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Research Article

Mitigating Trendy Cheap Fast Fashion's Negative Impact

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ABSTRACT

Three studies are carried out in an attempt to provide a picture of clothing consumption and knowledge of fast fashion among young consumers, and investigate possibilities for more sustainable choices through analyses of the second-hand clothing market. The first study collects data from different second-hand clothing markets, whether direct from owner or through a second seller. Savings are calculated by scraping original and sale prices on regular markets. Content analyses of second-hand markets show a wide variation in discounts depending upon the type of clothing and channel used to purchase. We find independent resellers offer significant savings on higher quality clothing, but reselling used fast-fashion is not an attractive option due to its initial low price point. The second and third studies assess the attitude, behavior, and knowledge of fast fashion among young consumers and the possibility of education to decrease fast fashion consumption. These studies document the desire for fashionable clothing and expose the limited budget among young consumers. Some respondents spend all their discretionary income on clothing, and many times, purchased items are never worn. There is some indication that educating young consumers about real environmental impacts might shift purchases from quantity to quality, but educating consumers about the harm of fast fashion may be a slow difficult task.

"We live in a golden age of fashion. A time when almost anyone can buy into the glamor and the lifestyle of the latest trends. Clothes are cheaper than ever. But there is a problem… All this cheap fashion is damaging our planet."

Stacey Dooley, "Fashion's Dirty Secrets" BBC

1. Introduction

Fast fashion is "an approach to the design, creation, and marketing of clothing that emphasizes making fashion trends quickly and cheaply available to consumers" (Merriam-Webster, 2023). Through cheap price labels and stylish designs, which are updated every week or two, fast fashion retailers create substantial incentives to encourage consumer spending on clothing items so that consumers may always stay on trend (Drew & Yehounme, 2017). Young adults aged 20 to 26, motivated by their desire to express uniqueness within tight budget constraints (Reichart & Drew, 2019; Tian & Mckenzie, 2001; Wang, 2010), are particularly susceptible to compulsive buying behaviors (Dittmar, 2005). These behaviors are amplified by the widely accessible, trendy clothing offered by fast fashion retail chains such as Zara, H&M, Old Navy, and Shein (Testa, 2022).

While the fast fashion industry continues to feed a mass audience, only a few consumers possess a comprehensive understanding of the harmful effects of fast fashion on the environment (Williams & Hodges, 2022). The textile dyeing industry is the second largest polluter of the world's clean water (Kant, 2012), and hence, the manufacturing of fast fashion clothing substantially harms the environment in the process. Therefore, the reduction of fast fashion consumption and responsible spending behaviors among consumers has both microlevel and macrolevel implications. On the microlevel, owning less fast fashion items means better living for consumers. This is exemplified in the reality television show "Tidying Up with Marie Kondo", where the host, Kondo, visits people's homes, and one of the most frequently occurring issues is closets stuffed with clothing never worn (Sandlin & Wallin, 2022). The negative effect of fast fashion on the environment involves the production aspect of textiles and the disposal side. The Environmental Protection Agency (EPA) documented that in 2018 more than 11.3 million tons of clothing and textiles were thrown away (Environmental Protection Agency, 2018).

On the macrolevel, fast fashion consumption contributes to large-scale environmental pollution in developing countries known for cheap labor in their textile factories. Bangladesh, Cambodia, and Vietnam are a few countries that suffer from poor health due to the pollution caused by clothing factories dumping their dyed water into drinking areas. It has been reported that the vast majority of Vietnam's water system is polluted, and the soil is also polluted due to the use of pesticides while cultivating fibers such as cotton (Environmental Justice Foundation, 2015). Furthermore, tons of waste generated from the textile and garment industries are sent to landfill (Birtwistle & Moore, 2007), which is not the best solution for managing waste.

Conventional communication campaigns, such as the British Broadcasting (BBC) program "Fashion's Dirty Secrets" (Onono, 2018), have aimed to educate consumers to encourage more sustainable choices, with the hope that education may serve as a tool to break the consumption cycles of fast fashion. Other advertising campaigns conducted by for-profit second-hand clothing stores laud the intelligence of shopping used (see Appendix). Hence, the main objective of this research is to investigate the awareness and consumption patterns of fast fashion among young consumers and look at the alternatives available to them in the second-hand clothing marketplace. Three studies are conducted to address the following research questions: (1) What are the actual price discounts offered within the various second-hand fashion markets?; (2) What are the attitudes, knowledge, and consumption behaviors of young consumers towards fast fashion?; and (3) What is the impact of educating young consumers about the fast fashion textile industry and the environmental costs?

2. Theoretical Background

2.1. The Industry of Fast Fashion

The basics of the fashion industry had remained relatively stable until about thirty years ago when the traditional fashion industry was disrupted due to the emergence of what is termed "fast fashion" – that is, a shift in the industry that pressures retailers to focus on low cost and flexibility in their merchandise (Doyle et al., 2006). Carried by the underlying idea of "Here Today, Gone Tomorrow" (Bhardwaj & Fairhurst, 2010), fast fashion retailers differ from traditional retailers in various aspects, such as fashion

cycles, craftsmanship, and affordability. With these factors combined, fast fashion is unique in offering trendy, fashionable styles with a low financial commitment. This characteristic is particularly attractive to young consumers with high identity needs, as consumers are incentivized to make repeated, large-volume purchases of clothing.

A comprehensive understanding of the industry requires examining production and consumption to uncover the forces shaping its development. The production side offers insights into the cost components that enable fast fashion retailers to deliver affordable and trendy products, while the consumption side reveals the consumer and behaviors that fuel the industry's expansion. By analyzing these elements, we can better comprehend the dynamics of the fast fashion industry and its implications on the global market, environment, and society.

The production side of fast fashion encompasses labor costs, design costs, and disposal costs. Traditional fashion takes pride in its craftsmanship. This commitment to authentic, attention-to-detail design and a belief in creating the standard of beauty through the highest quality entails significant costs. Craftsmanship often translates into substantial costs of production and a high barrier to entry. However, mass production technology enabled outsourcing manufacturing to low-wage countries, reducing costs and barriers in the fashion industry (Bhardwaj & Fairhurst, 2010). More than 55% of global apparel is produced in China, Vietnam, and Bangladesh (World Trade Organization, 2000; Barua et al., 2018; Lu, 2019), with labor costs as low as 12-24 cents per $14 shirt (Westwood, 2013). Additionally, lowered production costs and design piracy (i.e., copying or mimicking a finished apparel design; Bharathi, 1996; Raustiala and Sprigman, 2006) contribute to minimized design costs.

Although mimicry is considered the highest form of flattery (Wilke & Zaichkowsky, 1999), this could imply a violation of intellectual property in this context. Unfortunately, the fashion industry's apparel designs are not protected by intellectual property law (Raustiala & Sprigman, 2006) , enabling fast fashion retailers to "borrow" trendy designs at a fraction of the original price, making runway designs accessible to the average consumer. Lastly, textile production and disposal generate environmental harm, including pollution and potential health risks (Barua et al., 2018). However, businesses and consumers often disregard these negative aspects, focusing on profitability and consumption (Barua et al., 2018; Morgan & Birtwistle, 2009).

On the other hand, the consumption side of fast fashion examines the factors that make it appealing to consumers and drive their purchasing behavior. Low-cost manufacturing and design enable fast fashion retailers to offer inexpensive, trendy items that appeal to consumers. The average annual household expenditure on clothing and accessories has remained stable, but consumers purchase more clothing due to decreasing prices (Remy et al., 2016; Bedford, 2021). Low prices alone are insufficient to motivate fast fashion purchases (Bocti et al., 2021) as consumers seek to establish and maintain a unique sense of self. This leads to the importance of consumers' need for uniqueness and social signaling.

