, and mindfulness.

With the refined measurement model based on the pilot study findings, SEM was utilized for hypotheses testing. The results indicated that fashion trend sensitivity does not have a negative influence on sustainable wear, care, and repair practices and style orientation does have a positive influence on sustainable use practices. The results also indicated that mindfulness does not have a positive influence on sustainable wear practices, while frugality does have a positive influence on sustainable repair, though it did not reach statistical significance.

Then, the research question was explored via a MANCOVA test in SPSS 27. The statistic results indicated that there was a significant main effect of fashion trend sensitivity on sustainable wear practices and of style orientation on sustainable repair practices. There was a marginal statistically significant main effect of mindfulness on sustainable repair practices and of frugality on sustainable wear practices. There was only one marginal significant interaction effect of fashion trend sensitivity and age on sustainable care practices. None of the other interaction effects were statistically significant.

CHAPTER V

DISCUSSION AND CONCLUSION

The purpose of this study was to investigate the use phase of clothing as it relates to sustainable consumer behavior and to understand how personal factors (fashion trend sensitivity, style-orientation, mindfulness, and frugality) may influence use phase practices and how these personal factors may be influenced by demographic factors (age and gender). The goal of this research was to understand the personal attributes that influence engagement in sustainable clothing use behaviors. Eight hypotheses and one research question were proposed for study. A questionnaire was developed utilizing previously developed measures of sustainable use practice behaviors (e.g., sustainable wear, care, repair) as well as personal factors that may influence these behaviors (e.g., fashion trend sensitivity, style orientation, frugality, mindfulness). The potential moderation of age and gender on these personal factors was also explored. A pilot study was conducted to improve the final questionnaire. A variety of statistical analyses were conducted, including descriptive analysis, SEM, and MANCOVA to answer the hypotheses and research question. This chapter discusses the findings, and then explored the theoretical and practical implications of the main findings. Finally, limitations and potential future research guidance are discussed.

Summary of Research Findings

This research explored four personal factors and their influence on sustainable clothing use practices of wear, care, and repair. Sustainable clothing use practice for the purpose of this study was defined by wearing, caring, and repairing clothing in a way that extends the life of a garment. Consumers show sustainable wear practices through engagement with their wardrobe by wearing garments multiple ways and organizing their garments in a way to mix and match items easily (Fletcher, 2016; Joyner Armstrong et al., 2017; Lopes & Gill, 2015). Consumers who intend to delay immediate washing of their garments to prolong the garments use, as well as repair broken garments (e.g., ripped hems or small holes), demonstrate sustainable care and repair practices (Cline, 2019; Fletcher, 2016; Joyner Armstrong et al., 2017; Koch & Domina, 1997; Laitala et al., 2011; Pardue, 2005).

Eight hypotheses were generated based on previous literature. The first three hypotheses argued that fashion trend sensitivity would negatively influence sustainable clothing use practice (wear, care, and repair). Fashion trend sensitivity is the amount of attention a consumer dedicates to the latest fashion trends (Lang & Armstrong, 2016). A consumer who is more fashion trend sensitive is likely to have higher levels of acquisition and disposal, which is incongruent with sustainable use phase behaviors (Birtwistle & Moore, 2007; Lang & Armstrong, 2016; McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020). Hypotheses 1-3 were not supported (see Table 4.16); the statistical results for the research question did show statistical significance of the main effect of fashion trend sensitivity on sustainable wear practices. Fashion trend

sensitivity also had a marginally significant interaction effect with age on sustainable care practices.

Style orientation is the tendency for consumers to dress according to their personal style and their own characteristics regardless of fashion trends (Gupta et al., 2019). Hypotheses 4-6 postulated that style orientation would positively influence sustainable clothing use practice and were supported by the findings (see Table 4.16), which is congruent with the literature (Cho et al., 2015; Gupta et al., 2019; Tiggemann & Lacey, 2009; Joyner Armstrong et al., 2017).

Mindfulness is defined as connecting to the present moment without judgment (Kabat-Zinn, 2003) and creating a sense of self-awareness to the current experience (Bishop et al., 2004). Hypothesis 7 posited that there would be a positive influence from mindfulness on sustainable wear practices. Mindfulness did not have a positive influence on sustainable wear practices within SEM, however there was a marginal significant main effect of mindfulness on sustainable repair practices. Frugality explains consumer behavior that restricts purchasing and encourages resourcefulness of using goods and services (Lastovicka et al., 1999). Hypothesis 8 proposed that frugality would positively influence sustainable repair practices, but did not reach statistical significance. The statistical results for the research question showed a marginal significant main effect of frugality on sustainable wear practices.

The role of demographics (age and gender) was also explored in this study. The statistical results revealed that only age when combined with fashion trend sensitivity had a marginal statistically significant interaction effect on sustainable care practices, following similar findings to Norum (2013), who found that age was statistically

significant for laundry knowledge. None of the other interaction effects were statistically significant.

The Role of Personal Factors in Influencing Sustainable Wear, Care, and Repair

The four personal factors explored in this study were fashion trend sensitivity, style orientation, mindfulness, and frugality. In this section discussion includes the implications of the four personal factors on sustainable wear, care, and repair.

Fashion Trend Sensitivity

Statistical results indicated that fashion trend sensitivity had a statistically significant positive influence on sustainable wear, sustainable care, and sustainable repair practices, which is the opposite of the proposed negative influence (H1-3). Meaning, consumers who regularly follow and buy current fashion trends may also engage in some sustainable wear, care, and repair practices. These findings were incongruent with previous literature as it supports the idea that fashion trend sensitivity would be a driver of unsustainable behaviors. Birtwistle and Moore (2007) found that fashion trend sensitive consumers wore garments for social events and only a few times before disposal. Trend sensitive consumers were also labeled as impulse shoppers and frequent garment disposers (Lang & Armstrong, 2016; Park et al., 2006). A disparity was observed in the current study which supports the need for future research. These findings are incongruent with prior research, possibly due to one's interest in fashion trends being heighten through their engagement with their wardrobe, preserving their clothing through care, and repairing items. McNeill, Hamlin, McQueen, Degenstein, Garrett et al. (2020) found that consumers repaired their trendy items to extend the life of the garment, due to the researchers' assumption that trendy clothes were of lower quality and needed to be

repaired before the garment went out of the fashion trend. Of age and gender, age had a marginal significant effect with fashion trend sensitivity on sustainable care practices. This indicates that age may influence the way consumers engage with sustainable care practices suggesting that the findings from previous literature, which focuses on young female consumers, could be different for older consumers (Birtwistle & Moore, 2007; Lang & Armstrong, 2016; McNeill, Hamlin, McQueen, Degenstein, Garrett et al., 2020).

These results draw into question the suitability of the measures selected for this study. Perhaps, fashion trend sensitivity is more effective at measuring influence on buying behavior, as seen through the increased acquisition of fashion garments responsive to rapidly changing trends (Birtwistle & Moore, 2007; Lang & Armstrong, 2016). Perhaps, measuring fashion leadership (consumers become leaders within the fashion adoption cycle by accepting new styles) might have provided different results as fashion leadership may indicate the consumer's knowledge and awareness of trends (Lang & Joyner Armstrong, 2018). Fashion leadership focuses less on acquisition and increases the focus on the "exploration of the unfamiliar" (i.e., new fashion trends) (Lang & Joyner Armstrong, 2018, p. 39). Measuring fashion knowledge (e.g., awareness of fashion trends, first to try fashion trends, important to be a leader in fashion trends, and first to know fashion trends) in replacement of fashion trend sensitivity is an area for future use phase research.

Style Orientation

The statistical results indicated that style orientated consumers, who fashion scholars have proposed to be more sustainable buyers and disposers, are also associated with sustainable use practices (Bly et al., 2014; Cho et al., 2015; Joyner Armstrong et al.,

2017). The findings of the study suggest that consumers who prefer wearing clothing that fits their personal style and dress more timelessly are more inclined to engage in sustainable wear, care, and repair practices. Also, one's age or gender, does not strengthen or weaken this influence, though the literature has often considered older consumers to have a greater tendency for style orientation (and/or that younger consumers are more fashion-oriented) (Morgan & Birtwistle, 2009). Even though the literature implied that age and gender would influence style orientation, the findings in this study remain congruent with previous research (Gupta et al., 2019; Lang & Armstrong, 2016; Park et al., 2017). Consumption based on style has been observed to have a significantly positive influence on sustainable apparel consumption, particularly with regard to acquisition and disposal behaviors (Bly et al., 2014; Cho et al., 2015 & Gupta et al., 2019). The current study's contribution to the literature connects style orientation to have a statistically significant positive influence throughout the entire clothing consumption cycle (acquisition, use, and disposal).

Mindfulness

The statistical results indicated that mindfulness had a negative influence on sustainable wear that did not reach statistical significance. Mindfulness does not appear to have a direct influence on sustainable wear behaviors, suggesting that consumers who have dispositional mindfulness (e.g., need short definition here from your literature review using same language; perhaps, the awareness of internal and external stimuli and its effect on habits) do not necessarily, as a result, engage with their wardrobe through prolonged wear time or closet organization. One explanation behind this finding may be that there are some meditating factor(s) (e.g., environmental concern and/or a sense of

care) that may better illuminate the relationship between mindfulness and clothing consumption behaviors, which is an important area for future research (Amel et al., 2009; Gadhavi, 2020; Sheth et al., 2011).

Previous literature has explored mindfulness and consumption through a mediation of "acting with awareness" when exploring environmental behaviors (Amel et al., 2009, p. 14). Awareness actions, such as paying attention to decisions, was found to have a positive correlation with environmentally sustainable behavior through the Green Scale, created by Amel et al. (2009). This significance was found through self-reported behavior suggesting that sustainable behavior may be a focused consideration and not subconscious decisions, as consumers may report more socially acceptable behaviors (e.g., more sustainable) (Amel et al., 2009; Niinimäki, 2010). Mindful consumption has also been explored within the literature as an awareness of the consequences of consumption through thought and behavior (Sheth et al., 2011). Mindful consumption can be influenced by the sense of caring for nature, self, and community (Sheth et al., 2011). Sheth et al. (2011) punctuates the need to pinpoint how a sense of caring influences sustainable consumption. Sense of care from Sheth et al. (2011) has also been explored by Gadhavi (2020) with mindfulness in fashion consumption, where it was found that young consumers showed strong concern for animal rights within a fashion context, the frequency of clothing disposal and the need to increase reusing and repeating clothing. Combining both environmental concern and sense of care with mindful consumption, Gadhavi (2020) also found that young consumers felt that there is a significant negative impact on the environment, expressing a need for minimalism in clothing.

