Green-Tinted Glasses: Fashion Consumption Practices as Pro-Environmental Behaviors

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Abstract

The fashion industry is known to be one of the most polluting and resource-intensive industries, which contributes greatly to climate change and environmental degradation. Consumption of clothing has increased dramatically over the last thirty years, spurred on by the rise of fast fashion and the increased use of synthetic fabrics. This study explored the mediating role of environmental identity and demographic characteristics (age, gender, annual income, and level of education) on performing fashion pro-environmental behaviors. Data was collected on self-reported pro-environmental behaviors (PEB) and demographics through a nationally representative survey (N=507). The analysis found that environmental identity was the strongest predictor in performing fashion-related PEB. High environmental identity increased the odds of respondents reporting having performed fashion-related PEB in 10 of 15 models run, which indicates that environmentalists are adopting fashion-related PEB at an increased rate. In this paper, I argue that viewing the world through 'green-tinted glasses,' where the environmental impact of one's action informs the decision-making process, is a mechanism to express environmental identity in our ever-changing world.

Key Words

pro-environmental behavior, sustainable fashion, environmental identity, clothing consumption

Introduction

The environmental crisis is one of the most significant problems threatening human life. It is widely acknowledged that human behavior is a major contributor to various issues of environmental degradation, such as climate change, biodiversity loss, ocean acidification, and air pollution (Abdulla et al., 2018; Wynes and Nicholas, 2017). There is an urgent need for remediation which requires both environmental policy and widespread changes in lifestyle, particularly in consumer behavior. In this paper, the engagement in activities that improve the state of the environment and the omission of acts that harm the environment will be referred to as pro-environmental behaviors or PEB (Walton and Austin, 2011). By deepening our understanding of the rationale behind these pro-environmental behaviors, we can respond to these environmental issues through avenues such as advocacy campaigns and public policy (Antil, 1984). A key contributor to environmental degradation is the fashion industry and associated consumption. The fashion industry was found to produce 20% of global wastewater and 10% of global greenhouse gas emissions (UNF, 2018). This paper explores the role of environmental identity and demographic characteristics in the reported engagement with fashion-related pro-environmental behaviors. I will argue that environmentalists, highly environmentally identifying and those who consciously perform pro-environmental behaviors, view their actions and the world through green-tinted glasses. As opposed to rose-tinted glasses, looking at something through green-tinted glasses refers to a tendency to view situations, choices, and decisions, all in the context of how it affects the climate crisis and the overall sustainability of their personhood. In the way a person's choices reflect their overall attitude and worldview, a person with rose-tinted glasses has an optimistic lens on the world, and a person with green-tinted glasses has an environmental lens (Haws et al., 2014). In this way, one's existence is informed by the state of the environment, and by extension, environmental identity.

The Fast Fashion Paradigm

Fast fashion refers to the clothing industry and purchasing habits of the twenty-first century, where clothing is highly accessible, low-cost, poorly constructed, and mostly made of plastic. These characteristics are driven by the rapidly increasing rate at which trends and styles change (Bick et al., 2018). Overconsumption of clothing and accessories has prospered under this system, and the scale of consumption is unimaginable. Annually, eighty billion pieces of new clothing are purchased, and Americans consume five times more clothing today than Americans in the 1980s (McAllister, 2016; Niinimäki et al., 2020). The lifespan of clothing has also decreased; one British study found that the average number of wears of a piece of

clothing was only seven times before disposal (Thomas, 2019). Moreover, as the fashion industry has pivoted towards fast fashion protocols, retailers now produce almost twice the number of clothing collections compared with the start of the fast fashion movement in the late 1990s (Niinimäki et al., 2020). While measures vary, one projection estimated that 85% of textiles end up in landfills, are incinerated, or are exported to developing countries without consideration of reuse (UN Helps Fashion Industry Shift to Low Carbon).

The accelerated rate at which style changes had led to a cycle of rapid acquisition, wear, lack of care or repair, and subsequent disposal. This cycle increases consumer demand and corporate profits, creating a positive feedback loop of production and consumption. It has become common practice for clothing retailers to release 52 'seasons' per year (a new season every week!) because the styles change so frequently (Marquis, 2022). Producers are incentivized to maximize the number of garments produced over the item's quality, how it was produced, or the environmental and social ramifications (Marquis, 2022). The fast fashion framework is exemplified in garment construction; the decisions regarding the design of the piece are almost exclusively determined by the labor and material costs associated with garment assembly (Gwilt, 2020).

Fast fashion is dependent on synthetic fabrics, namely polyester, rayon, acrylic, and nylon, which are stain-resistant, stretchy, waterproof, stronger, softer, and cheaper than their natural fabric counterparts. These characteristics have made synthetic fabrics the de facto choice for garment production in the last twenty years. Synthetic fabric accounts for 61.3% of textile production today and is the second-greatest use of plastic products (Boucher, 2017; Muthu, 2020). However, synthetic fabrics are petroleum-based materials that are extremely energy intensive to produce and shed microplastics with every wear and wash. One study found that laundering synthetic fabrics were the most significant contributor of microplastics found in the ocean alongside tire abrasion (Boucher, 2017). Microplastics resulting from washing synthetic fibers present a considerable environmental threat due to the challenge of filtering wastewater or capturing microplastics in bodies of water (Brandon et al., 2019).

The Role of The Fashion Industry

To stabilize the rapidly deteriorating environment and escalating atmospheric carbon dioxide concentration, substantial changes to how humans collectively use natural resources, particularly energy, and land, are needed (Abdulla et al., 2018).A strong argument suggests that the best remedy for the climate crisis is policy to regulate corporations and industries, particularly fossil fuel producers, referencing the finding that 100 companies are responsible for more than 70% of global greenhouse gas emissions (Riley, 2017). On the other hand, estimates reveal that more than 80% of the energy used and the CO2 emitted in the US result

from consumer demands and the economic activities to support these demands, showing the outsized role of individual behavioral choices (Bin and Dowlatabadi, 2005; Steg and Vlek, 2009). One kilo of cotton requires 10,000 liters of water for cultivation; in comparison, it would take one person ten years to drink the same quantity (UNF, 2018).This statistic emphasizes the role of consumer behavior, showing that corporations have substantial carbon footprints due to increased consumer demand. While individual behavioral changes are not sufficient to address climate change, they are a necessary component of the effort to change the systems we reside within.