Traditional fashion has four stages: 1) introduction and adoption by fashion leaders; 2) growth and increase in public acceptance; 3) mass conformity/maturation; and 4) decline and obsolescence of fashion (Bhardwaj & Fairhurst, 2010). The introduction and adoption by fashion leaders are usually achieved in Spring/Summer and Fall/Winter runway presentations. In addition to the opportunity for each fashion house to show off their designs, these runway presentations set the tone for the trends of the fashion season, and the mass audience gradually adopts the central fashion concept and stays in focus until the next year of new fashion trends.

On the contrary, fast fashion disrupts the traditional fashion cycles by pushing retailers' and consumers' responsiveness to the "newness" of fashion trends. For example, Zara, one of the major leaders in the fast fashion industry, delivers apparel with new designs every two weeks – this is about 26 seasons per year, which is 13 times more than traditional fashion (Weinswig, 2017). Additionally, the authentic, original designs of luxury fashion brands are often copied by fast fashion manufacturers, enabling consumers to fulfill their needs for uniqueness without the

enormous costs associated with high fashion (Hilton et al., 2004).

2.2. Breaking the Negative Consumption Cycle: A Theoretical Outlook

Alternative of pre-owned clothing. The goals of persuading consumers to purchase less fast fashion must be two-fold. Besides education on the unsustainable and maladaptive aspects of fast fashion consumption, consumers need to be educated on an alternative that yields fashion benefits without environmental costs and addresses consumers' values. Research has highlighted the importance of sustainability in luxury fashion and how it may drive consumers towards purchasing eco-friendly clothing (Sun et al., 2021). Other research finds that consumer pride and gratitude help promote consumers' positive attitudes and sharing intentions for sustainable luxury fashion (Septianto et al., 2021). These findings suggest that budget-constrained consumers who are driven by sustainability might be well served by using second-hand channels to purchase higher-quality goods at a discount. This means that used slow fashion may also work as a viable solution to overconsumption in the new fast fashion market.

As a critical segment of consumer transaction channels, the used goods market has become increasingly popular in recent years. In the United States alone, the total revenue of resale goods in 2019 was $20.5 billion, with a steady annual growth of 3.0% since 2014 (Henry, 2019). While clothing items offered on the resale market may not always be the latest fashion, they may offer competitive fast fashion price points for better quality clothing. Additionally, while consumers may not always find clothing items of the right size/color in second-hand stores, it is notable that this aspect of thrift-store shopping is often the highlight of customers' experience – the psychological thrill of finding the right "treasure" in the right place at the right time (Bardhi & Arnould, 2005). Consumers who cannot afford regular or "slow fashion" clothing and are environmentally conscious should find second-hand shopping an attractive alternative, especially when they find high fashion treasures at fast fashion prices.

Prior research has addressed the importance of distinguishing used goods distribution channels that are for-profit (second-hand retailers such as Tradesy) and non-profit (thrift stores such as Goodwill and Salvation Army), as consumers who shop at these stores may possess distinct characteristics and motivations to purchase (Joyner-Armstrong & Park, 2017; Park et al., 2020). The price savings found among the various second-hand clothing retail and thrift stores are investigated with second-hand market analyses. By examining the discount level, we can ascertain if there is a more sustainable but equally satisfying channel for clothing. Thus, we aim to investigate:

RQ 1: What are the actual price discounts offered within the various second-hand fashion markets?

The Knowledge-attitude-behavioral theory. With an understanding of the negative aspects of fast fashion consumption, what can society do to motivate consumers not to buy fast fashion impulsively, if not at all? According to Fishbein's (1963) theory, a single person has several beliefs about any given object (i.e., concepts, values, goals, related objects), and each of these beliefs is associated with a mediating response (i.e., attitude). Since this evaluative reaction is linked to the attitude object, it will be elicited by the attitude object in subsequent interactions. Therefore, individual consumers must obtain knowledge (or beliefs) of fast fashion's maladaptive aspects first before they may start seeing the impulsiveness and environmental impact of fast fashion consumption, which should then lead to corresponding behavioral change in both frequency and quantity of fast fashion consumption (Fazio & Zanna, 1981; Fishbein, 1963).

Similar to Fishbein (1963)'s theory, McGuire (1989) further contends that even when persuasive messages successfully reach their intended audience, they may still encounter resistance if they challenge deeply-held values or psychological needs. This notion implies that the impact of communication campaigns can be significantly undermined if they do not align with the core beliefs and desires of the target population. In light of Fishbein (1963) and McGuire (1989)'s theories, it becomes apparent that understanding young adults' knowledge level, attitudes, and behavior is a critical step towards developing effective communication strategies to promote responsible consumption of fast

fashion. This leads to our next research question:

RQ2: What are the attitudes, knowledge, and consumption behaviors of young consumers towards fast fashion?

The Role of Education. After gaining a deeper insight into the actual behavior of fast fashion, the next step is changing that behavior around fast fashion consumption through education. Based on McGuire (1989)'s persuasion communication theory, education is critical in capturing young adults' attention/awareness towards the possible environmental and societal impact of fast fashion and assisting the facilitation of a deeper understanding of consumption behavior (See Figure 1). Can learning and viewing the environmental and societal impact of fast fashion inspire young consumers to alter their purchase and disposal patterns around clothing? While education may serve to disseminate critical information regarding pollution and climate impact, this cognitive effort competes with the immediate gratification of fast fashion purchases, such as affordability and trendiness. Therefore, while educational initiatives may impart knowledge, they may not translate to immediate behavior change given the complex interplay of attitudes, societal influence and behavioral control (Ajzen, 2002). This leads to our next research question:

RQ3: What is the impact of educating young consumers about the fast fashion textile industry and the environmental costs?

3. Overview of Studies

The first study analyses clothing sold in the second-hand market on an economic level. In study two, survey questionnaires were administered to understand young consumers' knowledge of fast fashion, their attitudes towards clothing, and their current clothing purchase and disposal habits. The third longitudinal study investigates whether educating consumers about the environmental impact of fast fashion may shift their consumption attitudes and behavior over time.

3.1 Study One: What is the Level of Price Discounts Found in Various Second-Hand Clothing Markets ?

Previous research shows consumers are highly motivated to purchase fast fashion because of its low price (Jones & Hayes, 2002; Kim, 2003, 2012; Ritch & Schroder, 2012). If price is indeed one of the most dominating factors, investigating the price depreciation of the various second-hand clothing markets might be worthwhile to see if the savings are strong among slow fashion items and could potentially motivate a behavior shift. Large discounts may draw young consumers to the resale higher quality fashion market, even though these items may be more expensive than fast fashion. Resale designer fashion items also offer additional benefits such as premium product quality and can send potential social status signals, which are not achievable with fast fashion items.

Currently, the lower status used goods market (Salvation Army, Thrift stores) are trying to appeal to consumers through advertising in which young consumers are smarter, hipper, and can save the planet by buying their clothes at these stores (See Appendix for transcript of the ad). While this is a great messaging strategy, somewhat driven by the society waking up to the problem of excess clothing production, the price discount in this market needs to be examined, as price is always important in purchase behavior. If the price savings are not significant for the thrift store and resale clothing market, there is little monetary incentive to shop second-hand. If the consumer can buy new clothes for a similar price as used clothes, then the purchase of new fast fashion may still be a preferred option.

Method. A content analysis of the items available for purchase through the major second-hand sales channels were carried out. The samples were two in-person stores: 1) The Salvation Army, a non-profit Christian thrift store; and 2) Turnabout, a thrift and consignment store of luxury and contemporary clothing brands. Then two online reseller sources were used: 1) Kijiji, an online classified advertising service that operates as a centralized network of online communities; and 2) Poshmark, a social e-commerce marketplace where people can buy and sell new or used clothing.