The findings from this study did not support mindfulness having an influence on wear behaviors; however, the development of a scale specifically for mindful clothing consumption may be useful to help determine the possible influences on sustainable use phase practices. The scale used for mindfulness in this study was intended to measure overall mindfulness, regardless of consumption. However, the concept of mindfulness is highly complex and requires more research. Theoretically, this study provides a starting point for measuring sustainable use phase behaviors. Significantly more exploration about the influence of mindfulness and sustainable consumption is needed.

Frugality

Findings of this study suggest that frugality positively influences the sustainable clothing use practice of repair, however, findings were not statistically significant. This suggests that consumers who are careful with their money when considering purchasing a new garment might repair damaged garments instead of purchasing new garments. Further research is needed to understand the relationship between frugality and related sustainable consumption behaviors more deeply as literature previously found frugality to be correlated with style orientation within the acquisition phase (Cho et al., 2015). Within the research question analysis, the findings did show some impact of frugality on wear behaviors as there was a marginal significant main effect between frugality and sustainable wear. These findings may have resulted from the measurement of frugality, as this measure may most effectively capture acquisition behavior. For example, consumers trying to save money on clothing purchases may be more oriented to short-term, economic decision-making as opposed to longer-term considerations like clothing preservation. Different types of relationships could be further explored regarding factors

that mediated the relationship between frugality and sustainable wear, care, and repair behaviors, such as utilitarian values (shopping for need and less frequently). Frugality might be marginally significant regarding sustainable wear for the relationship between strategically spending money on garments and prolonging the wear of a garment. Consumers who are frugal may utilize their investment in their garments by wearing them multiple times. From the findings of this study, there was a marginal significant main effect on frugality and sustainable wear practices. Future research could center around frugal behaviors and how these behaviors influence use phase behaviors.

Theoretical Implications

This study broadens the existing research pertaining to sustainable clothing consumption within the use phase by introducing definitions of sustainable use practices of wear, care, and repair. Existing research concentrates on the acquisition and disposal phases of sustainable clothing consumption (Arangdad et al., 2019; Bianchi & Birtwistle, 2010; Chekima et al., 2016; Degenstein et al., 2020; Kaur & Luchs, 2021; Kim & Seock, 2019). What is currently known about the sustainable clothing use phase is widely devoted to laundry habits in regard to washing and drying (Choudhury, 2014; Cline, 2019; Daystar et al., 2019; Laitala et al., 2011; Laitala et al., 2018). This research study demonstrated that the understanding of the sustainable clothing use phase can be expanded by studying consumers' behaviors beyond using a washing and drying machine (care practices). Some of the items utilized to measure sustainable care practices in this study examined practices that aid re-wearing clothing before laundering or freshening up garments to continue wearing before laundering.

While the practice of sustainable wear, care, and repair behaviors are not new ideas, these practices do allow for further development of how consumers interact within the use phase. Research centering on sustainable wear practices had not been widely explored using quantitative methods with Joyner Armstrong et al.'s (2017) and Fletcher's (2016) works being key studies in this area of research. The current study provides pioneering evidence about the need to better understand consumers wear practices to potentially shape sustainable social change. Sustainable wear practices were the most elusive to measure and highlight the need for advancing this research agenda. Fletcher (2016) discusses themes that embody highly idiosyncratic ways of using clothing that are distinct from fast fashion culture such as material resourcefulness, alternative dress code (wearing garments because they make the user smile or brings the user joy), garment co-operation (altering a garment to precising fit the user), attentiveness, shared use (swapping clothing between friends and family regularly), and intensive use (wearing garments until they are beyond repair). Several of these themes were difficult to measure alone, and offer the potential to apply various research approaches including mixed method designs. The themes discussed in Fletcher's (2016) work involve sustainable care and repair practices but mostly focus on experiences that are difficult to measure, such as consumers wearing clothing because it makes them smile or brings them joy. This research study offered an initial approach to measuring the clothing use phase. The three latent constructs for sustainable wear, care, and repair practices offer a promising foundation for expanding this research agenda.

Future research should begin with the psychometrically supported instrumentation for wear, care, and repair, as this study utilized unidimensional measurements. This study

helps to reenergize the understanding of sustainable use behaviors, but each factor of sustainable use may consist of various factors. Wardrobe engagement was utilized to measure sustainable wear. Within wardrobe engagement there were many variables, such as closet/wardrobe organization, delaying of acquisition by wearing what one has, and creating multiple looks with existing wardrobe (Joyner Armstrong et al., 2017); however these factors provide evidence of the complexity of individuals' experiences with clothing as described within Fletcher's (2016) work. For sustainable care, wardrobe preservation was utilized (Joyner Armstrong et al., 2017). The premise behind this measurement is the avoidance or delaying of washing garments, which should be considered before measuring actual laundry habits of sorting laundry before wash, washing/drying temperature, duration, etc. Current existing measurements for sustainable care are centered on laundry practices (e.g., the use of washing and drying machines). Laitala et al. (2012) argues that sustainable care practices involve delaying laundry practices to reduce these energy-demanding practices. Lastly, for this study the goal for the measurement of sustainable repair was to understand if consumers repaired their garments. Future research may focus on understanding several related variables such as mending skills, type of mending, how often clothing is mended, how often outside help is used, and so forth.

There is importance in continuing to explore use phase behavior due to decreased utilization of garments owned while garment purchasing and disposal is increasing disposal (Cook & Gover, 2020; Remy et al., 2016). There is a proposed solution concerning the disposal of garments: recycling. However, less than 1% of post-consumer garments are recycled into another garment of similar quality (Niinimäki et al., 2020).

Understanding the use phase could help consumers identify areas in their wardrobe where they could increase the longevity of their garments, delaying their engagement with the acquisition and disposal phases.

Practical Implications

This study confirmed the importance of style orientation on behaviors across the entire clothing consumption cycle, evidence the literature did not have before as it only had affirmation of style orientation's role in acquisition and disposal behaviors (Cho et al., 2015; Gupta et al., 2019; Joyner Armstrong et al., 2017; McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020; Tiggemann & Lacey, 2009). As an industry, more mechanisms should be provided to facilitate consumers' personal style and create longevity in the wardrobe with more classic styling rather than marketing quickly-fading to drive sales and profits without responsibility for the consequences.

The sustainable wear, care, and repair practices outlined in this study support garment longevity, which is the goal of the use phase (WRAP, 2017). To begin incorporating garment longevity into the retailing system, styling services may be a way to augment profits while helping consumers increase the longevity of their wardrobes through style and not through acquisition alone. These findings also point to an important consideration for consumers and academia. Knowing the importance of style orientation may help outline purchasing priorities for consumers building their wardrobes. Consumers may begin to create a meaningful wardrobe with classic pieces and outfits that support their designated style, regardless of current fashion trends. Understanding garment longevity practices may begin to guide curricula to clearly articulate what behaviors are attributed to sustainable use phase practices. With the knowledge of

consumers building a wardrobe around style, students can begin to understand how the use phase can also influence their acquisition and disposal habits.

Limitations and Future Research

In the previous sections, the findings and implications of this research were discussed, providing potential topics for future research. The following suggestions for future research were formulated with the considerations of both the findings and limitations of this study.

This study was designed to provide better understanding of sustainable clothing use practices. Within the current literature, use phase specific measurements are scarce, as evidenced by a majority of the measurements utilized in this study were created for sustainable acquisition and disposal research rather than the use phase (Cho et al., 2015; Joyner Armstrong et al., 2017; Lang & Armstrong, 2016; McNeill, Hamlin, McQueen, Degenstein, Garrett, et al., 2020). A scale is needed to measure sustainable use phase practices more comprehensively to attain a deeper understanding. The nature of the sustainable wear, care, and repair measurements utilized in this study may not comprehensively measure all the types of behaviors for the use phase. A majority of the measurements were adapted, requiring new language that fit sustainable use phase practices. The CAMS-R was utilized to measure mindfulness; however, a direct measure for mindful clothing consumption may provide more illuminating results about the influences of mindfulness on sustainable clothing consumption.

This research was limited to a focus on the binary gender, male and female, due to previous literature focus on males and females. The questionnaire did allow for participants to report other genders; however, this resulted in a small percentage (N=3,

0.7%) of participants self-reporting as neither male nor female. Within sustainable fashion research, any gender outside the binary is underrepresented, and further research is needed to understand these consumers (Bulut et al., 2016).

Further, this study was limited to respondent's self-reported use phase practices and their own account of their sensitivity to fashion trends, style orientation, and levels of mindfulness and frugality. Further demographics may be analyzed (e.g., education, income, household composition, ethnicity, etc.) to allow further insight on the influences of demographic factors on sustainable use phase practices.

Along with improving the current study by developing additional psychometric instrumentation on sustainable use practices and demographics, the exploration of influences on other consumption phases should be of importance for inclusion within future studies. The goal of sustainable use phase practices is to prolong the use of garments which could, in turn, influence the way consumers acquire and dispose of clothing (WRAP, 2017). If consumers are engaging with sustainable wear practices by shopping within their wardrobes before buying something new, then they have could lessen their interaction with the acquisition phase. Also, if consumers are delaying the laundering of their garments and mending garments when they need to be repaired, then the consumer is lessening their interaction with the disposal phase.

Chapter Summary

This final chapter summarized the main findings of this research and presented the conclusions that address the hypotheses and research question. The theoretical and practical implications of this study were discussed in this chapter, followed by directions for potential future research.

This research examined how personal factors may positively or negatively influence sustainable clothing use practices (wear, care, and repair), and how age and gender interact with these use practices. An online survey was conducted to collect data among consumer populations in the United States. The results indicated that each personal factor has a different influence on consumers' sustainable clothing use practices. The demographics of age and gender have different interactional effects with each practice as well; however, no interactional effects reached true statistical significance.