Literature Review

This literature review explores the measurement tools of pro-environmental behaviors, PEB research using surveys of self-reported behavior, the pro-environmental behaviors related to fashion, and the characteristics that influence the adoption of behaviors. Environmental behavior is studied across many disciplines, from psychology to environmental studies to business research and marketing, and the tools used to measure PEB vary widely (Diamantopoulos et al., 2003). One review from 2013 found that 42 out of 49 studies utilized a unique scale for measuring pro-environmental behavior without consistency of PEB categories (Markle, 2013). Many studies employ self-reported surveys to create a one-off measurement of behavior and environmental attitudes. The ad hoc nature of self-reported surveys is also apparent; another review of PEB scales stressed the importance of using and building on validated, established measures that contribute most to the cumulative research and our understanding of PEB (Lange and Siegfried, 2019). The culture of building upon previous research is apparent and widespread; for example, Shiel et al. (2020) combined components of the GREEN scale and the Ecologically Conscious Consumer Behavior Scale (ECCB) in research on green consumer behavior (Haws et al., 2014; Straughan and Roberts, 1999).

While research objectives vary greatly across PEB research, there is a strong focus on responsible consumption and behaviors with the most significant environmental impact. Webb et al. (2008) created the Socially Responsible Purchase and Disposal scale (SRPD) as an updated response to Ecologically Conscious Consumer Behavior scale. This measure better reflects the full, dynamic range of social and environmental issues and consumer concerns and addresses the varied environmental impact of products and behaviors. Additionally, Markle (2013) created the Pro-Environmental Behavior Scale (PEBS), which focused on behaviors having the most significant environmental impact, as identified by environmental scientists, as a response to models that included behavioral items with questionable environmental impacts.

Staats et al. (2004) created the Pro-environmental Behavior Index based on eight household behaviors with environmental consequences that aimed to create durable change. Research on the factors that affect the likelihood of performing pro-environmental behaviors also covers various determinants. A review of 72 studies that attempt to alter behavior and encourage pro-environmental behavior found that social influence and contextual intervention, such as education, created the most gain in PEB, indicating that factors such as pledges to achieve goals and incentives can be powerful motivators in performing (Byerly et al., 2018). Environmental identity, concern, and intention have been extensively studied regarding consumption habits and pro-environmental behavior (Antil, 1984; Lee, 2008; Fisher et al., 2012; Byerly et al., 2018; **?**). A study by Chan (1996) on young Hong Kong consumers found social influence, environmental concern, self-image in environmental protection, and perceived environmental responsibility to be the top predictor of green purchasing behavior.

A substantial body of research exists on the impacts of demographics on environmental behaviors, yet results are inconsistent (Walton and Austin, 2011). A review by Diamantopoulos et al. (2003) found inconsistencies in findings on the relationship between demographics and ecological knowledge, attitude, and behavior. An analysis by Fisher et al. (2012) found that the demographic variable with the greatest effect on environmentally friendly behaviors is gender, where women are more likely to exhibit green behaviors, and level of education did not affect ecologically friendly actions. Public opinions on environmental concerns have changed rapidly and vary dramatically, which is reflected in conflicting results. For example, studies that compared age groups are very mixed; Roberts (1996) found that age impacted ecologically conscious consumer behavior, where older consumers are more likely to exhibit ECCB, while another paper from the same year found the opposite (Chan, 1996). Additionally, the relationship between environmental beliefs and environmental behavior is mixed. This indicates the need to differentiate environmental behaviors from environmental attitudes (Walton and Austin, 2011). Several studies have also found that income level has been found to mediate environmental behaviors. For example, Dietz et al. (2007); Derksen and Gartrell (1993) found that increased income can increase willingness to make tradeoffs that benefit the environment. However, these relationships could result from the fact that some PEB consumption behaviors are luxuries that low-income individuals cannot afford, which illustrates the structural obstacles individuals face (Gebhardt and Lindsey, 1995).

The impact of the zeitgeist surrounding fast fashion and overconsumption on the operational framework of research on fashion as an environmental behavior should also be noted. Media coverage relating to the culture of consumerism and shopping is often highly inflammatory and centered around the actions of women, girls, and young people (Reice, 2021). While these groups are generally found to consume clothing at higher rates than men,

boys, and older people, the sensationalization and polarization of environmental behaviors across demographic groups in the popular press can significantly distort dominant notions of which groups are and are not acting in an environmentally friendly manner (ame, 2022). For example, in the news, Generation Z can be heralded as the savior of thrift shops and portrayed as hedonistic fast fashion lovers in two articles from the same month (Kale, 2021; Holland, 2021). Women generally face a similarly pointed portrayal in the news regarding topics such as shopping, frivolity and materialism, and appearance maintenance while simultaneously being proclaimed as the most potent consumer subgroup and the foremost untapped market (Brennan, 2022; Spector, 2022). In this way, the coverage of fashion consumption has contributed to a particular, un-nuanced view of who is and is not performing fashion-related PEB. Given the dominant conversations surrounding blame and overconsumption of fashion, age, gender, income, and level of education were identified as variables of interest. In this way, this research seeks to disentangle the deeply complex relationship between PEB and individuals.

In order to increase the environmental sustainability of the fashion industry, a connection between fashion-related PEB and industrial standards that affect these behaviors needs to be established. Several studies have explored this question. While fashion consumption behaviors have considerable environmental implications, the lifespan of clothing is equally important. Furthermore, practices such as mending, repurposing, swapping, buying second-hand, and mindful consumption imbue value into clothing, showing how environmental priorities have led "fashion consciousness [to be] re-imagined as sustainability consciousness" (Hackney et al., 2021).

