Understanding the Role of Usage Frequency for Sustainable Consumption

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***Abstract*—Product marketing for durable goods could play a more central role in encouraging sustainable consumption by making usage frequency more of a selling point to consumers. The three studies in this paper investigate consumers' considerations when selecting one high-end product versus multiple disposable products and identify effective marketing strategies for encouraging sustainable and "cost-effective" consumption. Study 1 shows that, given the same budget, consumers show a preference for purchasing multiple disposable products rather than one high-end product. Consumers overlooked a critical but latent factor in making consumption choices----usage frequency. Although consumers generally believe that their money is better spent buying high-end products and using them repeatedly, for the most part they fail to take usage frequency into account when making purchases. Study 2 manipulates the salience of usage frequency nudged this latent product feature becomes salient in the purchasing environment. The findings of study 2 indicate that if usage frequency is mentioned effectively in marketing messages, consumers will be more likely to make more sustainable purchase decisions of choosing one high-end product over multiple disposable ones. Study 3 constructs concept provides insights to explore which is the more "cost-effective" choice for consumers with different actual product usage preferences: high-end products or disposable products? Finally, this research offers actionable strategies for marketers and policy makers seeking to help consumers overcome product usage frequency neglect and nudge them toward purchasing products they will use repeatedly.**

***Index Terms*—Usage frequency, sustainable consumption, high-end product, cost-effectiveness.**

I. Introduction

Fast fashion is identified as low-cost clothing that mimics current luxury fashion trends. By its very nature, it is a fast-response system that encourages disposability [1]. The fast fashion industry thrives on fast cycles: the turnaround time from catwalk to consumers is compressed into a matter of weeks, enabling consumers to obtain affordable trendy clothing items, more than half of which are worn for less than a year [2]. Indeed, the fast fashion industry is among the top-polluting businesses. From production to consumption, it produces 8-10% of global CO_2 emissions and 20% of industrial water pollution [3]. Faced with this reality, the fashion industry's rapid update cycle raises ethical issues [4].

With the increasing awareness of green value, several trends have emerged to balance the demand for ever-newer fashions with a commitment to environmental sustainability [5]. Some fashion companies, such as the footwear makers Allbirds and Rothy's, have attempted to produce items from recycled materials and claimed to keep their products as eco-friendly as possible [6]. The environmentally friendly supply chains and non-polluting materials and manufacturing processes used by eco-friendly firms have been the focus of several marketing studies. (For a review of these, see [7], [8].) However, most of the literature on eco-friendly marketing focuses on studying the sustainability of the product manufacturing process and neglects the dimension of consumer usage and product disposal, especially in terms of product life span and usage frequency.

On the consumer side, Antonio Guterres argued at the 2021 United Nations Climate Change Conference [9], "Individuals in every society need to make better, more responsible choices in what they eat, how they travel, and what they buy." Research that studies product life cycle advocates the concept "buy less, buy better" [10]. This stream of research argues that consumers could consume fewer but higher-end products with longer life spans rather than many disposable products that will be quickly thrown into the landfills. High-end products can counter the negative impact of fast fashion due to their relentless pursuit of excellent craft and quality [5]. Moreover, luxury brands increasingly emphasize sustainability, as illustrated by the pledges by executives at top luxury businesses such as LVMH and Kering to make sustainability a priority [11]. Consumers are also more likely to discard high-end products in a more sustainable way—for instance, re-selling them on secondhand markets. This paper continues this research stream on efforts at sustainability in the fashion industry by exploring how encouraging the consumption of high-end products can lead to more sustainable practices from the perspective of usage frequency.

As one dimension of sustainability, usage frequency is a salient consideration in purchase decisions [12]. This research explores the association between high-end products and sustainable consumption by asking the following research questions: To what degree do consumers consider usage frequency when making decisions about purchases? Does reminding consumers of usage frequency encourage them to purchase high-end products to drive sustainable consumption? What consumption choices are most cost-effective for consumers? Correspondingly, this paper tests the following hypotheses:

H1: Given the same budget, consumers prefer to purchase multiple disposable products rather than fewer high-end products that could be used repeatedly.