The hypotheses and research question proposed in this research allows the industry, scholars, and consumers to gain a more comprehensive view of the sustainable clothing use phase regarding consumers' behavior. The findings of this study may help guide marketing messages and higher educational programs to increase clothing longevity.

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APPENDICES

Appendix A

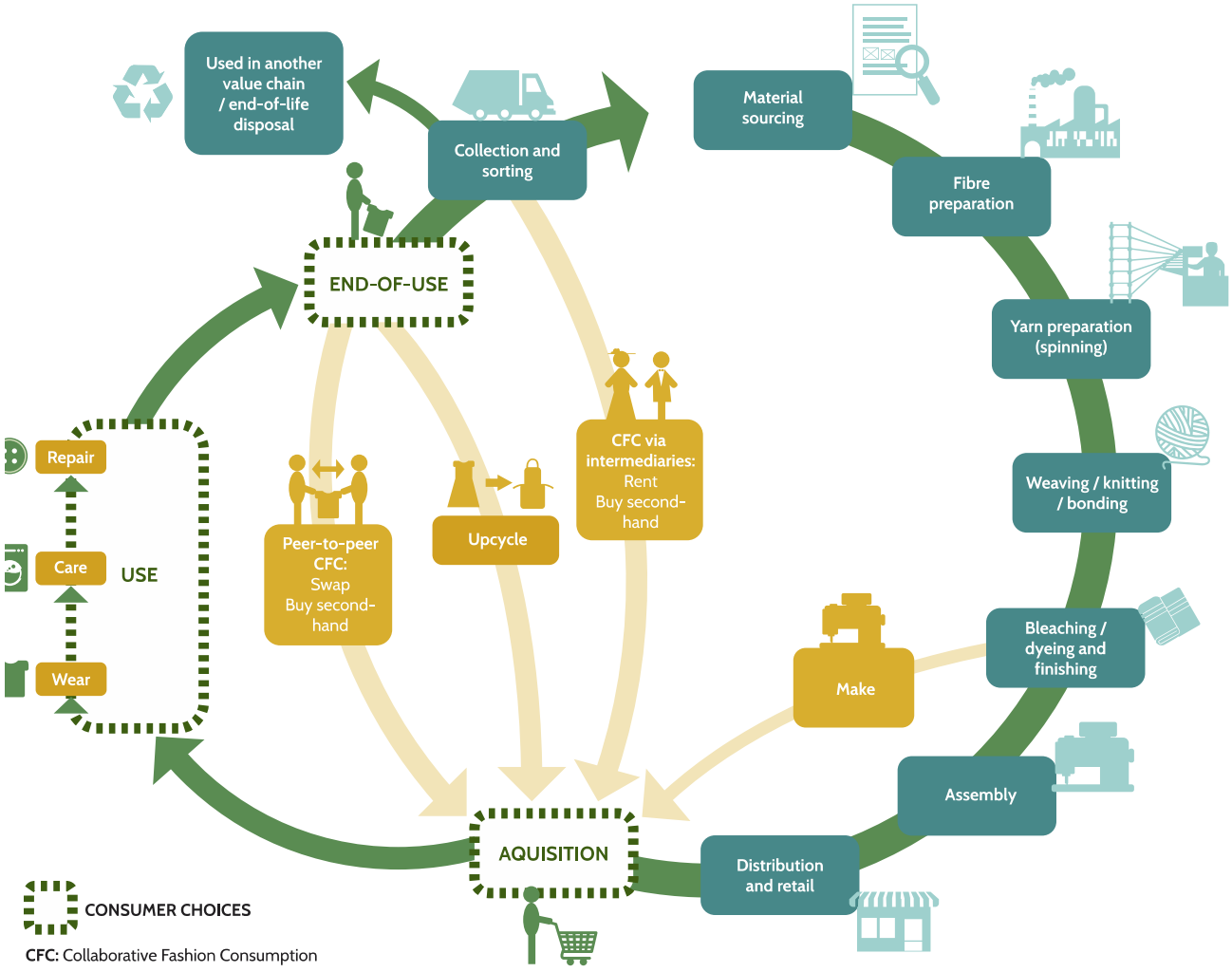


Figure A: Permission to use imaged from Vladimirova et al. 2021. Conceptual framework created by the Sustainable Fashion Consumption Network

Appendix B

Questionnaire

PARTICIPANT INFOMRATION
The Influence of Personal Factors on Clothing Use Practices

Background Information:
You are invited to be in a research study of clothing use practices. We ask that you read this form and ask any questions you may have before agreeing to be in the study. Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

This study is being conducted by:
Jessica Dao, graduate student in Design, Housing & Merchandising, under the direction of Dr. Joyner Martinez, Design, Housing & Merchandising.

Procedures:
If you agree to be in this study, we would ask you to answer a series of questions about clothing use behavioral tendencies and personal factors in an online survey. This will require approximately 10-15 minutes.

Compensation:
Upon completing the survey you will be compensated through Centiment, not by the researcher.

Confidentiality:
The information in the study will be anonymous. This means that your name will not be collected or linked to the data in any way. The researchers will not be able to remove your data from the dataset once your participation is complete. We will collect your information through an online survey via Qualtrics. This data will be stored in a password protected cloud-based storage system. The research team works to ensure confidentiality to the degree permitted by technology. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. However, your participation in this online survey involves risks similar to a person's everyday use of the internet. If you have concerns, you should consult the survey provider privacy policy at https://www.qualtrics.com/privacy-statement/. Contacts and Questions The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study.

If you have questions about the research study itself, please contact the Principal Investigator at, jessica.dao@okstate.edu. If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

Statement of Consent:
I have read the above information. I have had the opportunity to ask questions and have my questions answered. I consent to participate in the study.
If you agree to participate in this research, please click "I am 19 or older and consent to participate in the study".

I am 19 or older and consent to participate in the study (1)
I do not consent to participate (2)

Q1 The following questions are related to **how you wear your clothing items**. Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I organize my wardrobe regularly to make sure I'm wearing all clothing items. (6)	○	○	○	○	○
I wear my clothing items multiple ways to increase their use. (7)	○	○	○	○	○
I mix and match my clothing items to increase their use. (8)	○	○	○	○	○
I shop my wardrobe before buying new clothing item. (9)	○	○	○	○	○
I utilize many items in my wardrobe. (10)	○	○	○	○	○
I like to go through my wardrobe when I don't know what to wear. (11)	○	○	○	○	○
I can always dig into my wardrobe and find some items I can use. (12)	○	○	○	○	○
I organize my wardrobe regularly to find ideas about how to mix and match my clothes. (13)	○	○	○	○	○

Q2 The following questions are related to **how you care for your clothing items.** Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I rotate wearing clothing items, so they do not get worn out. (1)	○	○	○	○	○
I air out worn clothing items, so I can re-wear it before washing it. (2)	○	○	○	○	○
I carefully store lightly worn clothing items to re-wear before washing it. (3)	○	○	○	○	○
I keep unnecessary laundering and/or dry cleaning to a minimum. (4)	○	○	○	○	○
I do not wash lightly worn clothing right away. (5)	○	○	○	○	○
I wear clothing carefully so as to not get it dirty (so I can delay washing it). (6)	○	○	○	○	○
I avoid laundering and/or dry cleaning my clothing unnecessarily. (7)	○	○	○	○	○

Q3 The following questions are related to **how you repair for your clothing items.** Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I re-sew buttons, patch holes, or make other repairs to damaged garments. (6)	○	○	○	○	○
I repair my garments. (7)	○	○	○	○	○
I use a professional service when I cannot repair a garment myself. (8)	○	○	○	○	○
When a garment is damaged, I repair it/have it repaired. (9)	○	○	○	○	○

Q4 The following questions are **about clothing trends**. Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I am usually the first to know the latest fashion trends. (6)	○	○	○	○	○
I am usually the first among my friends to buy the latest styles. (7)	○	○	○	○	○
Friends regard me as a good source of fashion advice. (8)	○	○	○	○	○
I like to buy new clothing that just came out. (9)	○	○	○	○	○
I usually have one or more outfits of the very latest styles. (10)	○	○	○	○	○

Q5 The following questions are related to **your clothing style**. Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I prefer wearing clothing I know I can utilize for a long time. (1)	○	○	○	○	○
I typically wear clothing that fits my personal style for a long time. (2)	○	○	○	○	○
When purchasing clothing, I like to know it will work with my personal style for a long time. (3)	○	○	○	○	○
I wear clothing that is more timeless. (4)	○	○	○	○	○

Q6 The following questions are related to **mindfulness**. Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
It is easy for me to concentrate on what I am doing. (6)	○	○	○	○	○
I am preoccupied by the future. (7)	○	○	○	○	○
I can tolerate emotional pain. (8)	○	○	○	○	○
I can accept things I cannot change. (9)	○	○	○	○	○
I can describe how I feel at the moment in considerable detail. (10)	○	○	○	○	○
I am easily distracted. (11)	○	○	○	○	○
I am preoccupied by the past. (12)	○	○	○	○	○
It's easy for me to keep track of my thoughts and feelings. (13)	○	○	○	○	○
I notice my thoughts without judging them. (14)	○	○	○	○	○
I am able to accept the thoughts and feelings I have. (15)	○	○	○	○	○
I am able to focus on the present moment. (16)	○	○	○	○	○
I am able to pay close attention to one thing for a long period of time. (17)	○	○	○	○	○
Please select Strongly Agree if you are reading this statement. (20)	○	○	○	○	○

Q7 The following questions are about **your buying habits**. Indicate the degree to which you agree or disagree to the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neither Agree nor Disagree (3)	Somewhat Agree (4)	Strongly Agree (5)
I discipline myself to get the most from my money when buying clothes. (6)	○	○	○	○	○
I believe in being careful in how I spend my money on clothes. (7)	○	○	○	○	○
When buying clothes, there are clothes I resist buying today so I can save for tomorrow. (8)	○	○	○	○	○
I am willing to wait on a purchase of clothes I want so that I can save money. (9)	○	○	○	○	○

Q8 The following questions are related to **new clothing purchases.** Indicate the degree to which you agree or disagree to the following statements.