A review of sustainable fashion consumption literature by Dabas and Whang (2022) found that research has shifted focus to encompass sustainable fashion practices beyond product-consumption-based research. Shaw and Shiu (2002) found that ethical obligations partially drive consumers' decisions and that the knowledge that their behaviors impact others motivates sustainable behavior. Reyes and Mendiola (2021) found that respondents' attitudes and norms significantly correlate toward reducing the frequency of clothing purchases. The authors argue that reduced consumption of fast fashion is a crucial PEB due to the environmental impact, which concurs with Markle (2013). Furthermore, environmental attitude and environmentally and socially conscious self-identity were the strongest predictors of eco-fashion purchase intention in one study of French Millennials (Lambert, 2019). While environmental identity, perceived environmental responsibility, and perceived effectiveness of environmental behavior have also been extensively studied regarding consumer behavior and fashion consumption, no study was found to investigate the impact of environmental identity and fashion pro-environmental behaviors beyond consumption.

While scholars have extensively documented the importance of consumers' environmental behaviors, less focus has been devoted to fashion-related behaviors, and no study published to date has analyzed fashion-related PEB across demographic groups using representative samples. Furthermore, research into sustainable fashion behaviors mainly focuses on market analysis and eco-friendly product development instead of environmental identity (Manchiraju and Sadachar, 2014). Therefore, this study explores how environmental attitudes and demographics, namely age and gender, moderate the likelihood of performing fashion-related PEB. This research contributes to a better understanding of how fashion-related PEB is being practiced, consciously or not, across demographic groups.

Methods and Materials

Survey Development

This study analyzes data on fashion-related PEBs from a nationally representative survey of 507 residents of the United States. The survey was designed to assess respondents' short-term preferences for pro-environmental behaviors. The short-term focus of this tool enables researchers to study the external influences that affect respondent behavior. The questionnaire focused on eight environmental behavior domains: water use; home energy use; social & community; food and beverages; packaging; waste, recycling, and reuse; transportation; and fashion consumption. The fashion consumption domain comprised 15 questions, each specific to a fashion-related pro-environmental behavior. The questions were structured with binary answers (yes/no) to record respondents' PEB. The survey was carried out on QualtricsXM. The participants were recruited with Prolific to be approximately representative samples of adults in the United States. Prolific utilizes US Census Bureau data to calculate the proportion of each age, race, and gender subgroup of the national population to ensure that the sample is representative to an accuracy of 95% or greater. We then added seven additional demographic questions on level of education, postal code, parental status, rural-urban-suburban environment, political affiliation, 2020 presidential election vote, and annual household income. The survey was first administered as a beta test to approximately 15 friends and family members, which allowed us to clarify and adapt questions and provided an average survey completion time. The survey was distributed to respondents in the summer of 2022, and all personal data was anonymized to protect participants' privacy.

The survey included questions from five established scales on environmental behavior and beliefs; Environmental Identity, Warm Glow, Environmental Personal Norms, the Schwartz Value Survey, and Climate Change Beliefs (Bouman et al., 2018, 2020; Jia and van der

Linden, 2020; Van der Werff et al., 2013; Venhoeven et al., 2016).In order to collect data on the diverse set of behaviors with environmental impacts, the fashion and consumption domains focused on both purchasing and non-purchasing behaviors. The survey asked respondents to identify whether or not they performed the following twelve purchasing behaviors in the last week: avoiding buying anything except necessities; returning a piece of clothing; shopping for second-hand clothing; purchasing new clothing; purchasing clothing from an inexpensive, fast fashion brand; returning an online clothing purchase; choosing sustainably produced garments over conventionally produced clothing; making an effort to buy repairable clothing; buying clothing containing natural, synthetic, or recycled fibers; and consideration of repair of shoes. The survey also asked whether respondents had engaged in three non-purchasing behaviors in the same period: clothing mending, clothing swaps, and putting aside old clothing or belongings to donate or sell. The time scope of behaviors within the last week presented a challenge to this research, given that some behaviors that were initially identified to be of interest are practiced comparatively infrequently. As a result, four final questions were added to inquire about the last time the respondent had performed these behaviors. These four questions focused on the fiber content of the last clothing purchase (natural, synthetic, or recycled synthetic fibers) and the previous time shoes were purchased (considerations of repair). See Appendix B: Full Survey for the complete list of behaviors investigated.

Participant Demographics

Respondents ranged from 18 to over 75 years old, with a median age of 46.7 years. Nearly half of the respondents were male (48%), and 52% of respondents identified as female, non-binary, or other. 51.9% of respondents reported having a bachelor's degree, master's degree, or doctorate, while 48.1% reported having completed some high school, holding a high school diploma or associate's degree, or completed trade school. Table 1 summarizes the key characteristics of the sample based on the demographic questionnaire.

Table 1: Summary of Demographic Characteristics

Summary of Demographic Statistics				
Characteristic	Frequency (%)	n	Mean	N
Age (years)			45.7	507
18-24	11.2	57		
25-34	19.7	100		
35-44	16.9	86		
45-54	17.2	87		
55-64	20.5	104		
65-74	12	61		
75 or older	2.4	12		
Gender				507
Male	47.5	241		
Female and Other	52.5	266		
Level of Education				507
Some High School, High School Diploma, Associate's Degree, or Trade School	48.1	244		
Bachelor's Degree, Master's Degree, Doctorate, (Ph.D., J.D., M.D., etc.)	51.9	263		
Annual Income			$56,829.39	507
Less than $25,000	17.6	89		
$25,000 - $50,000	29.2	148		
$50,000 - $100,000	33.5	170		
$100,000 - $200,000	167	86		
More than $200,000	2.76	14		

Variables Recoding

Environmental identity was recorded with respondents reporting their attitudes using a seven-point Likert Scale ("Strongly Disagree," to "Strongly Agree"). The three environmental identity questions were as follows: "acting environmentally friendly is an important part of who I am," "I am the type of person who acts environmentally friendly," and "I see myself as an environmentally friendly person."