H2: The phenomenon in H1 is to a large degree caused by usage frequency neglect.

H3: Consumers will prefer to purchase fewer high-end products rather than consume multiple disposable products if reminded of usage frequency.

H4: Purchasing high-end products can drive sustainable

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and cost-effective consumption.

Across three studies, this paper finds that, given the same budget, a majority of consumers prefer to purchase multiple disposable products rather than one high-end product. Furthermore, this paper demonstrates that consumers are aware that buying and reusing high-end products would represent a better use of their money. Reminding consumers of usage frequency nudges them to make fewer purchases and think about reusing products, thus consuming more sustainably. After calculating the ratio of usage frequency to cost, the results show that it is more cost-effective to purchase frequently used products rather than cheaper disposable products, although, hypothetically, if consumers use disposable products at a high frequency and make good use of those products, then purchasing disposable products might also be a cost-effective and sustainable option.

II. Literature Review

The environmental impact of daily consumption patterns has become a subject of great concern [13]. Exploring better ways of influencing consumers' behavior is a necessary step toward alleviating ecological problems. From a sustainable consumption perspective, we must all work toward "the consumption of goods and services that meet basic needs and quality of life without jeopardizing the needs of future generations". Previous research has conceptualized sustainability in terms of two major aspects [14]: (1) the sustainability of the entire supply chain, from the origin of raw materials to the overall manufacturing process, including labor working conditions; and (2) how products are used and disposed of at the consumer's end.

Existing literature has mainly focused on the first aspect. A large body of research has explored the environmentally friendly supply chain and its promises of using non-polluting materials and manufacturing processes (for a review, see [7]; [8]. However, while this research has encouraged firms to adopt more sustainable manufacturing processes, it has largely ignored the question of how to encourage consumers to consume more sustainably. Giesler and Veresiu [15] found that consumer education based on expert research could increase awareness about consumption behavior and have a noticeable effect on the environment; moreover, another study found that the emerging concept of "green shame" can alter individual consumption behavior so that it is more environmentally friendly [16]. Sustainable marketing holds out the possibility of not only helping the environment but also aiding individuals in conserving financial resources [17]. This paper explores both aspects of marketing efforts to encourage sustainable consumption. This paper proposes that using the concept of usage frequency to encourage sustainable consumption of high-end products can benefit both consumers and the environment. If consumers focus on the quality of certain goods and select them with frequency of use in mind, their actions can both promote sustainability and help them to conserve financial resources.

High-end products are in essence defined by their long-term value and thus are highly associated with rarity and prestige [18]. Wiedmann, Hennigs, and Siebels [19] conceptualized high-end products as those excelling in several ranges: financial, functional, individual, and social. Luxury products and high-end products must uphold a high standard of excellence, and for that reason, not only are they generally stylish or of superb quality, they must meet the expectations of luxury consumers, who tend to demand a certain level of environmental responsibility [20]. Existing literature has investigated sustainability in association with the luxury industry. For example, Achabou and Dekhili [21] examined the influence of using recycled materials on luxury purchases. Of particular interest here is Sun, Bellezza, and Paharia [14], which demonstrated that luxury is consistent with sustainable consumption on the durability dimension. This paper contributes to this stream of literature by looking into the usage frequency of high-end products as an aspect of their consumption that consumers generally neglect, and it proposes that reminding consumers about their own repeated use of certain products can encourage more sustainable, high-end products consumption.