	Strongly disagree (6)	Somewhat disagree (7)	Neither agree nor disagree (8)	Somewhat agree (9)	Strongly agree (10)
I purchase new clothing more often than my friends. (1)	○	○	○	○	○
I buy new clothing often, even if I don't need it. (2)	○	○	○	○	○
I make clothing purchases only when needed. (3)	○	○	○	○	○

Q9 The following questions are related to **clothing disposal.** Indicate the degree to which you agree or disagree to the following statements.

	Strongly disagree (6)	Somewhat disagree (7)	Neither agree nor disagree (8)	Somewhat agree (9)	Strongly agree (10)
I probably discard unwanted clothing more often than others. (1)	○	○	○	○	○
I usually hang on to clothing, even if I don't wear it anymore. (2)	○	○	○	○	○
I generally discard clothing when it is out of fashion. (3)	○	○	○	○	○
I rarely dispose of clothing. (4)	○	○	○	○	○
When my closet gets too full, I will discard unwanted clothing. (5)	○	○	○	○	○
I typically dispose of clothing when I am bored with it. (6)	○	○	○	○	○
I usually discard clothing when it doesn't fit anymore. (7)	○	○	○	○	○
I typically discard clothing only when it is damaged or worn out. (8)	○	○	○	○	○

What gender do you identify as?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Other (4) _____

What is your age?

- 18-33 years old (1)
- 34-49 years old (2)
- 50 years old or older (3)

What is your exact age? (in years)

_____

What is your annual household income?

Less than or equal to $10,000 (1)
$10,001 - $19,999 (2)
$20,000 - $29,999 (3)
$30,000 - $39,999 (4)
$40,000 - $49,999 (5)
$50,000 - $59,999 (6)
$60,000 - $69,999 (7)
$70,000 - $79,999 (8)
$80,000 - $89,999 (9)
$90,000 - $99,999 (10)
$100,000 - $149,999 (11)
More than or equal to $150,000 (12)
Other (13) _____

What is the highest degree or level of education you have completed?

Some High School, no diploma (1)
High school (2)
Some college (3)
2 year degree (4)
4 year degree (5)
Masters/MBA (6)
Doctorate (7)
Other (8) _____

Please specify your ethnicity.

White (1)
Black or African American (2)
American Indian or Alaska Native (3)
Asian (4)
Native Hawaiian or Pacific Islander (5)
Other (6) _____

Please enter the number of persons living in your household including yourself.

_____

Appendix C

Table C-1 Descriptive Statistics of Sustainable Wear

Sustainable Wear	*N*	Min.	Max.	Mean	SD
W1-I organize my wardrobe regularly to make sure I'm wearing all clothing items.	419	1	5	3.21	1.32
W2-I wear my clothing items multiple ways to increase their use.	419	1	5	3.83	1.12
W3-I mix and match my clothing items to increase their use.	419	1	5	3.94	1.09
W4-I shop my wardrobe before buying new clothing item.	419	1	5	3.47	1.30
W5-I utilize many items in my wardrobe.	419	1	5	3.81	1.12
W6-I like to go through my wardrobe when I don’t know what to wear.	419	1	5	3.78	1.21
W7-I can always dig into my wardrobe and find some items I can use.	419	1	5	4.11	0.95
W8-I organize my wardrobe regularly to find ideas about how to mix and match my clothes.	419	1	5	3.29	1.34

Table C-2 Descriptive Statistics of Sustainable Care

Sustainable Care	*N*	Min.	Max.	Mean	SD
C1-I rotate wearing my clothing items, so they do not get worn out.	419	1	5	3.64	1.23
C2-I air out worn clothing items, so I can re-wear it before washing it.	419	1	5	3.16	1.40
C3-I carefully store lightly worn clothing items to re-wear before washing it.	419	1	5	3.46	1.32
C4-I keep unnecessary laundering and/or dry cleaning to a minimum.	419	1	5	3.80	1.19
C5-I do not wash lightly worn clothing right away.	419	1	5	3.48	1.30
C6-I wear clothing carefully so as to not get it dirty (so I can delay washing it).	419	1	5	3.36	1.33
C7-I avoid laundering and/or dry cleaning my clothing unnecessarily.	419	1	5	3.64	1.28

Table C-3 Descriptive Statistics of Sustainable Repair

Sustainable Repair	*N*	Min.	Max.	Mean	SD
R1-I re-sew buttons, patch holes, or make other repairs to damaged garments.	419	1	5	3.35	1.46
R2-I repair my garments	419	1	5	3.24	1.40
R3-I use a professional service when I cannot repair a garment myself.	419	1	5	2.76	1.53

R4-When a garment is damaged, I repair it/have it repaired.	419	1	5	3.22	1.40

Table C-4 Descriptive Statistics of Fashion Trend Sensitivity

Fashion Trend Sensitivity	*N*	Min.	Max.	Mean	SD
FTS1-I am usually the first to know the latest fashion trends	419	1	5	2.53	1.43
FTS2-I am usually the first among my friends to buy the latest styles	419	1	5	2.43	1.42
FTS3-Friends regard me as a good source of fashion advice	419	1	5	2.64	1.41
FTS4-I like to buy new clothing that just came out	419	1	5	2.78	1.42
FTS5-I usually have one or more outfits of the very latest styles	419	1	5	2.81	1.47

Table C-5 Descriptive Statistics of Style Orientation

Style Orientation	*N*	Min.	Max.	Mean	SD
SO1-I prefer wearing clothing I know I can utilize for a long time.	419	1	5	4.28	0.84
SO2-I typically wear clothing that fits my personal style for a long time.	419	1	5	4.24	0.84
SO3-When purchasing clothing, I like to know it will work with my personal style for a long time.	419	1	5	4.10	0.97
SO4-I wear clothing that is more timeless.	419	1	5	3.88	0.97

Table C-6 Descriptive Statistics of Mindfulness

Mindfulness	*N*	Min.	Max.	Mean	SD
M1-It is easy for me to concentrate on what I am doing.	419	1	5	3.76	1.17
M2-I am preoccupied by the future. R	419	1	5	2.82	1.28
M3-I can tolerate emotional pain.	419	1	5	3.59	1.20
M4-I can accept things I cannot change.	419	1	5	3.84	1.09
M5-I can describe how I feel at the moment in considerable detail.	419	1	5	3.62	1.15
M6-I am easily distracted. R	419	1	5	2.92	1.36
M7-I am preoccupied by the past. R	419	1	5	2.92	1.33
M8-It's easy for me to keep track of my thoughts and feelings.	419	1	5	3.67	1.14
M9-I notice my thoughts without judging them.	419	1	5	3.56	1.12
M10-I am able to accept the thoughts and feelings I have.	419	1	5	3.91	1.06
M11-I am able to focus on the present moment.	419	1	5	3.94	1.05

M12-I am able to pay close attention to one thing for a long period of time.	419	1	5	3.84	1.11

R = Reverse coded item

Table C-7 Descriptive Statistics of Frugality

Frugality	*N*	Min.	Max.	Mean	SD
F1-I discipline myself to get the most from my money when buying clothes.	419	1	5	4.09	0.98
F2-I believe in being careful in how I spend my money on clothes.	419	1	5	4.21	0.89
F3-When buying clothes, there are clothes I resist buying today so I can save for tomorrow.	419	1	5	3.84	1.11
F4-I am willing to wait on a purchase of clothes I want so that I can save money.	419	1	5	4.07	0.99