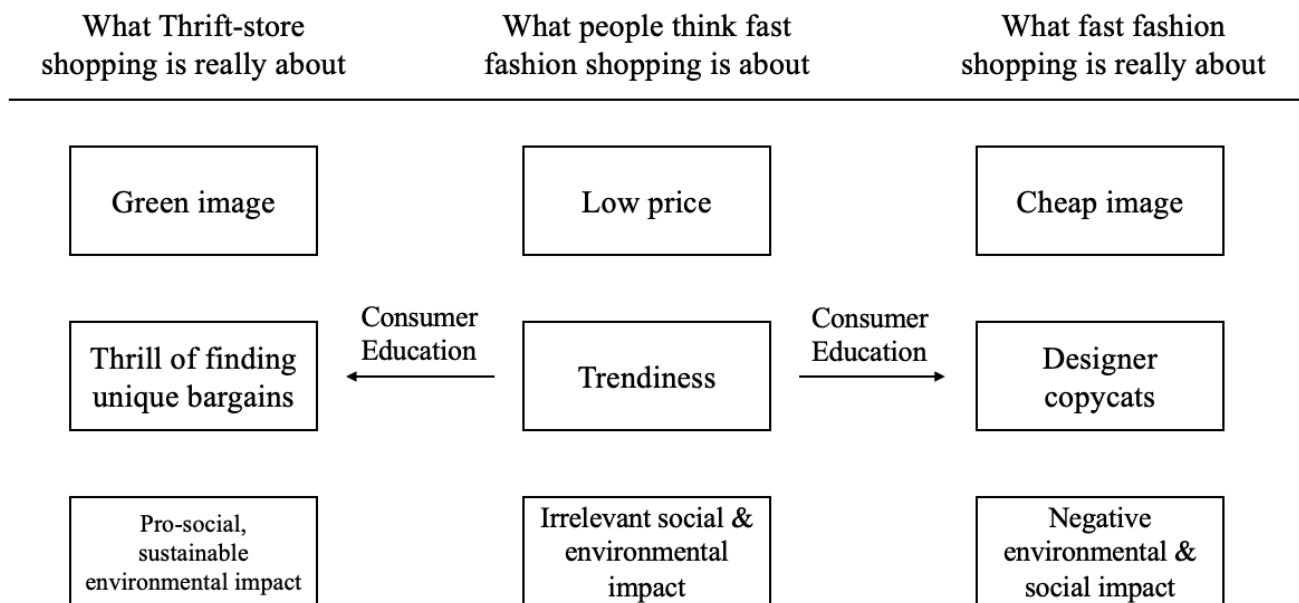The focus was on women's tops: sweaters, cardi-

What Thrift-store shopping is really about	What people think fast fashion shopping is about	What fast fashion shopping is really about
Green image	Low price	Cheap image
Thrill of finding unique bargains ← Consumer Education	Trendiness	Consumer Education → Designer copycats
Pro-social, sustainable environmental impact	Irrelevant social & environmental impact	Negative environmental & social impact

Figure 1. Moving Consumers Away From Fast Fashion

gans, jackets, and athletic wear. The items were recorded for product type and brand (fast fashion, e.g., Zara; mid-range, e.g., Talbots; luxury, e.g., Gucci; and athletic, e.g., Lululemon), price, and subjective condition (rated 1 = poor to 10 = new). Then the internet and stores of the original brands were searched for identical items to record the original price and sale price (if on sale). If no identical items could be found, a comparable item of the same brand was substituted at the coders' best judgments. The new items' original prices and their sale prices (if available) were recorded for price estimations. This process resulted in 424 raw observations. After deleting missing data, the final sample consisted of 283 observations (Turnabout = 116; Salvation Army = 68; Kijiji = 63; Poshmark = 36).

Price Depreciation and Discount Analysis: Primary vs. Secondary Markets. Due to huge price range differences among the different types of clothing (i.e., fast fashion versus luxury), the results are presented as percent difference rather than actual dollar values. Addressing RQ1, this study tested three different models: 1) depreciation in the primary market (new regular

retail price minus new on-sale price); 2) depreciation in the second-hand market (new regular price minus price in the second-hand market; and 3) contrast of lowest prices (new on-sale minus price in second-hand market). See Figure 2.

Results. The average selling price and category of clothing differed among the four markets: 1) Salvation Army, mainly fast fashion, average prices $10-$14; 2) Turnabout, mainly mid-range and some luxury, average prices $50-$60; 3) Kijiji, mainly luxury, average selling price $300; and 4) Poshmark, mainly mid-range average prices $40-50. The condition of the clothing varied from poor to never worn across the various outlets. The price depreciation in the primary market varied from 0 to 91%, and minus 183% to 99% in the secondary market. This means that some items listed for sale by individuals, selling in the second-hand online market, were priced almost twice what the item would have been in the primary in-store market.

[Model 1] Depreciation in the primary market. The depreciation rate in the primary market was calculated
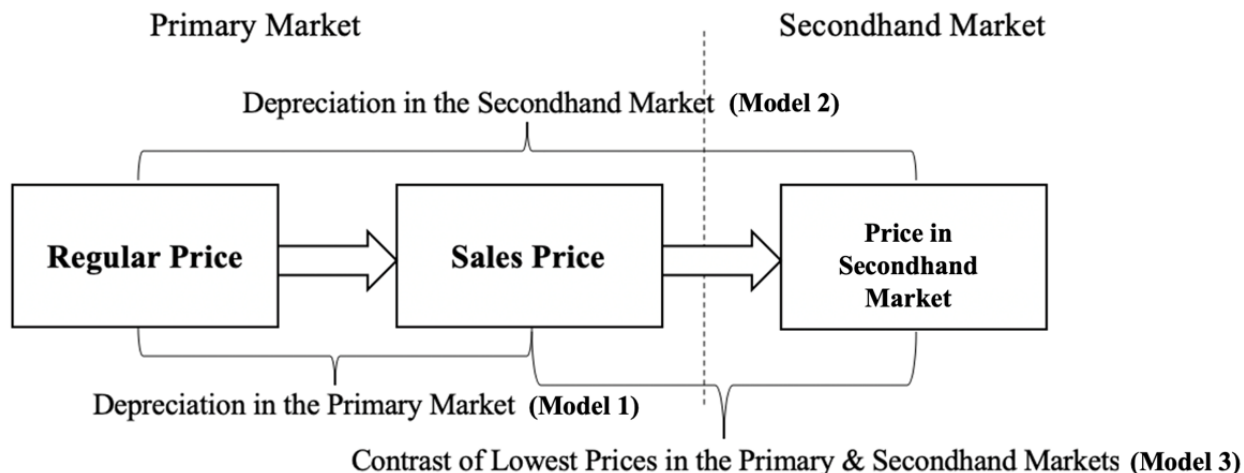
Primary Market   Secondhand Market

Depreciation in the Secondhand Market **(Model 2)**

| **Regular Price** | ➡ | **Sales Price** | ➡ | **Price in Secondhand Market** |

Depreciation in the Primary Market **(Model 1)**

Contrast of Lowest Prices in the Primary & Secondhand Markets **(Model 3)**

Figure 2. Clothing Price Cycle

as (Primary Market Regular Price − Primary Market Sales Price)/Primary Market Regular Price. A t-test and one-way ANOVA were conducted to compare the effect of categories on depreciation rate. Results showed a significant effect between categories on depreciation rate for the three conditions, $F_{(3, 279)} = 4.01$, $p < 0.01$. Furthermore, post-hoc comparisons using the Turkey HSD test suggests that the depreciation rates for luxury clothing and fast fashion were significantly different ($p < .05$). The depreciation rates for luxury clothing and mid-range clothing were also significantly different ($p < .05$).