As a characteristic that influences consumption, usage frequency is not as salient as price, style, or the purchase environment [12]. When consumers make purchases, product information is readily available to support their decisions [22], but consumers nevertheless tend to give little consideration to how much they can be expected to use the goods in question. Behavioral economists and marketing researchers demonstrate that providing more information in product descriptions and positioning that information prominently can reshape consumers' purchasing behavior [23], [24]. Giving reusability and sustainability more prominence among product features through explicit marketing can help consumers overcome the problem of overlooked opportunity costs [12]. Tanner and Carlson [25] argued that when consumers expect to use a product repeatedly, they tend to be willing to pay more for it. This research contributes to this literature by proposing that giving usage frequency more prominence in marketing and purchasing environments will lead to reduced consumer demand for disposable products in the durable category and lead to more sustainable purchasing decisions.

III. Study 1: Identify Usage Frequency as a Latent Factor

Study 1 aims to support the notion that, given the same budget for one specific category of consumer goods, consumers prefer to buy multiple disposable products rather than one high-end product (H1). The rationale is the absence of salient cues for usage frequency in the high-end product purchase environment (H2). As previous literature has shown [12], usage frequency is always a latent variable compared with other factors relevant to product selection, such as price. Thus, I predict that consumers will favor more disposable products because consumers tend to overlook the higher usage frequency aspect of high-end products.

A. Method

I recruited 38 UK subjects to participate in a paid online survey on Academic Prolific (63% female; Mage=30.43 years). Consistent with the literature, I chose two distinct categories suitable for testing the hypothesis: sweaters [14] and kitchen plates [12]. In the experiment, I used a fictitious brand name to avoid biases from existing brand image

impressions [26]. For the sweater condition, the respondents saw the following description for two differently priced brands: "Laurel is a retailer that offers high-end clothing. Laurel sells sweaters priced around £70-£80. Olive is a retailer that offers fast fashion. Olive sells sweaters priced around £10-£20." The high-end sweater was priced according to the average price from high-end clothing brands such as &other stories, COS, and Theory. Similarly, the fast fashion sweater price was consistent with the prices of well-known fast fashion clothing brands such as ZARA, H&M, and Primark. In addition, I used highly similar sweater images for the high-end and fast fashion brands to prevent potential bias connected to the images. The images used in the experiment are shown in appendix S1.1. Meanwhile, the order in which the high-end brand and fast fashion brand appeared was randomly shuffled to prevent order bias. Respondents were asked to answer a series of questions. First, they were told, "Imagine that this year, you have a sweater budget of £80." Respondents were then asked to choose one option between "one high-end sweater for £80 at Laurel" and "four fast fashion sweaters for £20 each at Olive" (the two choices were presented in randomized order). Next, the respondents were asked to write down at least one and up to five thoughts that went into their purchase decisions.

For the kitchen plate condition of the study's experiment, the respondents saw the product introduction pages shown in appendix S1.2 and the description, "Magnolia is a high-end kitchenware brand that sells plates priced £10-£15 each. Daffodil is a fast retailing low-end kitchenware brand that sells plates priced £1-£2 each." The two product pages show similar images of white, round dinner plates. The respective product pages appear in random order in the survey. The subjects are asked to respond to the following: "Imagine that you have a plate budget of £10. You have two options regarding how you want to spend the £10. Which would you prefer?" To make the conditions reflect real-world scenarios, I priced the high-end plate as the average price of high-end kitchenware brands such as Cutipol, Royal Doulton, and Sambonet. The price of disposable kitchen plates is comparable to that of IKEA. The respondents could select either "buy one high-end plate for £10 at Magnolia" or "buy five disposable plates for £2 at Daffodil" (the two choices were presented in a random sequence). Then the respondents were also required to list at least one and up to five reasons for their choices.

I calculated the proportion of each choice and then conducted a t-test. To further investigate what motivated each subject's choices, I used R to identify the frequency-related roots such as "frequen-" and "times" and then constructed the frequency of each keyword mentioned in the answers to provide evidence for H2.

