



Research Article

# The Role of Anthropomorphism in Consumer Evaluations of Sustainable Products: A Research Note

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## ABSTRACT

Identifying ways to encourage consumers to engage in sustainable consumption is a vital research topic. While previous studies have identified several messages or appeals that can improve consumer responses, studies examining these in detail remain scant. There are many psychological barriers to consumers' involvement in sustainable consumption. Therefore, much more work exploring effective means to promote sustainable consumption is necessary. This study proposes that anthropomorphizing a sustainable product can enhance consumers' evaluations of that product. Although prior studies have examined anthropomorphism in sustainable contexts, investigations regarding sustainable products remain limited. This method is considered beneficial because it is not a recommendation or request for consumers to engage in sustainable consumption; thus, it is unlikely to elicit consumer resistance. This study also incorporates perceived personal relevance and package attractiveness as mediators to explain the underlying mechanism of this effect. The results showed that consumers favored an anthropomorphized product through more substantial perceived personal relevance to the product and more potent perceived package attractiveness. These findings contribute to the literature on sustainable consumption and anthropomorphism and provide evidence of their relation. In addition to describing the features of sustainable products, marketers should portray sustainable products as more humanized to increase consumer acceptance.

## KEYWORDS

*sustainable consumption, sustainable products, anthropomorphism, perceived personal relevance, package attractiveness*

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## 1. Introduction

Among the major concerns of this century are climate change and environmental sustainability (Mayer & Frantz, 2004). Sustainable consumption is defined as the use of goods and services that cater to basic needs and ensure a better quality of life while minimizing the use of natural resources, toxic materials, and emissions of waste and pollutants to avoid jeopardizing the needs of future generations (Lorek & Ver-

gragt, 2015). Given the growing body of literature on sustainable consumption, several review papers have summarized the key studies on the subject (e.g., Iyer and Reczek, 2017; Narula and Desore, 2016; White et al., 2019; Trudel, 2019).

One common consumer phenomenon pointed out by researchers is the so-called attitude-behavior discrepancy (Johnstone & Tan, 2015; Reczek & Irwin, 2015; White et al., 2019). Although consumers report



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favorable attitudes toward sustainable behaviors, they do not display sustainable behaviors in reality. This discrepancy may occur because sustainable behaviors are interpreted as requiring time, money, and effort, sustainable products are believed not to be as strong and effective as traditional products, and consumers' memory regarding sustainability is unreliable (Johnstone & Tan, 2015; Luchs et al., 2010; Reczek & Irwin, 2015; Reczek et al., 2018b). Also, consumers are uncertain about the effectiveness of sustainable consumption practices for attaining sustainable goals (Johnstone & Tan, 2015; Reczek & Irwin, 2015). Further, some consumers hold unfavorable perceptions of green or ethical consumers (Brough et al., 2016; Johnstone & Tan, 2015; Shang & Pelozo, 2016; Zane et al., 2016).

Accordingly, previous studies have focused on understanding consumers' evaluations of sustainable consumption from various aspects (Iyer & Reczek, 2017). In particular, proposing ways to encourage consumers to engage in sustainable consumption has been a vital research topic acknowledged by researchers. However, studies examining these in detail remain limited because of the abovementioned psychological barriers. Also, consumers often resist changing their behavior and avoid considering the sustainability aspects of products (Reczek et al., 2018a). Further, some consumers show resistance to environmental appeals and messages (Wang et al., 2017; Yakobovitch & Grinstein, 2016) and sustainability interventions (Gonzalez-Arcos et al., 2021). Thus, much more work is needed to explore how to promote sustainable consumption. The present study aims to tackle this issue and explore whether anthropomorphizing a sustainable product helps elicit a more favorable consumer response.

Anthropomorphism refers to the process of imbuing non-human agents and objects with human-like properties, characteristics, and mental states (Epley et al., 2007). The term also refers to an inference process regarding the unobservable characteristics of non-human agents and objects. Aggarwal and McGill (2007) stated that consumers tend to anthropomorphize things such as natural phenomena (e.g.,

clouds, moon, and mountains) and artifacts (e.g., cars, engines, and computers). Marketers often encourage this tendency by imbuing brands with distinct personalities and images or designing anthropomorphized representations of brands (Aggarwal & McGill, 2007; Delbaere et al., 2011; Puzakova & Aggarwal, 2018). Accordingly, consumers often associate personality traits with brands and "easily can think about brands as if they were celebrities or famous historical figures" (Aaker, 1997, p. 347).