[Model 2] Depreciation in the second-hand market. The depreciation rate in the second-hand market was calculated as (Primary Market Regular Price − Secondhand Market Price)/Primary Market Regular Price. As the type of clothing mainly found within each reseller platform varied, the type of store was integrated into the analysis. Additionally, subjective ratings of clothing conditions were treated as a covariate in the model. The ANCOVA results revealed a non-significant interaction effect of clothing category and platform, $F_{(9, 266)} = 1.25$, n.s. However, the main effect of clothing condition was significant, $F_{(1, 266)} = 10.27$, $p < .01$, indicating more price depreciation with a lower condition. The main effect for type of outlet was also significant,

$F_{(3, 266)} = 5.48$, $p < .01$. Post-Hoc comparisons using the Tukey HSD test indicated that there is a statistically significant difference in depreciation rate between Kijiji and Turnabout (M = 22%, SD = 54%, $p < .001$). However, there were no differences between Salvation Army ($p = 0.32$), and Poshmark ($p = 0.69$). The most expensive original-priced clothing was sold on Kijiji.

[Model 3] Best deal comparison; new on-sale versus second-hand price. The depreciation rate between on-sale and used clothing was calculated to test the best monetary deal available, regardless of prior use (Sale Price in the Primary Market − Second-Hand Market Price)/Sale Price in the Primary Market. The analyses found no relation between type of clothing and platform of sale, $F_{(9, 266)} = .83$, n.s. However, the results indicated that overall, the type of clothing purchased ($F_{(3, 266)} = 2.58$, $p < .05$) and type of second-hand supply chain ($F_{(3, 266)} = 5.09$, $p < .01$) influenced the price depreciation rate. Sale luxury clothing from the primary market offered minor discounts compared to the resale independent sources. However, Kijiji resellers often inflated prices beyond the primary market regular price.

Discussion. Study One provides important insights to RQ1 by highlighting that different resale platforms vary in the price depreciation of clothing, leading to

a platform-specific effect of price depreciation rates across categories. Luxury, mid-range, and fast fashion clothing all have different depreciation rates or different percent savings when put on resale. Athletic clothing did not vary in price depreciation over the four secondary markets, so a consumer has equal confidence for best prices over the four resale platforms.

When a clothing item is simultaneously available in both the primary and second-hand market, consumer may find bigger discounts by purchasing from the primary market, particularly for fast fashion which has the most significant price depreciation rate (~50%), followed by mid-range and luxury. This result is not surprising given that the initial price of fast fashion is a fraction of the other categories, so the actual dollar price reduction of fast fashion may be inconsequential. Furthermore, results from model 2 indicate that different sales channels concentrate on various categories of clothing (e.g., Salvation Army: fast fashion; Turnabout: mid-range and luxury), and this might bias the depreciation rate.

Model 3 indicates that if a clothing item goes on sale in the primary market and becomes available in the second-hand market simultaneously, the consumer might find a greater discount on the primary market. Furthermore, some second-hand platforms might offer a bigger discount, such as Poshmark, which specializes in mid-range and luxury items. Several conclusions may be drawn from the results above. First, the discount consumers get in the primary market is affected by the type of clothing. Among all types of clothing, new luxury clothing has the lowest depreciation rate (15%); in other words, consumers may find the least percent saving with luxury clothing when they purchase from regular clothing retail stores.

In the second-hand market, the sales channel plays a role in the depreciation rate of clothing items. Notably, the channels sampled (i.e., Turnabout, Salvation Army, Kijiji, Poshmark) have differing characteristics. For example, Turnabout evaluates items' condition, style, and authenticity before the garment is accepted for resale. There is a guarantee to their customers that the clothing item purchased will be of a trustworthy discount. Salvation Army, on the other hand, does

not carefully evaluate the clothing items. A worker just labels the clothing with a price set within an acceptable range, as these are all donations. On the other hand, Kijiji and Poshmark are driven by direct owner-to-buyer transactions and often, the sellers are looking to make an income re-selling the clothing items.

Because each platform offers different pricing incentives to sellers and have varying buyer protection (if at all), these differences lead to a major platform/store effect in the depreciation rates of clothing across different categories. Additionally, without authentication, it is difficult to conclude whether buyers are receiving an item that worth is the price they paid, or if they are getting a great discount on a luxury brand because it is counterfeit. Lastly, the results suggest that if a clothing item goes on sale in the primary market and is available in the second-hand market, then buyers might find a greater discount if they just purchase that item from the primary market, particularly for fast fashion. However, this effect does not hold for luxury clothing, which rarely goes on sale in the primary market and is often discounted only when the item reaches the second-hand market. Therefore, second-hand fast fashion may not be an attractive option. Still, independent second-hand outlets may be a good option for mid-ranged goods and luxury brands of fashion clothing.

In conclusion, the findings from Study 1 underscore the potential of the independent second-hand fashion market to provide consumers with high-quality mid-range, or even luxury brands at attractive discounted prices. Conversely second-hand fast fashion items hold less appeal due to their initial low price, providing more reason to discard the item rather than resell it. This leads to Study 2 to investigate the current behavior of fashion purchase and disposal patterns.

3.1. Study Two A & B: Clothing Attitudes, Behavior, and Knowledge Among Young Consumers

A consumer's intention to purchase fast fashion may be closely tied to their need for uniqueness. Still, this need is angled on how much consumers care about appearing trendy and fashionable to others. While there are existing scales that measure similar

constructs (Hirschman & Adcock, 1978; Jung & Jin, 2014; Shim & Gehrt, 1996), there was a need to create a scale that captures individuals' sole desire for fashionable clothing. Items were generated based on the construct definition, tested for content validity and internal reliability, retested with different samples (study 2a and 2b), and assessed on predicting fast fashion-related consumption behaviors.

Defining the construct. This paper defines consumers' attitudes toward fashion as a favorable/unfavorable feeling that a consumer has towards fashion trends. A consumers' fast fashion purchase behavior originates from robust positive attitudes towards fashion trends in general and consumers' desire to purchase fast fashion as a cheaper alternative to designer brands. An original ten items were developed based on the current definition of fashion attitude and measured on a five-point scale (1 = strongly disagree to 5 = strongly agree). These items were rated by the following judges who had an interest in fashion: a senior professor in consumer behavior, a PhD candidate in consumer behavior, and a senior undergraduate student in communications. The judges rated the scale items on the appropriateness of the items to measure fast fashion attitudes.

After test-retest reliability over different samples, different orders, and three time periods, seven items were retained with repeated reliable Cronbach alphas (.85, .82, .83, respectively, see Table 1). These items were randomized as part of the questionnaires for the participants in Study 2A, 2B, and Study 3. The sum of participants' scores on the seven-item attitude questions was used to construct a final index of their attitudes towards fast fashion.

3.1.1. Study Two A: Fast fashion knowledge, purchase, and disposal behavior

In Study 2A, 104 undergraduate students from a major university (65% females, 31% males, 4% other; average age = 21.5 years) participated in the research study in exchange for course credits. Participants self-assessed their fast fashion knowledge on a scale from 1 = very low to 5 = very high. They were asked if they knew what happened to unsold clothing (1 = yes; 2 = not sure; 3 = no) and to estimate what percentage of

clothing donations ends up in the second-hand market. They were also asked to estimate the dollar value other young males and females spend on clothing over one month, how much they spend on clothing in one month, and then to do a mental inventory of their clothing closet in terms of how many tops, bottoms, and pairs of shoes they are closeting. Respondents were also asked how long they keep their articles of clothing and what percentage of clothing they donated to charity as opposed to disposing of the articles in the trash.