B. Results

Choice. Regarding sweaters, 71% of respondents opted for multiple disposable products, whereas only 29% preferred to buy one luxury product. Similarly, in the case of kitchen plates, 61% of them expressed a preference for multiple disposable products, while 39% indicated a preference for one high-end product. Different categories led to similar results. Throughout both products, 66% of respondents preferred to purchase multiple disposable products, while 34% of respondents preferred one high-end product (2 (1)=3.79, p=0.05). Thus, the majority of respondents preferred to buy multiple disposable products (H1).

Thoughts generated. Respondents generated a total of 234 comments, with an average of 2.34 thoughts per person. Only 3.84% of all comments contained content related to frequency and repeated use, regardless of the product choice.

Follow-up study. Although few respondents mentioned that the high-end product could be used on more occasions than the cheaper, disposable option, Mittelman, Gonçalves, and Andrade [12] argued that it is human nature to neglect what is not in sight, and usage frequency is one such hidden feature. Consumers may only realize in hindsight that they tend to use high-end products more frequently than disposable ones. To provide insights into consumers' rationale for using disposable products, I returned to the 38 study participants asked them to recall shopping experiences in which they had bought disposable products for which they had had little use afterward; I then asked whether they had later thought that it would have been a better use of their money to buy something more expensive that they would have used repeatedly. If they replied that they had indeed had this kind of experience, then they were asked to describe the product category associated with this experience and to write a short sentence about the experience. As predicted, 73.93% of respondents reflected that in the past they had bought disposable products but later failed to reuse them much or at all. Only 26.07% of respondents did not report having had this experience. Meanwhile, the fact that most of the subjects did recall such an experience in the follow-up study, even though they did not mention usage-frequency-related thoughts in the previous experiment, indicates that usage frequency is indeed a latent factor, consistent with the literature. In the comment to the follow-up study, frequently mentioned product categories included winter coats, toasters, shoes, and the like.

C. Discussion

Study 1 indicates that (1) most consumers operating within the same budget preferred a higher number of disposable products to a single high-end product, and (2) the consumers overlooked the question of how often or how much they would be likely to reuse the products. One may argue that, besides usage frequency neglect, other conceivable reasons for these findings may be concurrently at play, such as variety seeking [14] or hedonism [27]. To demonstrate that usage frequency is indeed an important factor influencing sustainable consumption, the author provides direct evidence in the follow-up study that, when pressed, consumers do recall the relevance of usage frequency for making a "cost-effective" choice. The results from Study 1 and the follow-up study imply that usage frequency is a critical but latent factor in making consumption choices. Therefore, it is possible that, if consumers are reminded about product attributes that lead to their repeated use, those consumers may be more likely to choose more sustainable, high-end products. Study 2 directly tested the hypothesis that when consumers are reminded about the usage frequency aspect of a product, they will be more likely to choose high-end options.

IV. Study 2: Nudging Usage Frequency as an Important Consideration

The objective of Study 2 is to test whether the salience of usage frequency can promote consumers to purchase one high-end product instead of multiple disposable products (H3). In the previous study, the author showed that usage frequency is a latent product characteristic. Thus, the author expects that when this latent product feature becomes salient, consumers will be more likely to make the more sustainable purchase decision of choosing one high-end product over multiple disposable ones.

A. Method

I recruited 62 UK respondents for a paid online survey on Academic Prolific (57% female; M_{age}=32.85 years). The respondents were randomly assigned to the treatment condition in either the sweater or kitchen plate category. The corresponding control condition for each product category is described in Study 1. For the sweater treatment, to prevent other confounding factors, I used the same product images from the control condition. I opted for fictitious brand names to control for preexisting brand associations with well-established brands [26]. "Olive" was used in the fast fashion condition, while "Laurel" was used in the high-end condition. Respondents were given the same information as in Study 1: "Laurel is a retailer that offers high-end clothing. Laurel sells sweaters priced around £70-£80. Olive is a retailer that offers fast fashion. Olive sells sweaters priced around £10-£20." For the high-end product option, I changed the product description along the following lines: "A high-end sweater. You can see yourself to wear it frequently in multiple occasions." The other sweater was given a description of similar length to avoid visual bias (the treatment conditions are shown in appendix S2.1). With a sweater budget of £80, respondents were asked to select either "four fast fashion sweaters for £20 each at Olive" or "one high-end sweater for £80 at Laurel." Next, respondents were asked to list several reasons for their decisions.