Appendix D

Figure D-1 Fashion Trend Sensitivity and Age on Sustainable Wear

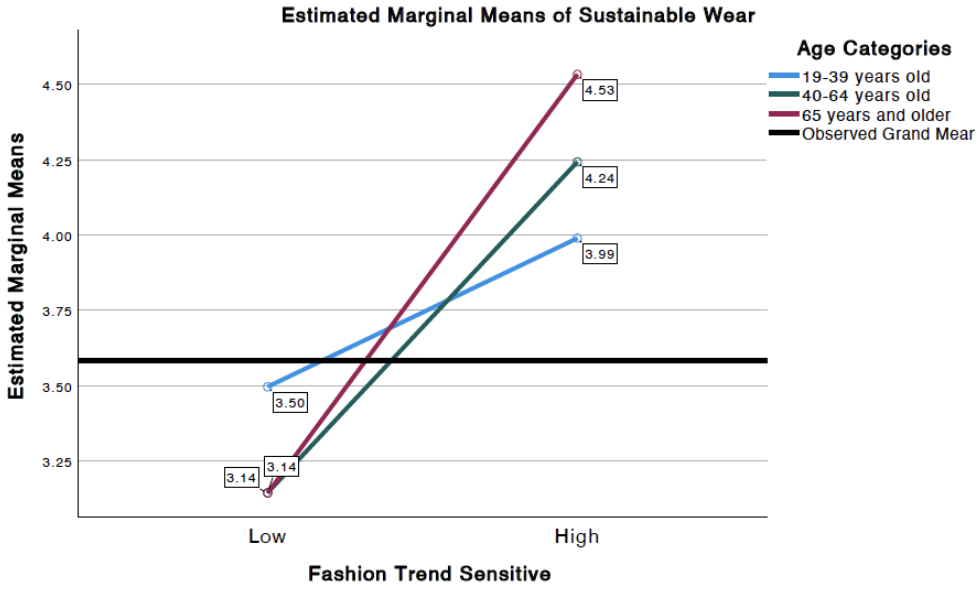


Figure D-2 Fashion Trend Sensitivity and Gender on Sustainable Wear

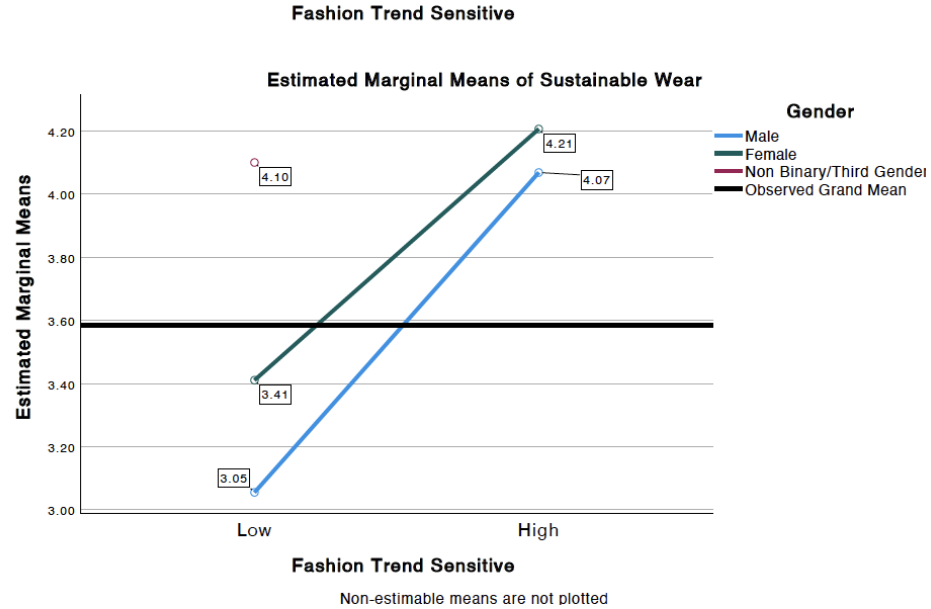


Figure D-3 Fashion Trend Sensitivity and Gender on Sustainable Care

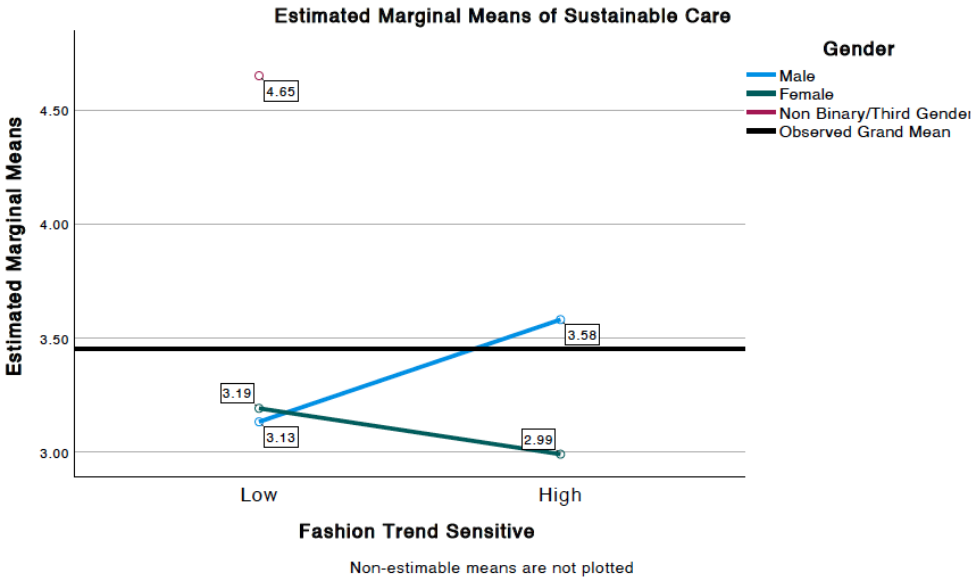


Figure D-4 Fashion Trend Sensitivity and Age on Sustainable Repair

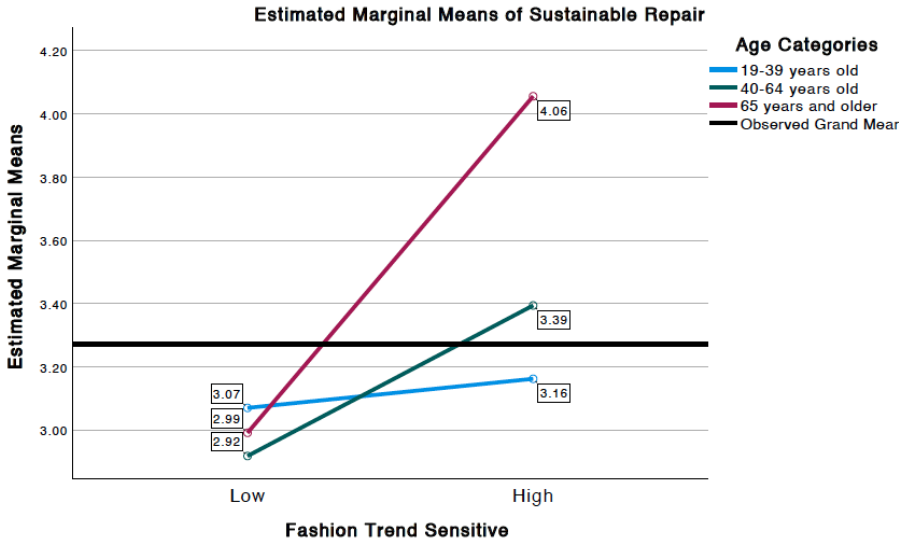


Figure D-5 Fashion Trend Sensitivity and Gender on Sustainable Repair

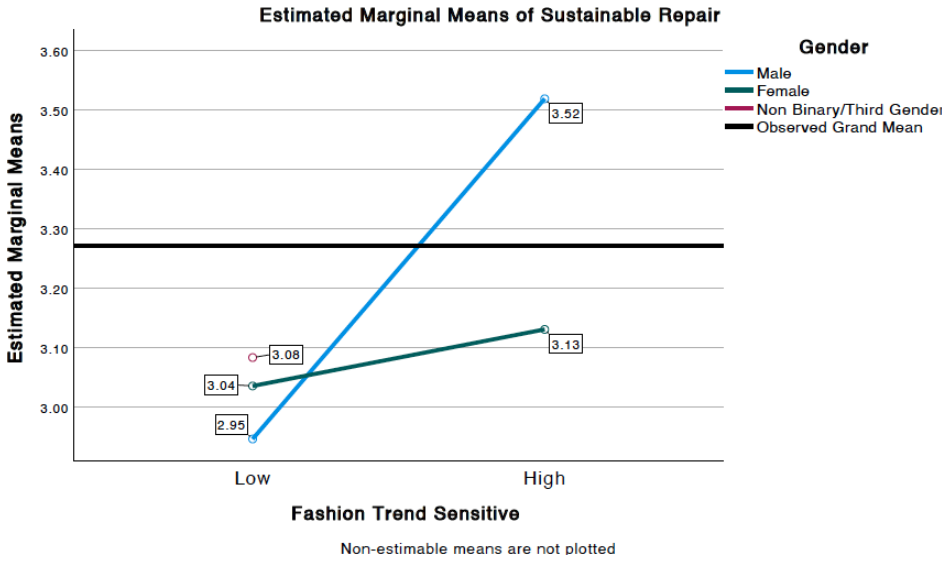


Figure D-6 Style Orientation and Age on Sustainable Wear

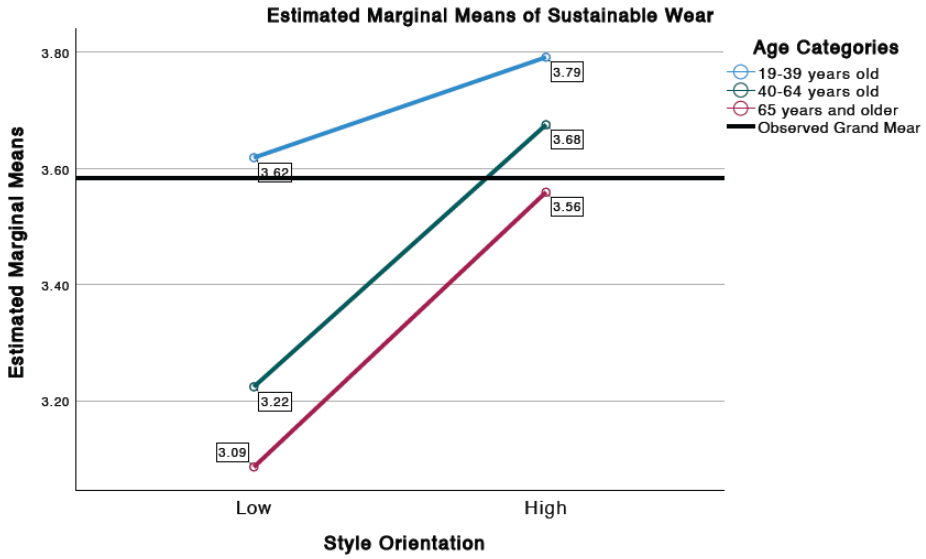


Figure D-7 Style Orientation and Gender on Sustainable Wear

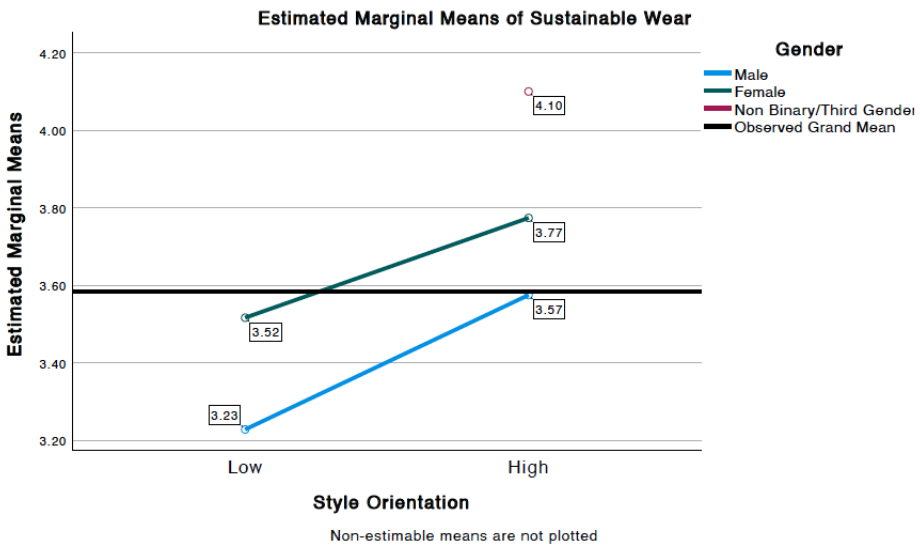


Figure D-8 Style Orientation and Age on Sustainable Care

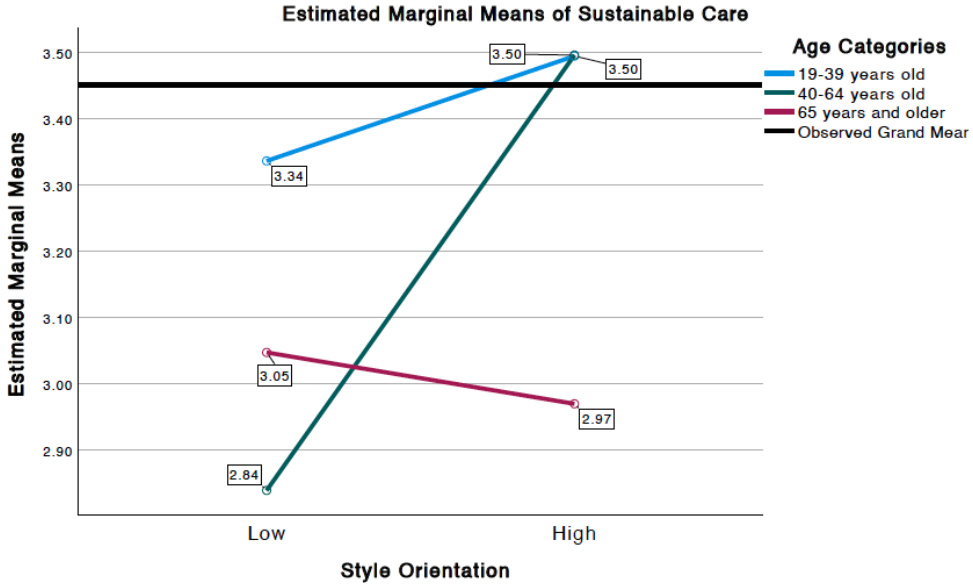


Figure D-9 Style Orientation and Gender on Sustainable Care

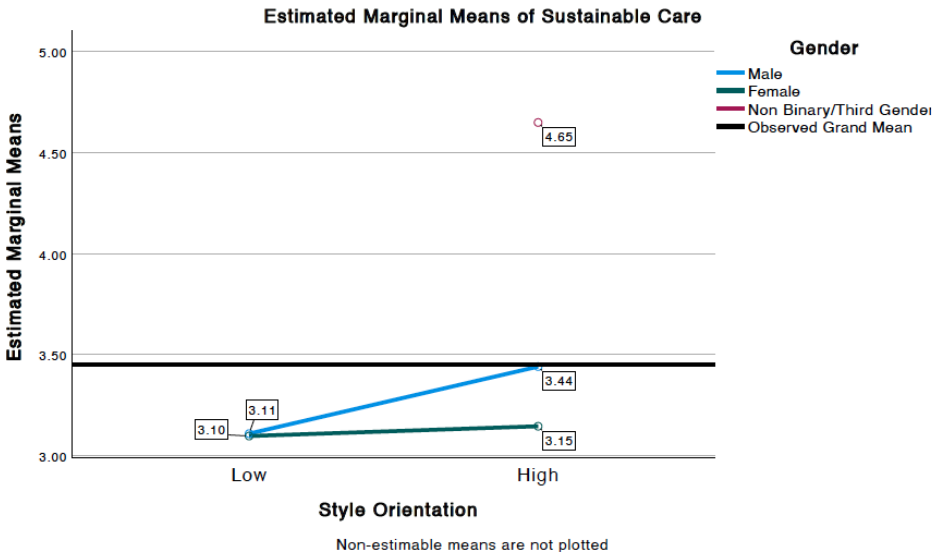


Figure D-10 Style Orientation and Age on Sustainable Repair

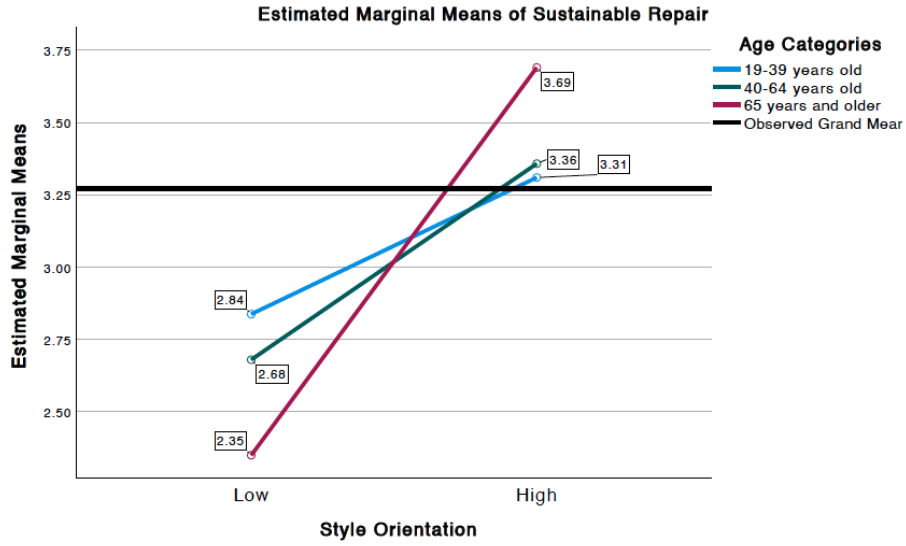