The predictor variables were first recoded to be used in logistic regression analysis. In order to use the environmental identity data as a predictor variable, an environmental identity score was calculated for each respondent. First, the responses were recoded with values ranging from one to seven (1="Strongly Disagree," 7="Strongly Agree"). The Likert scores were averaged and standardized to produce the environmental identity index. By standardizing this variable, the results of this study retain internal consistency. Gender was recoded as a binary variable in which 0 = represented male and "1" presented female, non-binary, or self-defined. The female and self-defined groups were designated the same due to a limited number of respondents reporting their gender as self-defined. The female

and self-defined groups had the same mean person parameter value, indicating no significant difference in reported behavior between these populations. Level of education was recoded as a discrete variable where "0" represented "completed some high school," "holding a high school diploma or associate's degree," or "completed trade school," and "Bachelor's degree," "Master's degree," or "Doctorate" were designated as "1." Income level was recoded from a categorical variable to a continuous variable of $10,000 increments by dividing the mean value of each range presented on the survey divided by 10,000. For example, option $25,000-$50,000 was recoded as 3.75. The start and end ranges were recoded as 1.25 and 20. Age was recorded in bins of 10-year increments, except for ages 18-24 and 75 or older. Age remained a categorical variable to show behavior differences between age groups, with 18-24 being the baseline to compare all other age groups. The results of the fashion-related questions were coded as discrete variables in which "0" represented "no" and "1" represented "yes."

Data Analysis

RStudio was used to analyze the data. I ran fifteen logistic regression models, each corresponding to one fashion-related PEB. Logistic regression analysis estimated the probability of an event occurring based on the independent variable and was employed due to the binary outcome variable (fashion-related PEB). The predictor variables in this study include the environmental identity index, gender, level of education, annual income, and age. In this way, the results of each model show the impact of environmental identity, gender, level of education, annual income, and age on the likelihood of performing a fashion-related environmental behavior. P values less than 0.05 were recorded as statistically significant. The statistically significant coefficients of the regression models are then used to obtain the odds ratio, which represents the estimated impact of each predictor variable on the probability of the reported behavior (See Appendix A: Results of Logistic Regression Models for complete results of each model). The odds ratios were calculated by exponentiating the coefficients of the logistic regressions. The exponentiated confidence intervals were calculated for each model, as well. Table 3 shows the odds ratios of statistically significant relationships.

An odds ratio of 1 would indicate no impact of the demographics and environmental identity on the likelihood of performing a fashion-related PEB. In contrast, an odds ratio greater than 1 indicates increased odds of reporting a PEB, while an odds ratio of 1 indicates decreased odds of reporting a PEB. Table 2 summarizes the frequencies of all fashion-related PEB.

Table 2: Frequencies of Reported Fashion-Related Behaviors

	Yes Count	%	No Count	%
Avoid buying anything except necessities	275	54.24	232	45.76
Purchase clothing made of natural fibers	242	47.73	265	52.27
Put aside old clothing or belongings to donate or sell	225	44.38	282	55.62
Purchase clothing made of synthetic fibers	174	34.32	333	65.68
Purchase new clothing	119	23.47	388	76.53
Purchase fast fashion	99	19.53	408	80.47
Shop for second-hand clothing	93	18.34	414	81.66
Mend clothing	70	13.81	437	86.19
Consider repair of shoes	65	12.82	442	87.18
Return a piece of clothing purchases	57	11.24	450	88.76
Return clothing purchased online	48	9.47	459	90.53
Make an effort to buy repairable clothing	39	7.69	468	92.31
Purchase clothing made of recyclable fibers	38	7.50	469	92.50
Chose sustainably produced clothing	24	4.73	483	95.27
Attend or host clothing swap	8	1.58	499	98.42

Results

The findings of this study reveal that environmental identity had the strongest relationship with the performance of sustainable fashion behaviors; 10 of 15 models found environmental identity to be a significant predictor variable. Respondents whose standardized environmental identity score exceeded the mean will now be referred to as highly environmental-identifying respondents or as environmentalists. Table 3 shows the statistically significant relationships.

High environmental identity increased the odds of reporting having performed the following fashion-related PEB: avoiding the purchase of non-necessities, putting aside clothing to donate or give away, purchasing second-hand clothing, buying sustainably produced clothing, considering the repairability of clothing and shoes, and purchasing clothing made of natural or recycled fibers. Additionally, highly environmentally identifying respondents were found to be less likely to have reported purchasing fast fashion clothing and clothing made of synthetic fibers, two key behaviors with associated negative environmental ramifications.

Environmentalists were three times more likely to report buying sustainably produced clothing, nearly four times as likely to consider the repairability of shoes, and over six times as likely to report purchasing clothing made of recycled fibers. Regarding acquisition and shopping habits, highly environmentally identifying respondents were also 29% more likely to avoid purchasing non-necessities, 70% more likely to have reported shopping for second-hand clothing, and 66% less likely to report purchasing fast fashion clothing.

Demographic variables had statistically significant relationships with sustainable fashion behaviors, but the results were mixed. Along gender lines, women (and those identifying as non-binary or other) were found to be three times as likely to report havingrepaired clothing

compared to men and are twice as likely to report putting aside clothing to donate or sell. Conversely, women are 68% more likely to report their most recent clothing purchase to be made of synthetic fibers compared to their male counterparts. Annual household income was also found to impact several behaviors. As income increases, individuals are much less likely to report avoiding purchasing non-necessities, buying new clothing, buying fast fashion clothing, and considering the repairability of clothing. As annual income increases, individuals are slightly more likely to report putting clothing aside to donate or give away. Interestingly, as annual income increases, respondents were less likely to report purchasing new clothing or fast fashion and consider the repair of shoes. Additionally, individuals with a bachelor's degree or higher are half as likely to buy second-hand clothing as their counterparts.

Regarding age groups, the group aged 25-34 was found to have no significant difference in behavior compared to the age group 18-24, indicating consistency in behaviors across these two groups. The age group 55-64 was also found to have statistically significant effects on several fashion-related environmental behaviors; individuals 55-64 are twice as likely to avoid purchasing non-necessities and four times more likely to have bought new clothing in the last week compared to 18–24-year-old respondents. Several statistically significant findings do not show large differences in behaviors across age groups, such as trying to buy repairable clothing. Results can be found in Appendix A, table 5A. Age groups 35-44 and 45-54 were 88% less likely than the baseline, age 18-24 group, to report having considered the repairability of clothing. Additionally, the age group 55-64 was 78% less likely to report considering the repairability of clothing than the baseline. Two sustainable fashion behaviors yielded no statistically significant findings; returning clothing purchased online and attending or hosting a clothing swap. Age groups 65-74 and 75 or older had no statistically significant relationships with any studied behaviors, possibly due to a small sample size (N = 61 and 12, respectively).