Regarding the kitchen plate condition, I used the same product image from the control condition to avoid other confounding factors. Likewise, the fictitious brand names "Daffodil" and "Magnolia," respectively, were used for the fast retailing and the high-end kitchenware. Respondents were given these descriptions of the two products: "Magnolia is a high-end kitchenware brand that sells plates priced £10-£15 each. Daffodil is a fast retailing kitchenware brand that sells plates priced £1-£2 each." On the page for the high-end kitchenware, I described the high-end dinner plate as "A dinner plate. Microwave-safe; Oven-safe; Dishwasher-safe" to underline usage frequency. What's more, I made the length of the advertisement for the cheaper plate look similar to avoid visual bias (the treatment conditions are shown in appendix 2.1). Next, the instructions for the respondents read: "Imagine that you have a plate budget of £10. You have two options regarding how you want to spend the £10. Which would you prefer?" They were given two choices: "buy five disposable plates for £2 at Daffodil," or "buy one high-end plate for £10 at Magnolia." Furthermore, they wrote down the reasons. Also, to create real experiment conditions, the advertisement images and options were presented in randomized order.

B. Results

As predicted, the number of respondents who chose the high-end option is significantly higher in the treatment condition than in the control condition (H3). In the sweater treatment condition, once they were reminded of usage frequency, 55% of the respondents preferred to consume one high-end sweater, while 45% preferred to buy multiple disposable products ($M_{control}$=29% vs. $M_{treatment}$=55%, t (1, 61.423) = -2.20, p-value = 0.03). This represents a 26% increase in luxury choice compared with the control condition. In the control condition for the kitchen-plate category, 39% of the respondents selected the high-end option. When reminded of usage frequency, 68% of the respondents indicated that they would choose one high-end kitchen plate, whereas 32% indicated they would choose multiple disposable kitchen plates ($M_{control}$=39% vs. $M_{treatment}$=68%, t (1, 65.213) = -2.41, p-value = 0.02). The choices of luxury sweaters and plates are shown in Fig. 1.

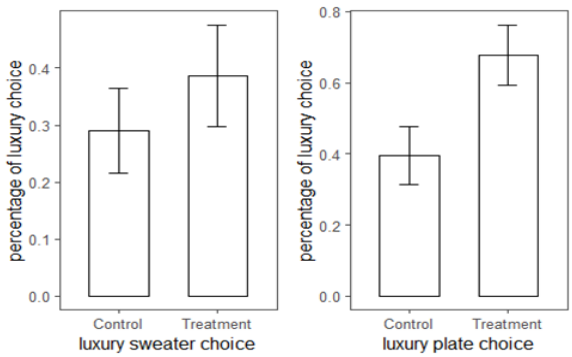


Fig. 1. Choices of luxury sweater. Error bars depict 95% conference intervals.

C. Discussion

The results of Study 2 provide further evidence that usage frequency neglect drives consumers' preferences for disposable products. Manipulating the salience of usage frequency nudged consumers to make more sustainable decisions about their purchases. Regarding the kitchen plate product category, even though consumers undoubtedly preferred buying multiple dinner plates, as mentioned in the responses to the question about the thoughts that went into respondents' decisions, the results from both categories were nevertheless significant and indicate that reminding consumers about usage frequency has a robust impact on nudging them into making sustainable consumption decisions. The findings suggest that if usage frequency is mentioned effectively in marketing messages, it could be a significant factor in more sustainable consumption. Managers of high-end brands would do well to consider including usage frequency in product descriptions or advertisement messages to encourage purchases.