Results: Knowledge bias. Overall, participants rated their knowledge of fast fashion considerably high (M = 3.20, SD = .97). There was a positive bias of subjective knowledge as 80% of the students reported average, above average, or very high knowledge of fast fashion. But much fewer (30%) reported they know what happens to unsold clothing. A comparison between participants' self-rated knowledge level on fast fashion and whether they know what happens to unsold clothing found a significant positive relationship: ($F_{(2, 101)}$ = 5.9, p < .01), number indicating "No" = 23, $M_{knowledge}$ = 2.78, SD = 1; "Not Sure" = 52, $M_{knowledge}$ =3.31, SD = .9; "Yes" = 29, $M_{knowledge}$ = 3.66, SD = .9). When participants were asked what percentage of clothing donations actually ended up in the used goods market, 46.2% of participants got the correct answer (1% - 25%), and this was not related to subjective knowledge ($F_{(2, 101)}$ = 1.90, n.s.). This gap in self-rated fast fashion knowledge and objective fast fashion-related knowledge suggests that consumers think they know more about fast fashion than they do, perhaps leading to a "greener" overconfidence bias on their purchases (Kahneman & Tversky, 1977).

Clothing purchase & disposal behavior. Questions related to behavior of clothing consumption included 1) how much they spend in one month on clothing; 2) the number of tops, bottoms and shoes estimated to be in their closet; and 3) the percentage of clothing they donated to charity as opposed to disposing of it in the trash. In addition, their monthly spending on clothes was compared with their self-reported disposal monthly income (χ^2=29.94, df = 9, p <. 001). The results are presented in Table 2 .

Table 1. Attitudes Toward Fashion Scale

Item Number	Item Statements
1	"Buying new clothes sounds exciting to me."
2	"Buying new clothes makes me feel good."
3	"It is important to me that I am always in style."
4	"I see shopping for clothes as something positive."
5	"I am enthusiastic about shopping for new clothes."
6*R	"I don't care about the latest fashion trends."
7*R	"I am content with wearing clothes that are not the latest fashion."

Table 2. Participants' Monthly Spending on Cllothing by income Level

Spending on clothing in one month	Monthly disposable income				**Total**
	<$100	$101-300	$300-500	>$500	
Less than $50	9	5	4	4	22
$51 – 100	9	11	4	3	27
$101 – 250	6	2	6	5	19
More than $251	2	5	8	21	36
	26	23	22	33	104

Note: $X^2 = 29.94$, df=9, p<.001

The spending patterns indicate many young consumers spend the majority of their monthly disposable income on clothing. When asked to estimate how much their peers spend on clothing in one month, the data was separated by gender, and no bias was found. Subjects tended to estimate others spending as like their own. The responses from participants on how many tops/bottoms/pairs of shoes they have in their closet was compared to how long they usually keep these items before disposing of them. Chi-square analyses found only a marginal link between the number of clothes owned and the length of time these were kept ($p < .10$). On average the most frequently purchased and owned garments are tops and kept for an average of three to four years. The propensity to donate one's used clothing to charity was compared to the amount of clothing one owns, revealing a nonsignificant relationship between the two variables. Therefore, there was no relation among purchase, retention, and disposal behaviors toward clothing items.

Contrary to understanding the fast fashion industry through reading industry reports, news, documentaries and articles on fast fashion practices, partici-pants appeared to infer their "knowledge" of fast fashion by how frequently they shop. However, just like being a heavy tobacco user does not necessarily make someone a tobacco expert, making a large volume of fast fashion purchases also does not necessarily make someone more knowledgeable about the fast fashion industry and its practices. More importantly, participants' self-rated knowledge of fast fashion might facilitate their confidence and trust in the fast fashion industry. Analysis was conducted to investigate whether participants' self-reported knowledge of fast fashion could predict their purchase frequency of fast fashion and how much they spend on clothing per month. The results found participants who rated themselves higher on their knowledge of fast fashion also spent more money on fast fashion ($F_{(3, 99)} = 2.6$, $p < .05$).

Attitude and behavior links. Females had a slightly more favorable attitude to fast fashion than males ($M_{female} = 26.5$, SD = 3.2; $M_{male} = 24.6$, SD = 3.5, $t_{(98)} = 2.7$, $p < .01$). Analysis was conducted to test if fashion attitudes would predict participants' spending on clothing per month and the number of tops/bottoms/shoes they own. Analyzing the data

by gender, both males and females had significant relationships between attitudes and purchase behavior (p<.05 and p<.01), but there was no significant link between attitudes and self-reported knowledge (n.s.). The results indicated that attitude was a significant predictor of participants' spending on clothing each month (β = .71, se = .16, p < .001). Analyzing the data by gender showed a significant relationship for females (p < .01) for tops and bottoms but not for males (n.s.). Both genders who scored higher on the fashion attitude scale were likely to own more shoes (β = .33, se = .16, p < .05). Participants' monthly disposable income was treated as a covariate in the regression tests specified above.

Addressing RQ2, Study 2A's findings provide important insights into understanding the interplay of consumers' knowledge, attitudes, and behaviors regarding fast fashion. However, a deeper investigation is needed to examine these behaviors more thoroughly and to establish the external reliability of the fast fashion attitude scale we developed. This brings us to the following phase of our research: Study 2B.

3.1.2. Study Two B: Attitudes, knowledge, purchase, and disposal behavior

Study 2B was conducted eight months later to a different undergraduate student sample with similar demographics (n = 208, 52% females, 47% males, 1% other, average age = 21 years) with updated questions reflecting what was learned from the first survey. One objective was to further investigate purchase behavior concerning trying on clothing, whether it is worn, and what is done with their excess purchases. The same questions on attitudes, knowledge, and purchase behavior were supplemented with the following questions: 1) Do you usually try the clothing on before buying?; 2) If the clothing is not right for you, how often do you return it?; 3) How many different articles of clothing have you purchased in the past year but never worn?; 4) What is the total value of these clothes that you purchased over the past year but have never worn?; and 5) What did you do with these items that you have never worn?

Results. There was a significant difference in self-reported knowledge between males (M = 3.0, SD =

1.1) and females (M = 3.4, SD = .83; t(203) = 2.5, p < .01). As in Study 2A, participants who rated themselves higher on their knowledge towards fast fashion also reported higher monthly spending on clothing (F(3, 204) = 5.0, p <.01). Participants were asked 1) how often they try the clothing on before making a purchase, and 2) how often they return the clothing if it is not right. The results are presented in Table 3 (χ^2= 19.06, df = 9, p < .01). While the results suggest that most of the participants would try on their clothing more than half of the time when they make purchases, not all of them were willing to spend the extra effort. There is a significant segment of consumers who are less likely to try on clothing before purchase and then never return unsuitable clothing.

To follow up on the previous finding and to further explore whether participants were making rational, responsible purchases, participants were asked how many different articles of clothing they have purchased in the past year but never wore, and what was the total value of these items (see Table 4). While most participants had less than two items in their closet that were purchased last year and never worn, 44.5% of participants had more than three pieces of clothing that they purchased and still had not worn. The value of the unworn clothing, in some cases, was well over $500.00. ($\chi^2$ = 98.48, df = 6, p < .001).

Predicting behavior with attitudes. Regression analysis was conducted to test whether participants' self-reported attitudes towards fashion would predict their consumption behaviors related to clothing (monthly spending on clothing, frequency of shopping for clothing, frequency of trying on clothing before purchase, frequency of returning unsuitable clothing after purchase, number of articles purchased and never worn over the past year, and the total value of these never-worn clothes). See Figure 3. Replicating findings from Study 2A, the results indicate that attitude was a significant predictor of participants' monthly spending on clothing (β = .76, se = .09, p < .001). Attitudes also predicted frequency of shopping for clothing (β = -.74, se = .09, p < .001). However, participants' attitudes towards fashion did not predict how frequently they would try on clothing before buying (β = -.02, se = .10, n.s.).