Full regression results are found in Appendix A: Results of Logistic Regression Models. For example, Table 3A of Appendix A shows that gender statistically significantly impacts participants reporting having mended clothing within the last week, where the coefficient equals 1.128. The odds ratio, in turn, equals 3.09, meaning that female and non-binary identifying respondents are 3.09 times more likely to have reported mending.

Table 3: Statistically Significant Odds Ratios and Confidence Intervals

Model	Environmental Identity	Gender	Level of Education	Annual Income	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Avoid buying anything except necessities	1.29 (1.03, 1.62)			0.95 (0.90, 0.99)				2.22 (1.04, 4.81)
Purchase clothing made of natural fibers	1.79 (1.39, 2.33)							
Put aside old clothing or belongings to donate or sell	1.49 (1.18, 1.92)	2.00 (1.29, 3.13)		1.07 (1.02, 1.12)				
Purchase clothing made of synthetic fibers	0.76 (0.60, 0.98)	1.68 (1.05, 2.69)						
Purchase new clothing				0.91 (0.86, 0.96)		2.85 (1.12, 7.49)		4.11 (1.63, 10.74)
Purchase fast fashion	0.66 (0.48, 0.91)			0.94 (0.89, 1.00)				
Shop for second-hand clothing	1.70 (1.22, 2.43)		0.5 (0.26, 0.95)					
Mend clothing		3.09 (1.57, 6.46)						
Consider repair of shoes	3.82 (2.32, 6.71)			0.9 (0.82, 0.97)				
Return a piece of clothing purchased						11.71 (1.85, 228.47)		
Return clothing purchased online								
Make an effort to buy repairable clothing	2.23 (1.35, 3.88)					0.12 (0.02, 0.56)	0.12 (0.02, 0.53)	0.22 (0.06, 0.76)
Purchase clothing made of recyclable fibers	6.57 (2.89, 18.49)							
Chose sustainably produced clothing	3.06 (1.45, 7.34)							
Attend or host clothing swap								

Note; This table shows the odds ratios and exponentiated confidence intervals of statistically significant regression models ($p < 0.05$). Gaps indicate non-significant results. Age groups 65-74 and 75+ were omitted due to lack of statistically significant findings.

Discussion

This study investigates the mediating role of environmental identity, age, gender, level of education, and income on performing fashion-related PEB. Fifteen models were run, each analyzing a different behavior; behaviors ranged from clothing consumption to considerations of clothing repair. This analysis was based on data from a survey on self-reported PEB featuring a sample roughly representative of the American population.

The analysis identifies environmental identity as the variable with the most statistically significant relationships. Respondents with a strong sense of environmental identity were more likely to engage in sustainable fashion behaviors, such as buying second-hand, and less likely to engage in behaviors with negative environmental impacts, such as buying fast fashion. This would indicate that having a robust environmental identity leads to an increased likelihood of considering the impact of one's clothing. In turn, this leads to adopting behaviors that align with environmental beliefs and values, a necessary step in the lifestyle changes necessary to mitigate environmental crises. This study found that environmentalists, respondents who were identified as highly environmentally identifying, are cognizant of the sustainability of clothing and the first adopters of fashion-related PEB. In this way, these results affirm my argument that environmentalists view their lives through green-tinted glasses.

Additionally, understanding the characteristics of people already performing PEB may be instrumental in identifying the most potent avenues of behavior modification. This analysis found that women and non-binary people are more likely to perform two key behaviors that extend the lifespan of clothing; mending clothing and putting clothing aside to donate or sell. This indicates that women and non-binary people are aware of the potential for an extended life for their clothing through mending and donating clothing. These findings can be understood as a function of greater societal structures beyond the environmental lens; sewing is women historically, and women are more likely to have larger wardrobes (Hackney et al., 2021; Zhang, 2014). These findings also contradict the idea that women are frivolous shoppers who shop for fulfillment instead of necessity. Considering the size of one's wardrobe can further contextualize these conclusions; individuals are more likely to report getting rid of clothing (putting clothing aside to sell or donate) as income increases. This finding is contradicted by the finding that increased income leads respondents less frequently to report having bought new or fast fashion clothing and considering the repair of shoes. This finding may be impacted by perceptions of the quality of fast fashion compared to luxury brands or one's sense of frugality.

While level of education was found to impact reported behaviors, where respondents with

a Bachelor's degree or higher are half as likely to have reported buying second-hand clothing as those without a Bachelor's degree. Further research, specifically studying the impact of income on pro-environmental behavior, is needed. The finding that respondents aged 18-24 are more likely to consider the repairability of shoes than their peers aged 35-64 indicates that younger individuals are more likely to consider their wardrobe according to lifespan and wear. These findings resonate when considering the blame placed on young people for buying fast fashion; this research found that young people (ages 18-24) are most likely to perform fashion-related PEB. Furthermore, there was no significant reported difference in behaviors between age groups 18-24 and 25-34. Respondents aged 35-44 are eleven times more likely to have reported returning a clothing purchase and nearly fourfold as likely to have reported buying new clothing. This would indicate that individuals aged 35-44 are buying clothing and returning the purchase the most frequently, which could be attributed to factors such as; increased disposable income, changes in household composition from having children, or career advancements resulting in the need for a new wardrobe.

The mixed findings regarding age, gender, and fashion-related PEB is congruent with previous PEB research, which is often contradictory in this way (Byerly et al., 2018; Markle, 2013; Shiel et al., 2020).The main finding of this research is that strong environmental attitudes correlate to reporting fashion-related PEB concurs with Staats et al. (2004). Furthermore, women's increased likelihood of mending and putting clothing aside (as opposed to disposal into the garbage) confirms the findings from Fisher et al. (2012) which suggested women perform environmentally friendly behavior, specifically by using green products and recyclable bags. This finding, and the lack of observed differences between men and women for most other fashion-related PEB, disproves common conceptions regarding women's shopping habits. Unlike Fisher et al. (2012), this research found age to moderate some fashion-related PEB, specifically that the youngest age group was much more likely to consider the longevity of their shoe purchases than the oldest respondents. This contradicts the assertion that Generation Z is the foremost offender of impulsive fast fashion purchases, a common trope.