V. Study 3: Real "Cost-Effectiveness" in Purchase Decisions

The objective of Study 3 is to explore which is the more "cost-effective" choice for consumers with different actual product usage preferences: high-end products or disposable products? It is possible that some consumers wear fast fashion products repeatedly and may even reuse them more

often than high-end fashions. Thus, for these consumers, "purchasing fast fashion" is a more cost-effective option. To investigate this question, I asked study subjects their actual usage frequency for the two types of purchases and the average cost of each type. Specifically, I conceptualized two types of consumers: consumers who wear high-end sweaters more and consumers who wear fast fashion sweaters more. I hypothesized that it is a more cost-effective option for consumers to purchase the type of sweaters they wear more frequently. I expected the results to indicate that the "cost-effective" level is highly dependent on consumers' product usage preference. These two types of consumers are significantly different regarding their cost-effective options.

A. Method

I recruited 53 UK (53% female; M_{age}=37.02) respondents from Academic Prolific for a paid survey. First, respondents read the instructions, "Please think about all of the sweaters you own. Divide them into two groups: expensive and inexpensive." Next, the respondents were asked to write down the specific number of days (out of seven) that they would wear the expensive sweater: "In a typical sweater season, how many days out of seven do you wear the expensive sweater (as opposed to the inexpensive sweater)?" I also collected the respondents' typical budgets for expensive sweaters ("What is your typical budget for an expensive sweater?") and cheap sweaters ("What is your typical budget for an inexpensive sweater?").

I conceptualize the consumers as falling into two groups: those who wear expensive sweaters more and those inclined to wear inexpensive sweaters. Specifically, I label consumers who wear expensive sweaters four or more days a week "high-end sweater consumers." I label the rest of the consumers "budget sweater consumers." I calculate the "cost-effective level" of consumption for each subject building upon this assumption and consider the following choice scenarios. In one scenario, respondents have one expensive sweater and multiple cheap sweaters. This assumption is consistent with this previous study design. With this assumption, I define the cost-effective level as {(expensive sweater budget/number of days the expensive sweaters are worn) / inexpensive sweater budget}. I investigate the scenario in which consumers have fewer expensive sweaters (in this assumption, one) and more fast fashion sweaters and ask which consumption option is most cost-effective for them. This ratio implies that, if the frequency with which consumers wear high-end products is proportional to their corresponding budgets, then this ratio should equal to 1. Similarly, under this assumption, the most cost-effective option should be the one with a lower ratio.

B. Results

Under the assumption that consumers with one expensive sweater place it in rotation with different inexpensive sweaters each week, for those who opt to wear their expensive sweater four or more days a week, the average cost of the expensive sweater will be less per day than the daily average cost of one of the budget sweaters. For consumers who wear expensive sweaters fewer than four days a week, the daily average cost of an expensive sweater is 3.27 times the daily average cost of a budget sweater ($M_{morethan4days}$=.80 vs. $M_{lessthan4days}$=3.27, t (1, 38.352) = -6.71, p-value < 0.001). The results show that, for consumers who wear high-end sweaters more, it is actually more cost-effective to purchase high-end sweaters. For consumers who prefer to wear a greater selection of fast fashion sweaters, it is a more cost-effective option to purchase the inexpensive sweaters. Thus, product usage frequency is an important dimension to consider when it comes to making sustainable consumption decisions.

C. Discussion

The results are consistent with the expectations. If consumers prefer to use expensive products more frequently, the sustainable consumption choice is to purchase a smaller quantity of the higher-quality product. However, the results suggest that lower-range products are a better choice for consumers who are not inclined to use high-end products. There are two more dimensions I did not consider in this study design: product durability and the available number of sweaters in each category. For example, I would underestimate this cost-effectiveness level if consumers had more high-end sweaters to choose from, or if the high-end products were less durable than the fast fashion sweaters. However, given the literature, high-end products are unlikely to be less durable. Therefore, this constructed concept provides insights in terms of cost-effectiveness given the most frequently used product types. Furthermore, this study provides the first step in investigating real cost-effectiveness for consumers.