Table 3. Behavior with Clothing Before and After Purchase

How often do you return clothing?	How often do you try on clothes before purchase?				Total
	Less than 25%	26 - 50%	51 - 75%	76 - 100%	
Less than 25% of the time	3	12	13	15	431(20%)
25- 50%	2	8	6	7	23(11%)
51 - 75%	7	13	25	14	59(28%)
76 - 100%	10	5	31	37	83(49%)
Total	22(11%)	38(18%)	75(36%)	73(35%)	208

Note: X^2=19.06, df=9, p<.01

Table 4. Number of ClothingItems Purchased in the Past Year but Never Worn

Number of items unworn	Total Dollar Value				Total
	<$100	$100-300	$301-500	Over $500	
< than 2	94	18	2	2	116 (56%)
3 - 5	29	25	10	3	67 (32%)
6 or more	0	7	9	9	25 (12%)
	123 (59%)	50(42%)	21(10%)	14(4%)	208

Note: X^2=98.48, df=6, p<.001

There was a marginally significant relationship between attitudes towards fashion and how frequently unsuitable clothing would be returned (β = .22, se = .12, p = .07). Lastly, attitudes towards fashion significantly predicted the number of items purchased in the past year and were never worn (β = .25, se = .08, p <.01). The positive coefficient suggests that the higher participants scored on the fashion attitudes scale, the more purchased and never-worn clothing items they would have in their closets. However, their attitudes towards fashion were not enough to predict the monetary value of these purchased and never-worn clothing items (β = .11, se = .10, n.s.; see Figure 3).

Adding to RQ2, study 2B enables us to better understand young adults' attitudes and purchase behavior towards fast fashion. First, the findings helped establish the replicability and external reliability of the fast fashion attitude scale. Furthermore, we show that even with higher self-reported knowledge of fast fashion, young consumers continue to consume fast fashion items in a unsustainable manner (e.g., buying clothes without trying them on, not returning the unsuitable

clothes). Consistent with the attitude-behavior literature on the weak predictability of attitude on behavior (Ajzen & Fishbein, 1977; Riskos et al., 2021), our findings demonstrate the existence of the attitude-behavior gap in the context of young adults' fast fashion consumptions. In light of these findings, Study 3 was conducted to examine whether educating consumers on the implications of their consumption would be effective in shifting their consumption patterns (RQ3).

3.2. Study 3: Does Education Change Behavioral Intentions?

Study 3 aimed to investigate if consumption habits towards fast fashion might be changed through education. Participants were a class of 30 undergraduate business students enrolled in a consumer behavior course. At the beginning of the semester, the professor administered a survey to participants to measure their attitudes and consumption patterns on fast fashion. During the course, a 45-minute-long documentary produced by BBC named "Fast Fashion's Dirty Secrets" was played in class to provide factual and graphical information on the negative impacts of fast fashion on the environment and various
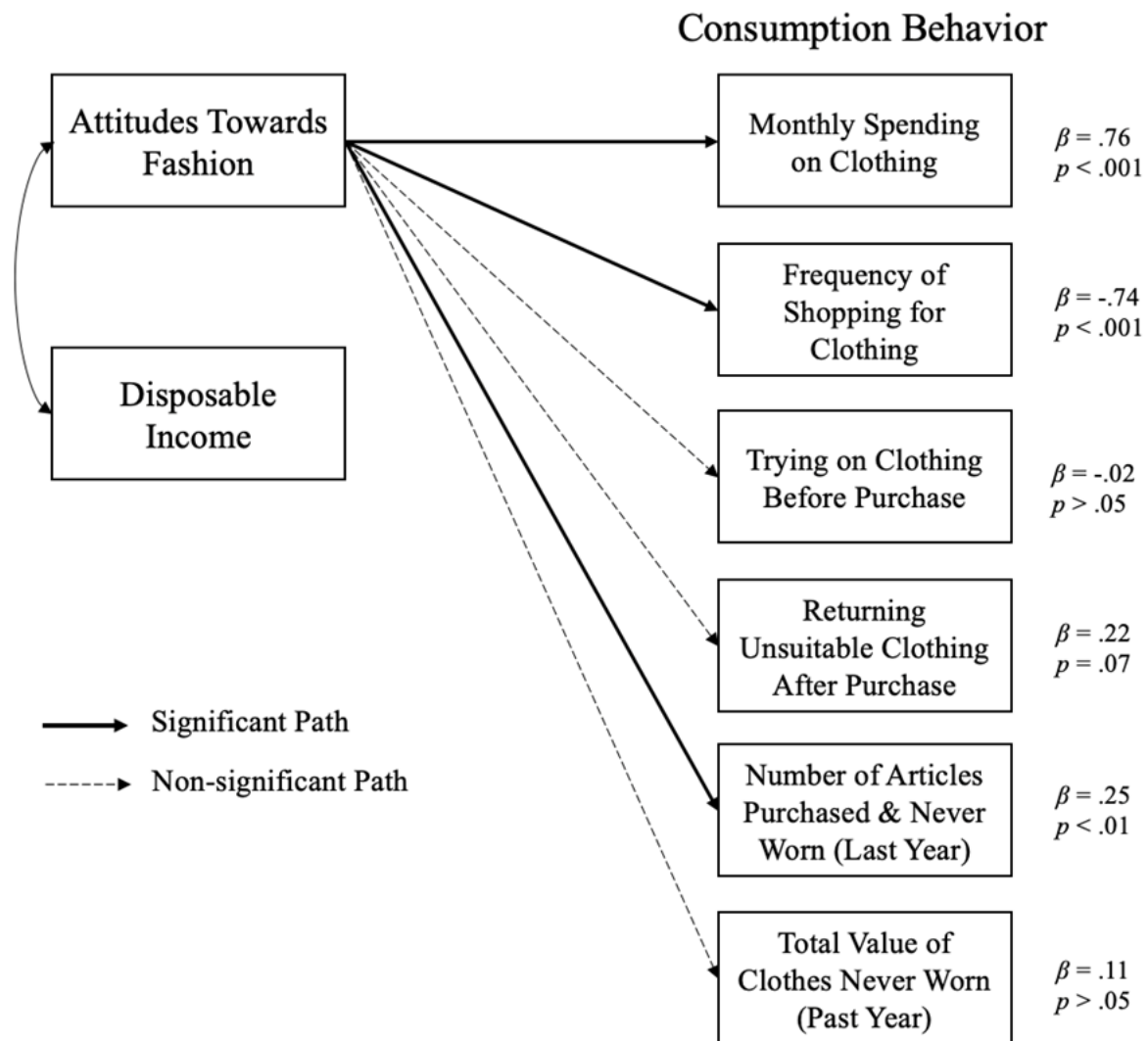
Consumption Behavior

Figure 3. Predicting Clothing Consumption Behavior with Fashion Attitudes

communities. At the end of the semester, students were surveyed again on their knowledge, attitude, and purchase intention on fast fashion to see if there were any changes after viewing the documentary. Eight months after completing this course, students were contacted again and asked repeated questions about their shopping behavior. They were surveyed on their attitudes and purchase behaviors around fast fashion, as well as their purchase behavior of second-hand clothing (offline and online). This was to measure whether participants sought out second-hand clothing

as an alternative to fast fashion.

Results. As expected, the number of participants decreased over the one-year time period: Time 1 N = 29; Time 2 N = 25 and Time 3 N = 19. The sample was evenly split between males (15) and females (14), and the average age was 23. Most of the sample lived at home with their parents (80%).