Conclusion

Returning to the role of the measurement tool in interpreting research findings, these results are only as valid as the survey itself. While the survey development was based on previous work, there are limitations in the conclusions that can be made from the results. Using self-reported behavior, for example, brings up issues of social desirability bias and response bias, wherein participants give inaccurate responses, consciously or not, which reduces the validity of these findings. Due to the constraints of the survey format, this research was narrow in

focus; meanwhile, fashion-related behaviors range widely. Furthermore, some behaviors, such as clothing swaps and returning clothing purchased online, were practiced highly infrequently. One behavior, avoiding purchasing non-necessities, is exceptionally subjective, both of which diminish practical application because of variations in interpretation.

One application of these findings could be in future research into modifying behavioral patterns to encourage fashion-related PEB with positive environmental impacts. Further research should investigate a broader range of fashion-related PEB, specifically in frequently practiced behaviors. Additionally, the informal networks of clothing exchange that occur in the personal sphere present a unique opportunity to explore the social factors that determine the undertaking of pro-environmental behaviors. The findings made regarding fashion-related PEB and environmental identity should be tested in future studies. Research could also be done in an experimental setting to study participatory fashion practices, such as wardrobe audits where participants estimate how many pieces of clothing they own, count their clothing, perform interviews, keep a clothing diary, and attend workshops. Research into individuals' relationship with their wardrobe and the dynamic process of clothing acquisition, care, wear, and disposal, wherein clothing is an extension of self, is necessary to study fashion-related behavior.

Furthermore, the drivers of behavior, such as environmental identity, frugality and thrift, and access to information, are complex in nature, highly diverse, and dynamic. In this way, disentangling the drivers and obstacles of performing pro-environmental behaviors and attempting to change behaviors is complex and goes far beyond the scope of this study. While the provisional nature of this research on fashion-related PEB constrains the applications of results, there is a clear and pressing challenge to which PEB research contributes invaluable information. Changing behavior, particularly consumption patterns, is a requisite in the movement to mitigate climate change. Conversely, this presents an unprecedented opportunity and demand for research that explains how individual beliefs, especially as they relate to the environment, impact the decisions making process. Individual action is one component of environmental collapse remediation; political action and supply-side changes are also necessary. Efforts vary widely; two examples of programs with great potential would be municipal clothing recycling and reuse programs and advocacy curricula regarding synthetic clothing and microplastic shed. This research shows that the movement for increased awareness of the environmental impact of clothing and the fashion industry has created change. In this way, this subsidiary of fashion research is integral to re-imagining the future of clothing consumption, where self-identity is re-imagined to incorporate environmental identity.

These results show that environmentalists practice the fashion-related PEB in this

research the most, showing the impact of environmental beliefs on behavior. Viewing one's life through green-tinted glasses creates a clear path to reducing one's carbon footprint regarding clothing clear. By limiting fast fashion purchases, caring for existing pieces of clothing to expand lifespan, and generally adopting strategies that are centered around divesting in overconsumption, a new set of priorities emerges: "the personal becomes political and the wardrobe a quietly activist space for social, economic, and political agency" (Hackney et al., 2021).

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Appendix A: Results of Logistic Regression Models

Table 1A: Results of Models 1-3

	Dependent variable:		
	clothingMend	purchaseNonNecessity	clothingReturn
	(1)	(2)	(3)
Environmental Identity	0.237	0.255**	−0.206
	(0.186)	(0.114)	(0.212)
Gender	1.128***	0.386*	−0.256
	(0.359)	(0.219)	(0.380)
Level of Education	0.470	−0.304	−0.575
	(0.352)	(0.238)	(0.428)
Annual Income	−0.032	−0.055**	−0.031
	(0.034)	(0.023)	(0.036)
Age 25-34	0.078	0.340	0.473
	(0.908)	(0.397)	(0.623)
Age 35-44	1.540*	0.667	2.460**
	(0.808)	(0.411)	(1.111)
Age 45-54	0.927	0.404	0.739
	(0.831)	(0.407)	(0.657)
Age 55-64	1.132	0.799**	0.806
	(0.799)	(0.390)	(0.613)
Age 65-74	1.320	0.295	0.198
	(0.833)	(0.438)	(0.631)
Age 75 or More	0.961	0.598	14.761
	(1.329)	(0.904)	(898.564)
Intercept	−3.692***	0.421	2.431***
	(0.807)	(0.346)	(0.555)
Observations	387	387	387
Log Likelihood	-131.866	-245.158	-104.890
Akaike Inf. Crit.	285.733	512.315	231.781

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2A: Results of Models 4-6

	Dependent variable:		
	clothingOld	clothingSecondHand	clothingNew
	(1)	(2)	(3)
Environmental Identity	0.401***	0.533***	−0.271*
	(0.124)	(0.175)	(0.149)
Gender	0.695***	0.346	−0.061
	(0.225)	(0.302)	(0.265)
Level of Education	−0.117	−0.686**	−0.038
	(0.239)	(0.326)	(0.291)
Annual Income	0.066***	−0.031	−0.095***
	(0.023)	(0.033)	(0.026)
Age 25-34	−0.056	−0.453	0.202
	(0.422)	(0.543)	(0.442)
Age 35-44	0.082	−0.744	1.048**
	(0.418)	(0.552)	(0.481)
Age 45-54	0.148	−0.746	0.799*
	(0.420)	(0.555)	(0.471)
Age 55-64	−0.368	−0.074	1.413***
	(0.405)	(0.474)	(0.478)
Age 65-74	0.393	−0.272	0.423
	(0.445)	(0.554)	(0.485)
Age 75 or More	0.999	−0.481	15.511
	(0.841)	(1.164)	(900.210)
Intercept	−1.261***	−1.131**	1.428***
	(0.371)	(0.441)	(0.391)
Observations	387	387	387
Log Likelihood	-240.571	-151.724	-181.859
Akaike Inf. Crit.	503.142	325.449	385.719
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 3A: Results of Models 7-9