Figure D-11 Style Orientation and Gender on Sustainable Repair

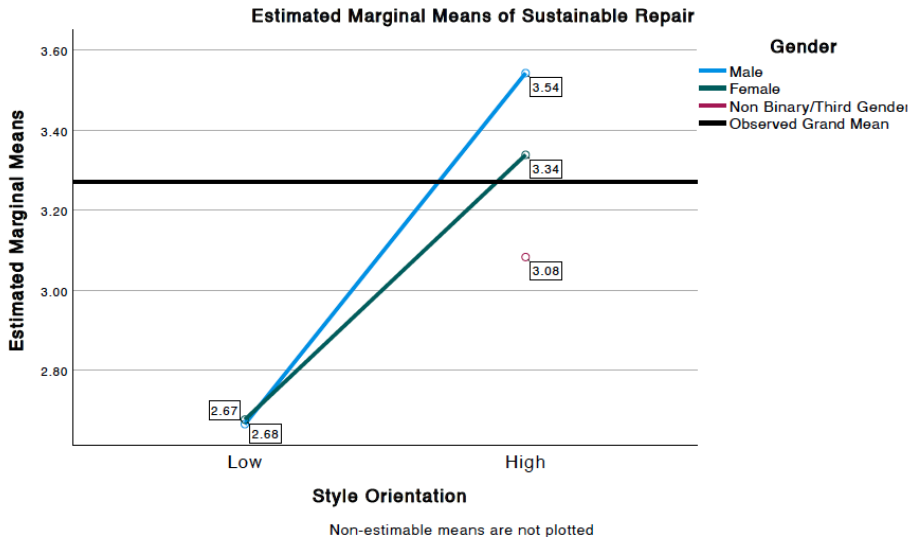


Figure D-12 Mindfulness and Age on Sustainable Wear

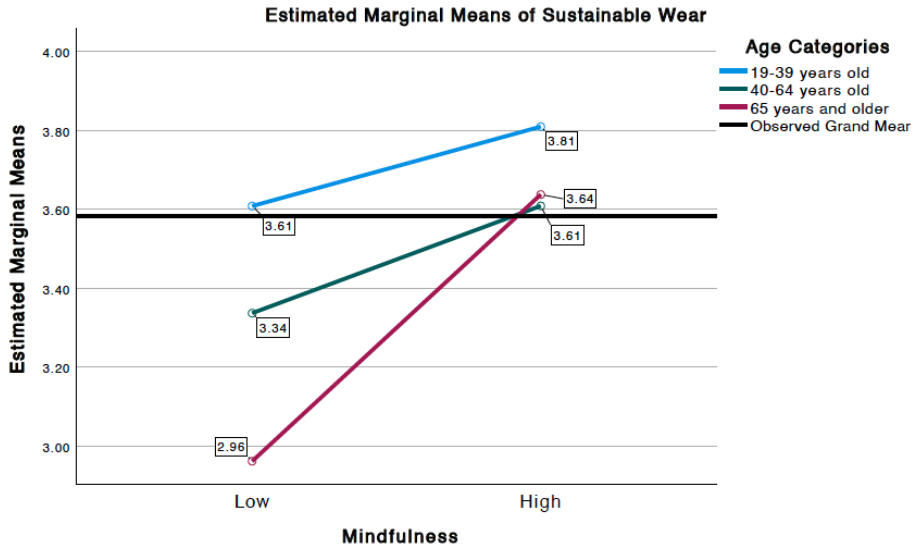


Figure D-13 Mindfulness and Gender on Sustainable Wear

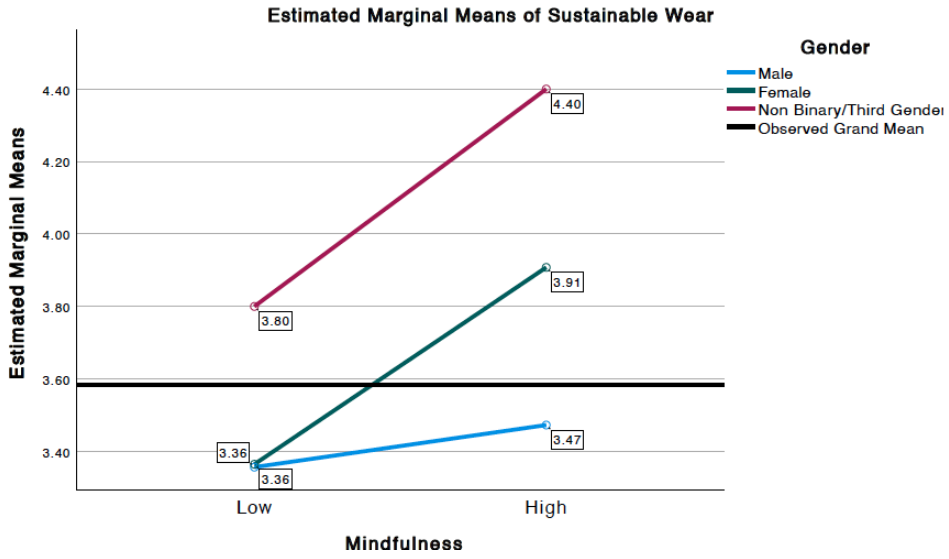


Figure D-14 Mindfulness and Age on Sustainable Care

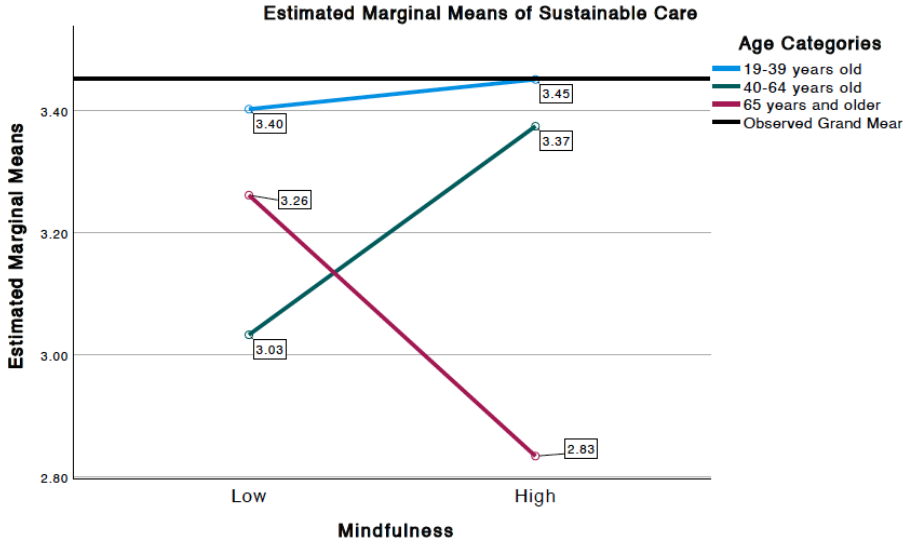


Figure D-15 Mindfulness and Gender on Sustainable Care

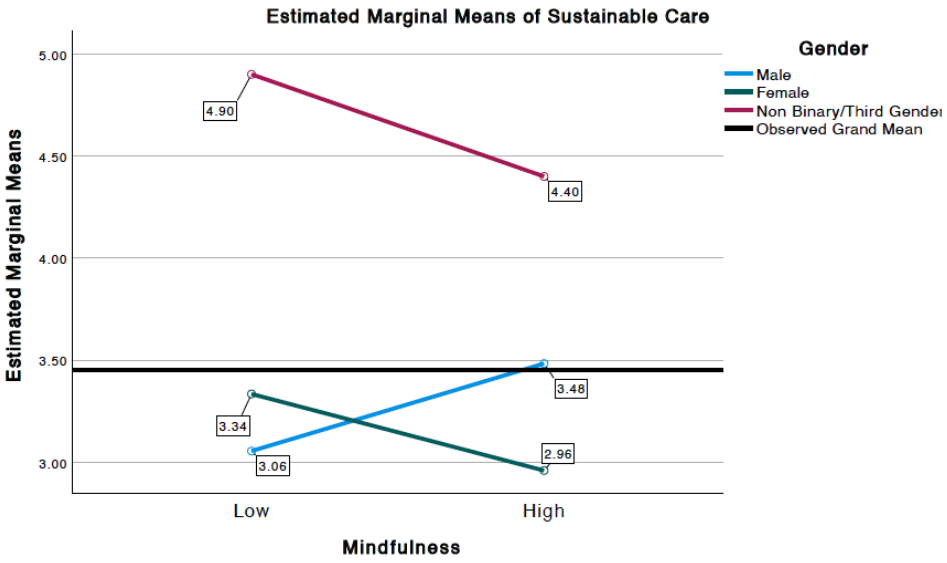


Figure D-16 Mindfulness and Age on Sustainable Repair

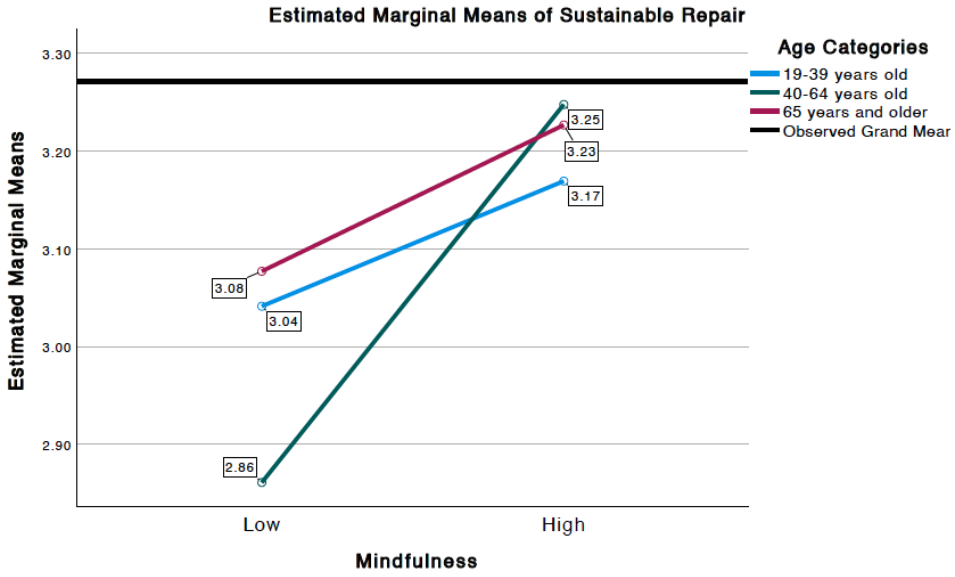


Figure D-17 Mindfulness and Gender on Sustainable Repair

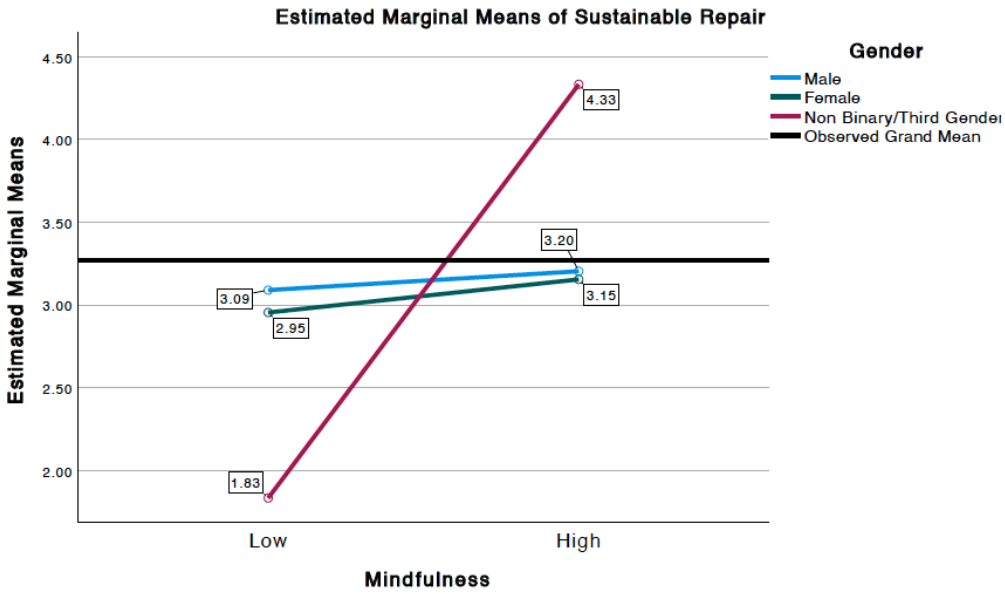


Figure D-18 Frugality and Age on Sustainable Wear

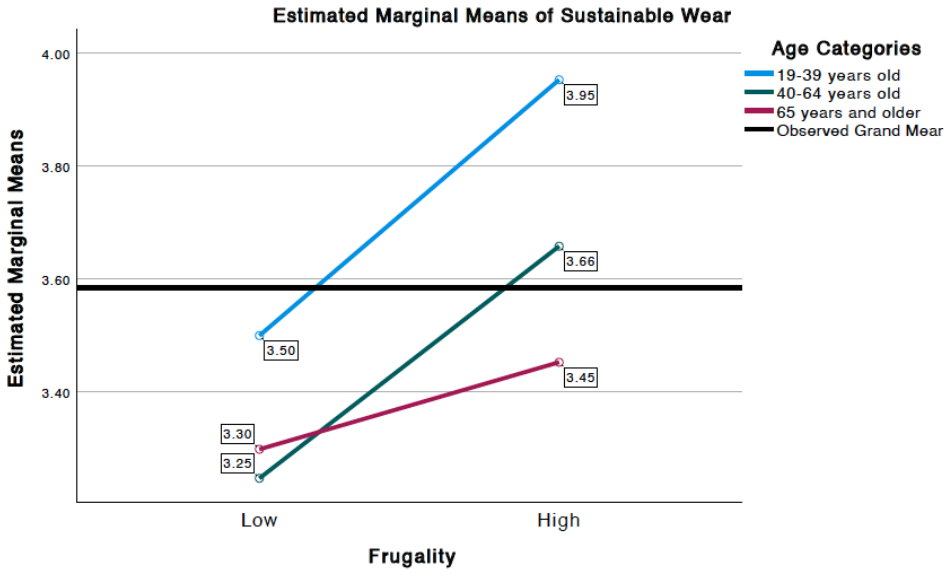


Figure D-19 Frugality and Gender on Sustainable Wear

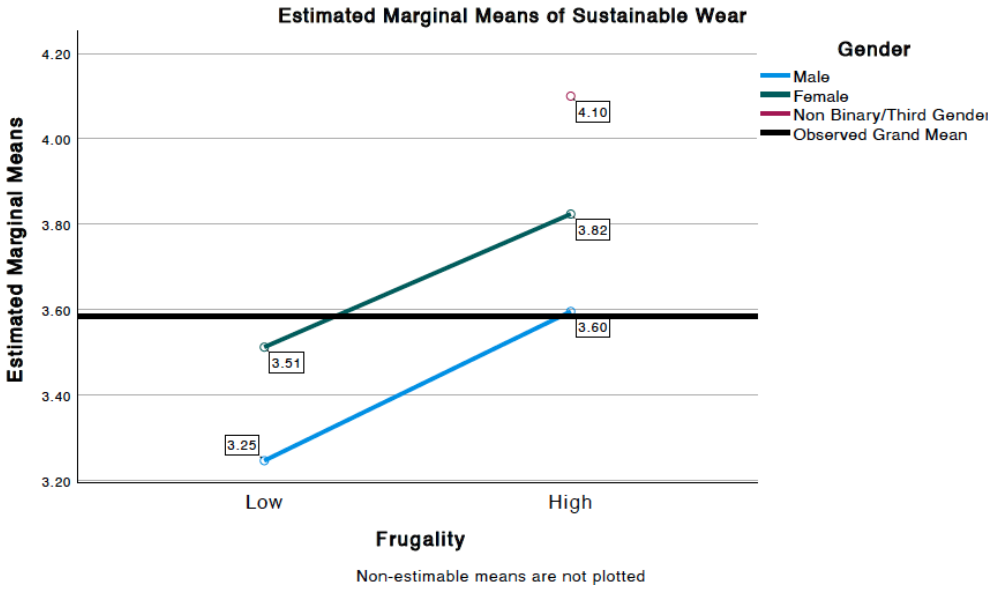


Figure D-20 Frugality and Age on Sustainable Care

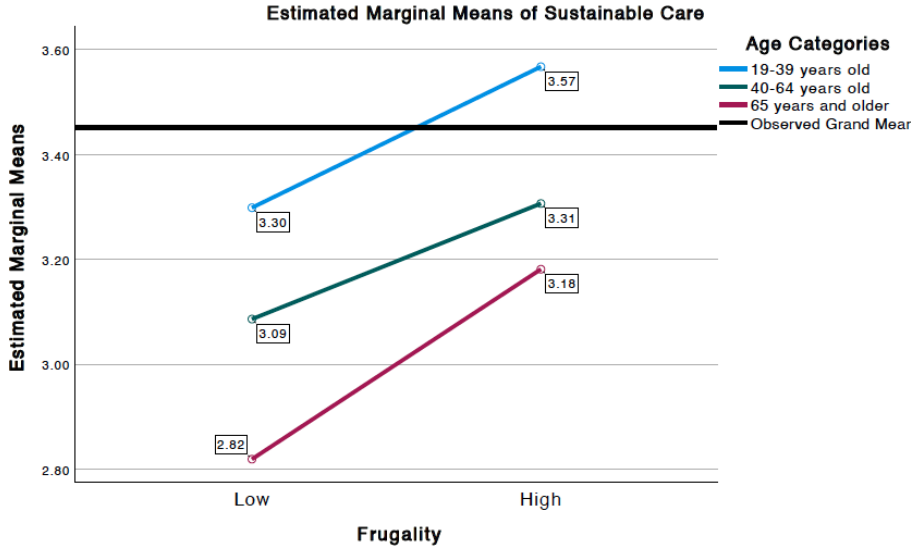


Figure D-21 Frugality and Gender on Sustainable Care

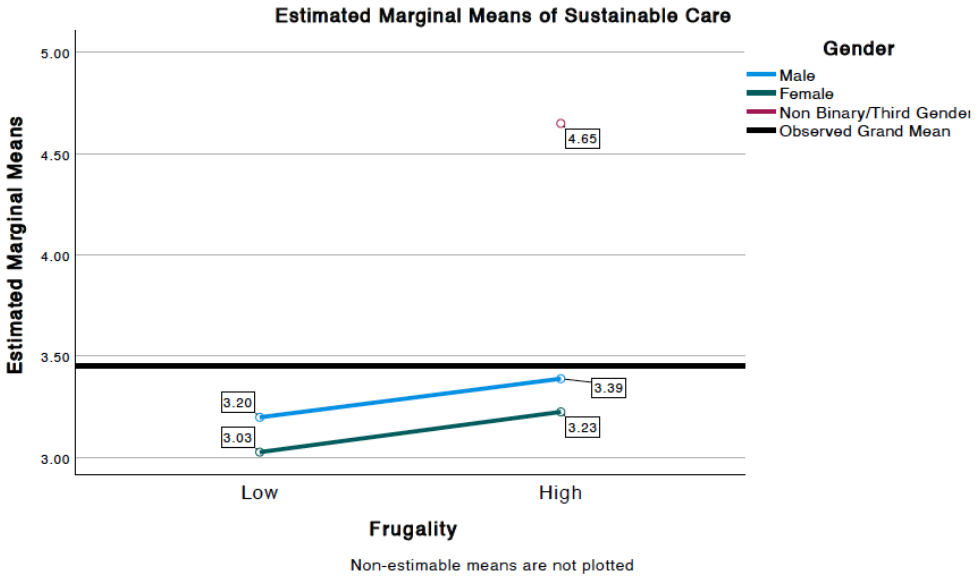