Behavioral measures on fast-fashion related purchases. Participants were asked whether they would try clothes on first before purchasing. Repeated-

measure analysis showed a directional within-subject effect of time on participants' behavior ($F_{(2, 20)}$ = 3.05, p = .07; Figure 4). Moreover, the one-way ANOVA result showed a significant main effect of time ($F_{(2, 30)}$ = 31.41, p <.001). Initially, participants did not like trying on clothing before buying them. However, after the education on fast fashion and how irresponsible spending could negatively impact the environment and consumers' well-being, participants seemed to be incorporating clothing try-ons into their shopping routines.

The dollar amount participants spent on clothing per month was tracked. Similar to previous findings, the results revealed decrease in spending on clothing per month over the year was only directional ($F_{(2, 20)}$ = 2.44, p = .11; see Figure 5).

Fast-fashion vs. slow-fashion preference. Participants were asked to imagine that they had $100 and to choose between "buying 5 $20 items" or "buying 1 $100 item". Their choices were compared over time. While the data seemed to capture an increase in participants' preference towards the $100 item (in other words, trading off quantity for quality) immediately after education, this preference seemed to revert backwards slightly after eight months (Figure 6). Repeated measures test results revealed an nonsignificant within-subject effect of time on people's choices ($F_{(2, 20)}$ = .73, n.s.). The one-way ANOVA result also showed a nonsignificant main effect of time ($F_{(2, 30)}$ = .37, n.s.).

Second-hand clothing behavior. In addition to assessing attitude and behavior shifts in fast fashion purchases, consumers' experience with second-hand clothing was measured in the final survey. Specifically, participants were asked to report how frequently they shopped at a used clothing store in-store and online. Overall, participants did not shop for second-hand clothing frequently, with 45% reporting they had never shopped in the in-person second-hand environment and 82% saying they had never bought used clothing online. Of those who did buy second-hand clothing in person, 36% reported going two to three times a week, and 18% said they go less than once a month.

Addressing RQ3, our findings show that while educating consumers about fast fashion's negative impacts could potentially shift their attitude and behaviors towards responsible shopping, the overall difference before and after education could not be stated with confidence due to our small sample size. Second-hand clothing exists as a potential environmental-friendly option that offers high-quality clothing at a discount price. However, the initial evidence from this study suggests that participants did not fully realize the benefits of second-hand clothing. Understanding what is being offered and bought in second-hand clothing venues could potentially provide critical insights into understanding how we could better shift consumers' fashion shopping behavior towards a healthier and greener direction.

4. General Discussion

Increasing interest in the domains of fast fashion consumption and sustainability offers a great discussion point to address the growing consumer interest in sustainable and ethical clothing. In Study 1, the price factor in motivating a more sustainable purchase was explored by examining the depreciation rates of clothing in both the primary and the second-hand market. This secondary data analyses had very interesting findings. While in-store second-hand venues (Salvation Army and Turnabout) offered systematic large price reductions, online venues controlled by individuals were less predictable in discounts. Some luxury fashion items sold second-hand in Kijiji were more expensive than on the regular price new market. Some mid-price range items sold on Poshmark had a much lower mark-down than on the primary retail on-sale market. Therefore, the second-hand in-person clothing market offers the best values for traditional slow fashion and luxury fashions.

The results of Study 2A and 2B find consumers who purchase fast fashion are driven by a desire for fashionable clothing but also have limited budgets. While fast fashion is highly cost-effective, a substantial amount of our participants spent nearly all of their monthly disposable income on their clothing. Some consumers underestimate fast fashion's environmental impact and do not view this industry as unsustainable. Many of our
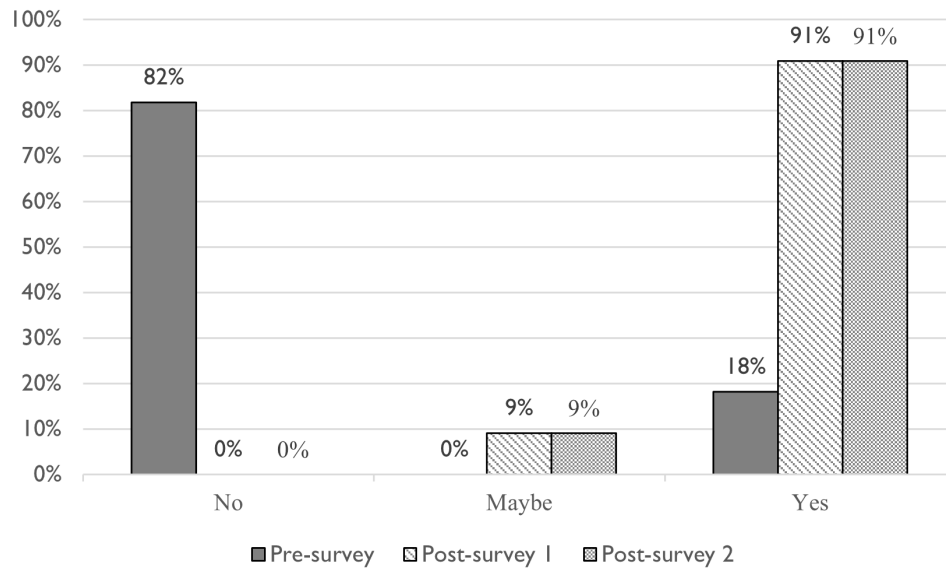
Figure 4. Summary of Whether Participants Would Try on Clothing Before Buying
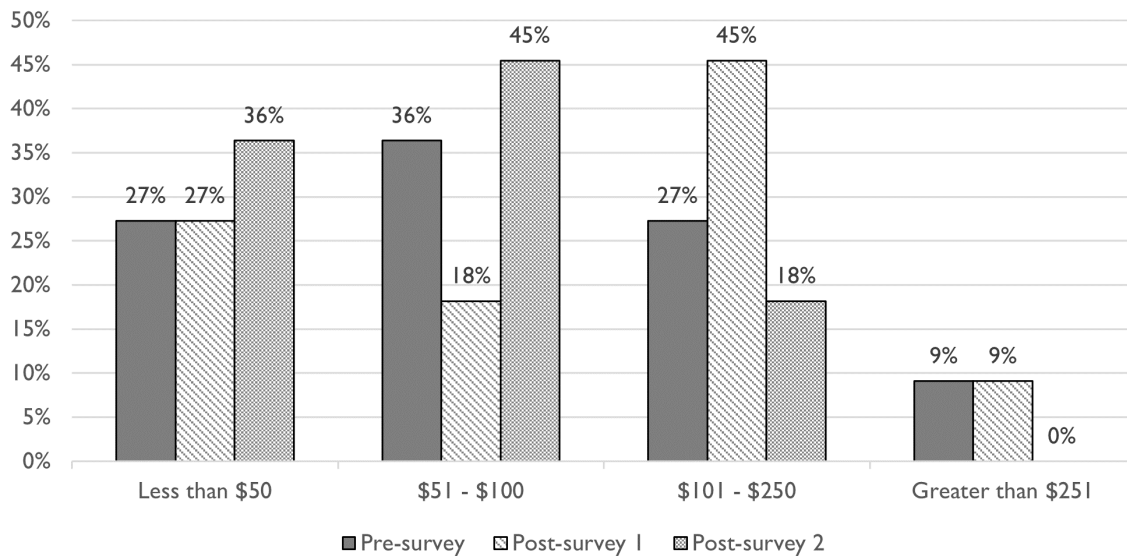