Previous studies have demonstrated that anthropomorphizing products can elicit positive consumer responses (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Delbaere et al., 2011; Wan et al., 2017). This anthropomorphism effect was also examined in sustainable contexts, and anthropomorphism was found to drive sustainable consumption under certain conditions (Chen et al., 2021; Cooremans & Geuens, 2019; Han et al., 2019; Ketron & Naletelich, 2019). However, these studies based their findings on anthropomorphizing cues (i.e., earth and trees), reusable tableware (i.e., coffee mugs), produce, and shipping materials. Little research has addressed how anthropomorphizing sustainable products (i.e., products with sustainability features) influences consumer evaluation. This product type is worth investigating because a variety of brands, including those that are sustainable and those that are less sustainable, compete in many product categories. Consumers can choose from a wide variety of options, so sustainable products face severe competition in attracting consumers. Identifying ways to catch consumers' attention and increase their interest is pivotal (Macinnis & Jaworski, 1989). Therefore, the first research question addressed herein is how using anthropomorphism for sustainable products influences consumers' evaluation. In addition, this study explores potential mediators related to the effect of anthropomorphism on consumer attitudes; specifically, perceived personal relevance of the products and their packaging attractiveness. As such, this research conceptually differs from previous studies and contributes to deepening our knowledge of the anthropomorphism effect.

The following section reviews the literature on sus-

tainable consumption and indicates a research issue requiring further investigation. Next, we describe our hypotheses along with a study designed to test them. Finally, we summarize our findings, implications, and directions for future research.

## 2. Literature Review

Research on sustainable consumption has a long history. According to [Chamorro et al. \(2009\)](#), researchers began to take an environmental perspective during the 1970s. Early works focused on the relationship between environmental concerns and behavior and the characterization of green consumers. Since then, numerous studies have been conducted, and several review papers have been published (e.g., [Iyer and Reczek, 2017](#); [Narula and Desore, 2016](#); [White et al., 2019](#); [Trudel, 2019](#)).

A more recent stream of research focuses on factors influencing sustainable consumption. To date, various factors such as consumer characteristics ([Goldsmith et al., 2016](#); [Gupta & Ogden, 2009](#); [Minton et al., 2022](#); [Reczek et al., 2018a,b](#); [Yan et al., 2021b,a](#)), product characteristics ([Gershoff & Frels, 2015](#); [Sun et al., 2021](#)), and decision contexts ([Griskevicius et al., 2010](#); [White et al., 2014](#)) have been studied.

Another recent research stream has sought ways to increase consumers' sustainable consumption. Previous studies examined the effects of benefit appeals ([Goldsmith et al., 2016](#); [Green & Peloza, 2014](#); [White & Simpson, 2013](#); [Yang et al., 2015](#)), message frames ([White et al., 2011](#)), sustainability labels ([Cho et al., 2018](#)), and traceability information ([Lee et al., 2020](#); [Meise et al., 2014](#)). Others demonstrated that presenting environmental messages could be counterproductive for some consumers ([Wang et al., 2017](#); [Yakovovitch & Grinstein, 2016](#)). These studies have augmented our understanding of how to lead consumers to be more involved in sustainable consumption; however, the knowledge remains limited. In reality, prompting consumers to engage in environmentally sustainable behaviors is a huge challenge, as consumers often resist engaging in sustainable consumption ([White & Simpson, 2013](#)). Additional studies are therefore necessary to explore better

methods of promoting sustainable consumption. Hence, the present research extends this stream of work by proposing that anthropomorphism is one way to increase consumers' evaluation of sustainable products. We presume that consumers are unlikely to display psychological resistance or reactance to anthropomorphism because it is not a recommendation or request aimed at consumers to engage in sustainable consumption.