Figure D-22 Frugality and Age on Sustainable Repair

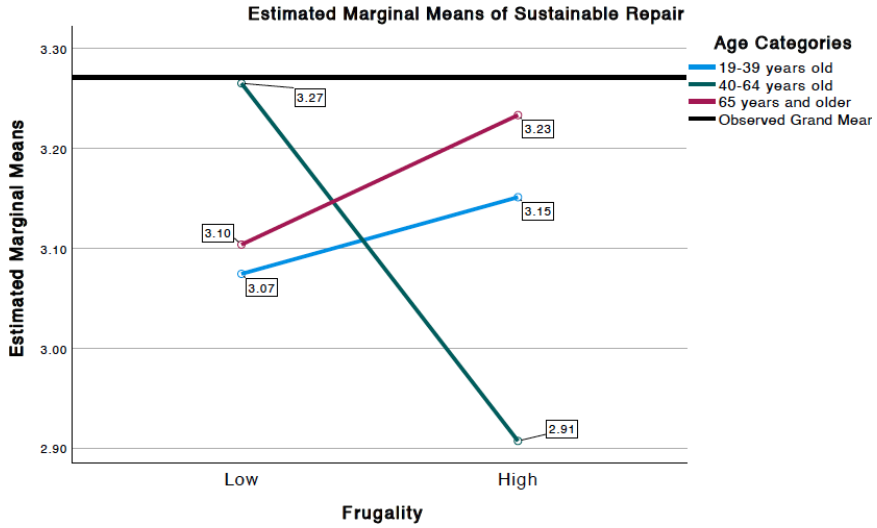
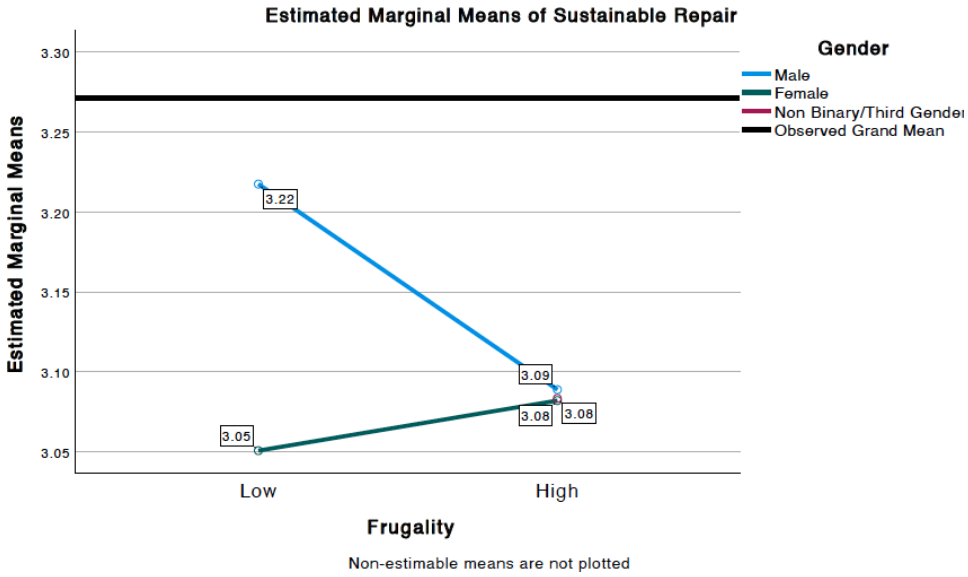


Figure D-23 Frugality and Gender on Sustainable Repair


Estimated Marginal Means of Sustainable Repair
Gender
Male
Female
Non Binary/Third Gender
Observed Grand Mean
Estimated Marginal Means
3.30
3.25
3.20
3.15
3.10
3.05
3.22
3.09
3.08
3.08
3.05
Low
High
Frugality
Non-estimable means are not plotted

Appendix E

Oklahoma State University Institutional Review Board

Date:	02/16/2022
Application Number:	IRB-22-60
Proposal Title:	The Influence of Personal Factors on Clothing Use Practices
Principal Investigator:	Jessica Dao
Co-Investigator(s):	Cosette Joyner Martinez, Swagata Chakraborty
Faculty Adviser:	Cosette
Joyner Martinez Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt
Exempt Category:	

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744- 3377 or irb@okstate.edu.

Sincerely,

Oklahoma State University IRB

VITA

Jessica F Dao

Candidate for the Degree of

Master of Science

Thesis: THE INFLUENCE OF PERSONAL FACTORS ON CLOTHING USE PRACTICES

Major Field: Design, Housing and Merchandising

Biographical:

Education:

Completed the requirements for the Master of Science in Design, Housing and Merchandising with a concentration in Merchandising at Oklahoma State University, Stillwater, Oklahoma in July 2022.

Completed the requirements for the Bachelor of Science in Design, Housing and Merchandising with a concentration in Merchandising at Oklahoma State University, Stillwater, OK in 2020.

Experience:
- Graduate Teaching Assistant (OSU) – Spring 2022, Fall 2021
- Graduate Research and Teaching Assistant (OSU) – Spring 2021

Professional Memberships:
- Phoenix Award Committee Member (OSU) – Spring 2022
- Graduate and Professional Student Government Association Representative for Design, Housing and Merchandising (OSU) – Spring 2022, Fall 2021
- Graduate Student Advisory Council Representative for Design, Housing and Merchandising (OSU) – Spring 2022, Fall 2021
- Student President of the Design, Housing & Merchandising Grad Program (OSU) – Spring 2022, Fall 2021