Figure 5. Summary of Participants' Spending per Month on Clothing (in Percentage)
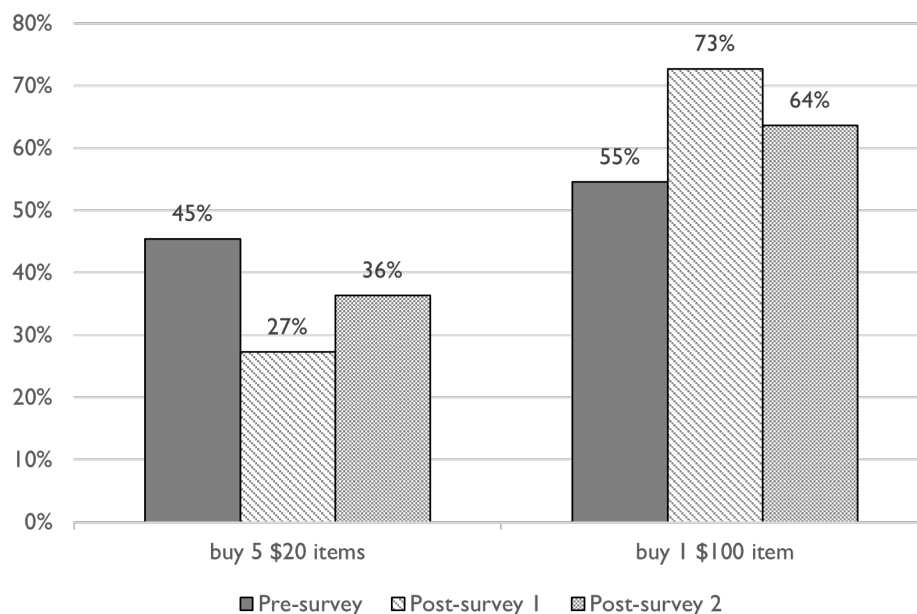
Figure 6. Summary of Participants' Preference of "Quality" vs. "Quantity" Towards Clothing

participants hold false "green" beliefs about fast fashion donation behaviors, without realizing much of their donation is disposed of and could potentially cause further harm to the environment.

Lastly, Study 3 provided some hope that educating consumers about the real environmental impacts of fast fashion consumption may reduce their purchase intentions around fast fashion items and shift their behavior from quantity to quality. Our research findings suggest that educational interventions can raise awareness of the environmental impact of fast fashion consumption and promote more sustainable consumption habits among young adults. However, while educational interventions may influence attitudes, it is evident that translating these shifts into tangible behavioral changes will remain complex. The weak link between attitude and behavior (Ajzen & Fishbein, 1977; Fishbein, 1963) continues to pose a significant challenge not just for our research but for policymakers and marketers utilizing educational campaigns targeting behavioral changes in the general population, thus highlighting the need for multifaceted approaches that go beyond awareness-raising to elicit tangible behavioral changes.

By evaluating the effectiveness of an educational program in raising awareness and shifting consumption habits, our research adds to the literature on consumer behavior and sustainability, shedding light on the viability of such initiatives in addressing the detrimental impact of young adults' fast fashion consumption on the environment. Although the impact of educational programs on consumers' behaviors may be limited in the short run, we show that such interventions do have positive impact on consumers' knowledge and awareness of the fast fashion industry. Our findings highlight the potential of educational interventions and the secondary clothing market to promote more responsible and environmentally conscious consumer behavior, ultimately contributing to a more sustainable and ethically minded fashion industry.

This research has several limitations that warrant further investigation. First, the reliance on self-reported data may introduce biases, as participants might respond in socially desirable ways. Future studies could employ observational measures to capture the actual changes in consumer behavior better. Secondly, as discussed by McGuire (1989), behavioral change is

a lengthy process, and the educational program may need to be implemented over an extended period to achieve lasting effects. The current study design may not fully capture the long-term impact of the educational intervention on participants' attitudes and behaviors towards fast fashion and sustainable consumption. Additionally, the research employed a pre-made educational program (i.e., a video documentary) to teach and persuade participants to change their behaviors. However, the actual engagement of the participants with the program and the extent to which they consolidate the information remains unclear.

Furthermore, while Study 2A and 2B provided support for the internal validity and replicability of the fast fashion attitude scale, it should be noted that both studies utilized undergraduate students as research participants. Additionally, in Study 3, while using undergraduate students enrolled in a specific course allowed us to educate and track changes in their knowledge, attitudes, and behaviors over the year, it resulted in a limited sample size which depleted the power of statistical significance. Tracking undergraduates over time is challenging, and future studies might consider employing larger, more diverse samples to replicate the direction of the results.

5. Conclusion

The world can no longer ignore the effects of fast fashion. The environmental impact is still substantial despite growing awareness about the relevance of sustainability. As a recent Mckinsey report suggests (Albella et al., 2022), fast-fashion businesses produce more products than they can sell and emit about the same amount of greenhouse gases per year as France, Germany, and the United Kingdom combined. The same report also suggests that consumers are ambivalent about what "sustainability" actually means, which is supported by Study 2. Gen Z and Millennials, being the predominant customer segments in the fast fashion market, are more receptive to sustainable appeals (Burns et al., 2022). Ironically, our studies find a similar conclusion that these young consumers are also more likely to buy into the sustainable claims made by fast fashion retailers while

lacking awareness of the environmental and societal impacts of fast fashion. As Study 3 suggests, educating these young consumers must be a priority for all stakeholders, including governments, universities, and non-profit organizations.

Study 1 finds a complicated second-hand market in the for-profit online marketplace due to high prices. While thrift stores offer an opportunity for low-cost unique items, saving them from landfill, some consumers are using these outlets to find unique desirable clothing items for profitable resale. Many find this practice ethically concerning, as the goods from thrift stores are recycled for consumers' profitable gains (Nguyen, 2021), and many thrift stores now have a limit on the number of fashion items a customer may purchase at any one time (~2) (De Castillo, 2022).

According to industry reports, the second-hand apparel market was worth $28 billion in 2019 and is expected to reach $64 billion in 2024 with the increase in independent for-profit channels (Nguyen, 2021). So, does second-hand clothing really solve the problem of excess clothing found in our environment? Our research evidence seems to suggest this process will take more time and effort than expected. But there is no doubt that proper sustainability education needs to be introduced to young consumers. Since fashion is motivated by the desire for novelty, fashion brands can explore circular business models and create more value for their customers. For instance, a model where consumers can resell their beloved products or design products to be repurposed.

Future research may consider exploring more interactive and engaging communication/educational campaigns, such as workshops, to maximize the impact of the communication campaign on participants' behavior change. Lastly, while our research focuses on the role of low prices as a significant incentive that may deter individuals from engaging in sustainable behaviors and consuming last fast fashion, it is possible that other factors (e.g., consumer identity) that could influence consumers' preferences and behaviors. Future research needs to investigate the interplay between these important factors and continue to explore alternative, more sustainable channels that address the con-

sumers' needs without the detrimental environmental impacts.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Appendix. Television Advertisement Coaching Young People to Buy Second-Hand

Thrift Pound – Value Village

[Background Music]

[A young woman walks out of a thrift store. Texts of "Value Village" can be seen printed on the door.]

Narrator: "You just bought cool jeans, BUT you didn't just buy cool jeans. You bought pre-loved jeans because they look better worn. BUT they don't just look better; they saved you money."

[Background music becomes more upbeat. Lighting changes to create a fierce, exciting atmosphere, as if something magical is happening.]

Narrator: "BUT you didn't just save money. You saved 1,800 gallons of water because that's what it takes to make a new pair of jeans. BUT you didn't just save water you reduced the landfill. The planet loves you, and you are going viral."

[Music tenses. Woman's facial expressions looks euphoric, as if she is transforming into someone with super-power. Then all the sudden things shifted back to their normal states.]

Narrator: "No, you are not. BUT you should feel proud. Thrift proud."

[Value Village's logo was shown again at the end of this video.]