## 3. Hypotheses

In consumer behavior research, [Aggarwal and McGill \(2007\)](#) were the first to examine the anthropomorphism effect, demonstrating that the perceived fit between product features and the activated human schema enhances consumers' product evaluation. Subsequent studies investigated the anthropomorphism effect with respect to consumer characteristics ([Chen et al., 2017](#); [Khenfer et al., 2018](#)), product characteristics ([Wan et al., 2017](#)), consequences such as emotions and attributions of brand personality ([Delbaere et al., 2011](#)), and product replacement intention ([Chandler & Schwarz, 2010](#)). Overall, anthropomorphism elicits positive consumer responses ([Aggarwal & McGill, 2007](#); [Chandler & Schwarz, 2010](#); [Delbaere et al., 2011](#); [Wan et al., 2017](#)).

Anthropomorphism has also been examined in sustainable consumption research. For example, [Cooremans and Geuens \(2019\)](#) demonstrated that anthropomorphism increased purchase intentions for abnormally shaped produce but not for normally shaped produce. The preference for anthropomorphized abnormally shaped produce was manifested through enhanced positive affect and taste perceptions. Conducting similar studies, [Chen et al. \(2021\)](#) reported that feelings of empathy toward produce mediated the effect of anthropomorphism on purchase intentions of abnormally shaped produce. Other than produce, [Ketron and Naletelich \(2019\)](#) demonstrated the impact of anthropomorphic cues. They showed that anthropomorphized images of a tree, earth, and a delivery box could enhance sustainable behavior, such as lowering the usage of soap and paper towels, increasing intentions to include more recycled fibers in customized backpacks, and choosing eco-friendly

shipping. Han et al. (2019) focused on a reusable mug used in a coffee house. They demonstrated that featuring an anthropomorphized image of the mug in an advertisement improved mug use intentions and coffee purchases when the advertisement also explained why the mug should be used (desirability appeal) rather than how it is used (feasibility appeal).

Although these studies exhibited that anthropomorphism helps promote consumers' sustainable consumption, they did not scrutinize their reactions to anthropomorphized sustainable products. They examined anthropomorphized cues, reusable tableware, produce, and shipping material. Contributing to the extant literature, we focus on products that have sustainability features. Chen et al. (2021) and Cooremans and Geuens (2019) probed actual products; however, their focus was the appearance of produce (i.e., normal vs. abnormal shapes), and this antecedent does not apply to our target products. Sustainable products face severe competition, making it difficult for them to capture consumers' attention and stimulate their interest. Investigating whether and how anthropomorphizing sustainable products influences consumer evaluations is thus worthwhile.

In light of the evidence reported in previous studies, we argue that anthropomorphism helps increase consumer acceptance of sustainable products. Many consumers tend to view sustainable consumption as abstract, vague, and distant from the self because such activities involve putting aside immediate individual interests and providing long-term benefits to others and the natural world (White et al., 2019; Reczek et al., 2018b). Anthropomorphism can strengthen consumers' emotional bonding with and connection to non-human entities (Chandler & Schwarz, 2010; Puza-kova & Aggarwal, 2018; Kim & McGill, 2011). Thus, we expect that anthropomorphizing sustainable products can raise consumers' interest in the products, leading to a more favorable product evaluation.

Furthermore, this study examines the underlying process of this effect by including potential mediators. One proposed mediator is perceived personal relevance. Previous research has argued that personal relevance is associated with product

judgments (Meyers-Levy & Maheswaran, 2004), the strength of brand preference (Chernev et al., 2011), and mental simulation (Ülkümen & Thomas, 2013). Anthropomorphism can motivate consumers to build social relationships with products (Chen et al., 2017). Hence, we expect that anthropomorphism can increase the perception of personal relevance. We hypothesize that anthropomorphizing sustainable products generates a more positive evaluation of the products through intensified perceived personal relevance toward the products.

Another potential mediator is package attractiveness. Wan et al. (2017) demonstrated that anthropomorphism increased consumers' preferences for good-looking products. The result implies that anthropomorphized products lead consumers to focus more on product packaging. Accordingly, we expect consumers to evaluate anthropomorphized products more favorably as they are more attracted to their packages. Hence, we propose the following hypotheses:

H1: Product anthropomorphism positively influences consumers' evaluation of a sustainable product.

H2: The effect of product anthropomorphism on consumers' evaluation of the sustainable product is mediated by perceived personal relevance to the product.