	Dependent variable:		
	clothingFastFashion	clothingReturnOnline	clothingSwap
	(1)	(2)	(3)
Environmental Identity	−0.408**	−0.294	0.495
	(0.166)	(0.247)	(0.676)
Gender	−0.287	0.211	−0.783
	(0.288)	(0.429)	(1.246)
Level of Education	0.211	−0.623	−0.637
	(0.314)	(0.490)	(1.327)
Annual Income	−0.061**	−0.014	0.025
	(0.028)	(0.042)	(0.121)
Age 25-34	−0.314	0.329	−17.253
	(0.482)	(0.732)	(3,378.061)
Age 35-44	0.618	0.366	−17.723
	(0.524)	(0.722)	(3,603.755)
Age 45-54	0.562	1.201	−0.128
	(0.524)	(0.905)	(1.465)
Age 55-64	0.963*	0.907	−0.446
	(0.522)	(0.756)	(1.486)
Age 65-74	0.277	0.154	−17.590
	(0.540)	(0.740)	(4,136.436)
Age 75 or More	15.021	14.369	−17.390
	(904.125)	(891.673)	(10,813.330)
Intercept	1.810***	2.584***	−3.638***
	(0.441)	(0.637)	(1.341)
Observations	387	387	387
Log Likelihood	-161.219	-87.907	-14.791
Akaike Inf. Crit.	344.439	197.813	51.582

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4A: Results of Models 10-12

	Dependent variable:		
	clothingSustainable	clothingRepairable	naturalfiber
	(1)	(2)	(3)
Environmental Identity	1.117***	0.802***	0.581***
	(0.413)	(0.269)	(0.132)
Gender	−0.273	0.853*	−0.368
	(0.586)	(0.444)	(0.237)
Level of Education	0.067	0.002	−0.044
	(0.650)	(0.468)	(0.258)
Annual Income	−0.011	0.025	−0.026
	(0.060)	(0.041)	(0.025)
Age 25-34	−0.133	−0.747	0.839*
	(1.077)	(0.636)	(0.444)
Age 35-44	−16.639	−2.082**	−0.481
	(1,289.172)	(0.843)	(0.457)
Age 45-54	−0.370	−2.148**	0.249
	(1.047)	(0.847)	(0.443)
Age 55-64	0.217	−1.519**	0.483
	(0.902)	(0.650)	(0.422)
Age 65-74	−0.372	−1.193*	0.424
	(1.081)	(0.706)	(0.476)
Age 75 or More	−16.469	−14.978	−1.767
	(3,910.771)	(895.777)	(1.159)
Intercept	−3.324***	−2.287***	0.122
	(0.911)	(0.571)	(0.384)
Observations	387	387	328
Log Likelihood	-48.646	-85.276	-208.527
Akaike Inf. Crit.	119.291	192.551	439.054

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5A: Results of Models 13-15

	Dependent variable:		
	syntheticfiber	recycledfiber	repairableshoes
	(1)	(2)	(3)
Environmental Identity	-0.268^{**}	1.883^{***}	1.340^{***}
	(0.125)	(0.469)	(0.270)
Gender	0.517^{**}	0.166	0.125
	(0.238)	(0.565)	(0.364)
Level of Education	0.180	−0.605	−0.039
	(0.259)	(0.597)	(0.388)
Annual Income	−0.014	−0.037	-0.108^{**}
	(0.025)	(0.063)	(0.043)
Age 25-34	−0.091	0.468	0.301
	(0.452)	(0.978)	(0.713)
Age 35-44	0.733	−1.850	0.258
	(0.454)	(1.369)	(0.685)
Age 45-54	−0.245	−0.237	−0.251
	(0.465)	(1.035)	(0.735)
Age 55-64	0.131	−0.649	−0.065
	(0.430)	(0.943)	(0.664)
Age 65-74	0.441	0.433	0.114
	(0.483)	(0.972)	(0.726)
Age 75 or More	1.583^{*}	−11.409	−0.181
	(0.929)	(1,455.398)	(1.267)
Intercept	-0.967^{**}	−1.427	-1.791^{***}
	(0.400)	(0.912)	(0.630)
Observations	328	120	324
Log Likelihood	-207.682	-45.228	-105.665
Akaike Inf. Crit.	437.364	112.456	233.331
Note:			*p<0.1; **p<0.05; ***p<0.01

Appendix B: Full Survey

Water Usage

In the past week, have you ... (Yes, No, Not Applicable, I Don't Know)

taken short showers (less than 10 minutes)?

showered at least once a day?

showered every other day or less?

watered your lawn?

watered your garden?

run the dishwasher without a full load?

run the washing machine without a full load?

turned off the water when not in use, while brushing teeth,

shaving, or washing hands?

turned off the water in the middle of a shower (e.g. while soaping up, shaving, etc.)?

Home Energy Use

During which season are you taking this survey? (Warm season, Cold season)

In the past week, have you ...(Yes, No, Not Applicable, I Don't Know)

turned down the heat at night?

turned down the heat while away from home?

turned down the A/C at night?

left the A/C on while away from home?

left fans on while away from home?

used an energy-saver setting on a household appliance (e.g.

dishwasher or laundry machine)?

used a water-saver setting on a household appliance (e.g. dishwasher or laundry machine)?

left lights on in rooms when not in use?

leave this response blank

turned off electronics or appliances when not in use?

unplugged electronics or appliances when not in use?

left a TV on for more than a few minutes when no one was watching it?

Social and Community

In the past week, have you ...(Yes, No, Not Applicable, I Don't Know)

posted ideas or actions to reduce one's environmental impact on social media?

posted any information, articles, or content that are critical of mainstream climate change science?

posted any information, articles, or content that is supportive of mainstream climate change science?

posted any information, articles, or content that are critical of policies or practices aimed at protecting the environment or promoting sustainability?

posted any information, articles, or content that are supportive of policies or practices aimed at protecting the environment or promoting sustainability?