VI. Conclusion

This paper demonstrates that purchasing high-end products with an emphasis on usage frequency can drive sustainable consumption behavior. However, given the same budget, the majority of consumers prefer to purchase multiple disposable products rather than single high-end products, which could be used more frequently. This paper proposes that this effect is, in part, driven by consumers' neglect of product usage frequency. Consumers generally have had the experience of buying disposable products and later not reusing them much (or at all) and realizing that it would have been a better use of their money to have bought a more expensive multiple-use item. But at the time of their purchases, they generally fail to take this experience into account. These studies explore usage frequency as a critical dimension of sustainability.

This paper establishes usage frequency as a key dimension of sustainable consumption and suggests the need for deeper exploration of usage frequency in marketing research. This study followed previous literature in focusing on the domains of clothing and kitchenware. These results show that if consumers expect to use a potential purchase repeatedly, they may be less prone to ignore the usage frequency aspect of the purchase and thus show a preference for high-end, reusable products. On the other hand, consumers may not immediately think about reuse and sustainability when making their purchases. Highlighting product usage frequency as a functional alibi [27] might nudge consumers to select high-end, reusable products. Highlighting sustainability might help reduce scenarios in which consumers avoid purchasing high-end goods because they perceive these

products as wasteful.

The reminding of usage frequency in the purchase environment is also an attempt to create responsible consumers. Responsible consumption increasingly arises with the growing concern about the impact of consumption decisions on the environment, and on society. For instance, in 2019, global strategy consulting firm OC&C conducted an in-depth survey of 15,500 respondents from nine countries and assessed that Gen Zers in China "are more concerned by environmentally-friendly consumption" (25 percent versus 13 percent for Gen Zers across the globe) [28]. Because this is a generation that has directly seen various environmental crises in China and the health impact of global warming. In this case, affective dynamics play a crucial role in how consumers are created as responsible subjects [29]. Younger "green consumers" will push the country in a sustainable direction. Usage frequency and durability of products will be taken into account when consumers make purchase decisions.

Consumers always under-predict future expenses as compared to their recalled past expenses. The results of follow-up study in study 1 suggest that major subjects did not consider the character of usage frequency as costs of products. "cost-effective level" is a proper reminder for "tightwad" consumers, who are chronically attuned to costs [30].

In 2019, the global market value of fast fashion was 36 billion U.S. dollars [31]. While the fast fashion system stimulates economic growth, according to the United Nations Economic Commission for Europe, the entire fast fashion industry contributes to 20% of wastewater and roughly 10% of global gas emissions, hindering sustainability efforts. But fast fashion still appeals to consumers because of low prices and trendy styles. These findings suggest that reminding consumers about usage frequency can encourage them to purchase more high-end products that are more sustainable. The policy implication from this research is that policy makers should consider taxing the environmental costs of disposable products. If environmental costs were priced into products and consumers were encouraged to purchase items for multiple uses weighted by the cost, the result would undoubtedly be more sustainable consumption behaviors overall.

Conflict of Interest

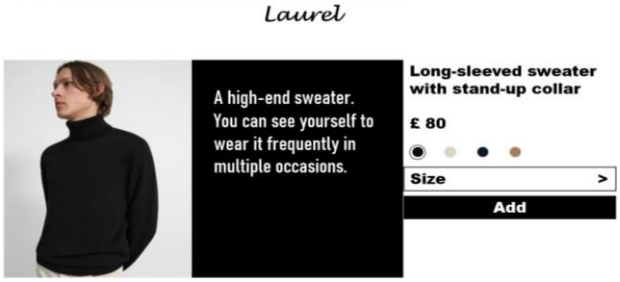
The authors declare no conflict of interest.

Appendix

A. Appendix 1.1

B. Appendix 1.2

C. Appendix 2.1



D. Appendix 2.2

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