Food and Beverage

In the past week, have you consumed any meat or seafood? (Yes, No, I don't know)

In the past week, have you ... (Yes, No, Not Applicable, I Don't Know)

eaten at least one dinner without meat?

eaten at least one lunch without meat?

chosen conventionally raised products over pasture-raised or grass-fed animal products?

bought local meats and animal products?

chosen conventional fish over sustainably raised fish?

eaten beef?
eaten poultry?
eaten fish, shrimp, or other seafood?
consumed cow's milk?
consumed a non-dairy milk alternative?
consumed almond milk?
consumed eggs?
purchased or eaten sustainably sourced animal products (dairy, eggs, etc.)?
eaten anything that was foraged (for example eaten edible plants from a forest or yard)?
purchased non-organic produce?
purchased produce grown without chemicals and pesticides?
purchased locally grown produce?
refrained from making a food purchase because it was produced too far away?
consumed food from a personal or household garden?
eaten out at a restaurant?
gotten take-out from a restaurant?
brought your own lunch to work or school?
consumed climate-friendly protein (e.g., tofu or beyond burgers)?

Packaging, Waste, Recycling, and Reuse

In the past week, have you ... (Yes, No, Not Applicable, I Don't Know)
consumed water from a disposable water bottle?
purchased disposable water bottles to have on hand?
consumed a non-water beverage from a disposable bottle?
declined a paper or plastic bag at the register?
purchased a product with reduced plastic packaging?
chosen glass or aluminum packaged products over plastic packaged products?
chosen aluminum packaged products over glass packaged products (e.g., aluminum cans vs. glass bottles)?
used a disposable plastic straw?
reused glass or plastic containers that were intended to be single-use (such as a glass beverage bottle or take-out container)?
reused plastic or paper bags?
brought your own bags or cardboard boxes to the store instead of using new paper or plastic bags?
used a refillable water bottle?
used a refillable container for a beverage other than water?
brought your own container for leftovers?
Used your own utensils to avoid using disposable utensils?
used reusable cloth napkins?
used paper napkins?
recycled glass or plastic containers?
thrown away a piece of trash that could have been recycled?
pulled something recyclable out of a trash can even though it was not yours?
put compostable waste into a compost receptacle?
held on to something recyclable or compostable until finding the appropriate receptacle?
thrown out food that had gone bad?
cut open packaging to use up the last of a product?
diluted soap or liquid products to expand their lifespan?
thrown away products before using them up?
repurposed an item instead of throwing it away?
given away an item instead of throwing it away?

tried to buy an item second-hand instead of something new?
bought a second-hand item?
replaced something instead of repairing it?
browsed or participated in a buy-nothing group?
printed something when using paper could have been avoided?
used the library or read an online copy of a book or publication?
used environmentally friendly cleaning products?

Transportation

In the past week, have you ... (Yes, No, Not Applicable, I Don't Know)
have you attempted to drive less?
carpooled?
used public transportation?
walked as a form of transportation?
driven once a day?
chosen a slower shipping speed for package deliveries?
driven in a way that limits fuel consumption (e.g. avoided
excessive acceleration/braking)?
checked your tire pressure?

Fashion and Consumption

In the past week, have you ... (Yes, No, Not Applicable, I Don't Know)
mended clothing?
avoided buying anything except necessities (ie. food)?
returned a piece of clothing that you had purchased?
put aside old clothing or belongings to donate or sell?
shopped for second-hand clothing?
purchased new clothing?
purchased clothing from an inexpensive fast fashion brand (such as HM, Walmart, Target, Shein, Amazon, or otherwise)?
returned an online clothing purchase?
hosted or attended a clothing swap?
chosen sustainably produced clothing over conventionally produced clothing?
make an effort to buy repairable clothing?
The last time you bought clothing...(Yes, No, Not Applicable, I Don't Know)
was the clothing made of natural fibers (such as hemp, wool, cotton, and linen)?
was the clothing made of synthetic fibers (such as polyester, acrylic, rayon, and nylon)?
was the clothing made of recyclable fibers?
The last time you bought a pair of shoes, did you think about whether they could be repaired or re-soled? (Yes, No, I don't know)

Environmental Attitudes Questions

(Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree)
Acting environmentally friendly is an important part of who I am.
I am the type of person who acts environmentally friendly.
I see myself as an environmentally friendly person.

Green Warm Glow

(Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree)
Doing something good for the environment would make me feel positive about myself.
I expect to feel good when I behave environmentally

friendly.
I anticipate that I would feel good when I do something to help the environment.
I'd feel guilty if I did NOT behave environmentally friendly.

Environmental Personal Norm

(Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree) I feel morally obligated to act in an environmentally-friendly manner. I would be a better person if I would act in an environmentally-friendly manner.

Environmental Schwartz Value Survey E-SVS

Please rank the following values based on their importance in your life -1(Opposed to my values)-7 (Of supreme importance)
PREVENTING POLLUTION (protecting natural resources)
PROTECTING THE ENVIRONMENT (preserving nature)
RESPECTING THE EARTH (harmony with other species)
UNITY WITH NATURE (fitting into nature)
EQUALITY (equal opportunity for all)
SOCIAL JUSTICE (correcting injustice, caring for the weak)
A WORLD AT PEACE (free of war and conflict)
HELPFUL (working for the welfare of others)
PLEASURE (gratification of desires)
ENJOYING LIFE (enjoying food, sex, leisure, etc.)
SELF-INDULGENT (doing pleasant things)
SOCIAL POWER (control over others, dominance)
AUTHORITY (the right to lead or command)
INFLUENTIAL (having an impact on people and events)
WEALTH (material possessions, money)
AMBITIOUS (hardworking, aspiring)

Climate Change Beliefs

To what extent do you feel a personal responsibility to try to reduce climate change? (0(Not at all)- 10(A Great Deal)
Which of these three statements about the Earth's temperature comes closest to your view?
The Earth is getting warmer mostly because of human activity such as burning fossil fuels
The Earth is getting warmer mostly because of natural patterns in the Earth's environment
There is no solid evidence that the Earth is getting warmer
How worried are you about climate change?" (Not at all worried,Not very worried, Somewhat worried, Very worried, Extremely worried)
In the past five years, have you been personally affected by wildfires, hurricanes, tropical storms, floods, heat waves, drought, or other extreme weather-related events? (Yes, No)