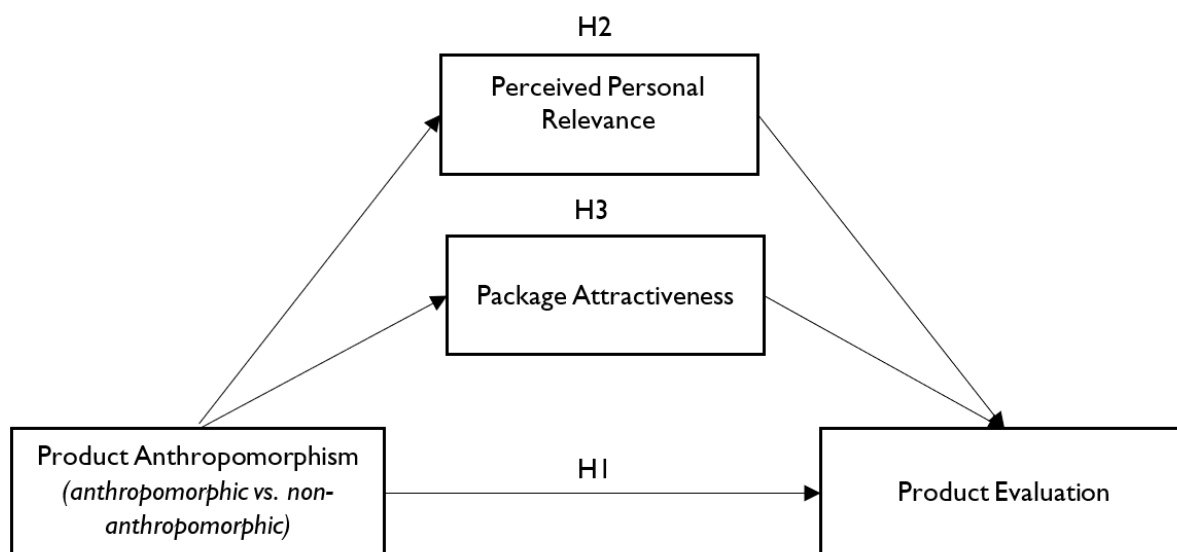
H3: The effect of product anthropomorphism on consumers' evaluation of the sustainable product is mediated by package attractiveness.

The schematic representation of our proposed framework is depicted in Figure 1.

## 4. Method

### 4.1. Design and Sample

We conducted a controlled experiment to test our proposed hypotheses. We employed a single-factor between-subjects design with two conditions (anthropomorphic vs. non-anthropomorphic). This factor was manipulated in an advertisement of a fictitious laundry detergent brand, Earth & Natural. We selected this product category because consumers' familiarity with the product was high, and several sustainable detergent brands are available in the marketplace.



**Figure 1.** Conceptual Framework

The advertisement described the product in the first person in the anthropomorphic condition, whereas it described the product in the third person in the non-anthropomorphic condition. More specifically, respondents in the anthropomorphic condition viewed an advertisement describing the product, such as: “I am Earth & Natural, a liquid laundry detergent that is sustainable and has a superior ability to clean clothes. I am plant-based, safe, and made of highly biodegradable ingredients. I do not contain ingredients that are harmful to the environment and people, such as synthetic fragrances, preservatives, or fluorescent whitening. My container is eco-friendly and is made of bio-based and recycled plastics. Please try me.” In contrast, respondents in the non-anthropomorphic condition observed similar information describing the product in the third-person narrative. This manipulation method has been frequently adopted in previous studies (Aggarwal & McGill, 2007; Chen et al., 2017; Puzakova et al., 2013; Puzakova & Aggarwal, 2018; Wan et al., 2017).

A total of 340 respondents recruited from an online panel of an Internet research company participated in the experiment. The respondents were approximately equally divided between genders (49.1% females), with

an average age of 49.6 and a variety of occupations.

#### 4.2. Procedure and Measures

We first asked respondents to imagine that they had noticed a sustainable laundry detergent brand advertisement when searching the Internet for information on new detergents. Next, respondents viewed the ad and rated their evaluation of the product using a three-item, six-point scale anchored from very unfavorable to very favorable, very negative to very positive, and very bad to very good ( $\alpha = 0.92$ ). This scale was adopted from Wang et al. (2020). Next, perceived personal relevance was measured using Meyers-Levy and Maheswaran (2004)’s three-item scale. Respondents reported how interesting, involving, and personally relevant they perceived the product on a six-point scale that ranged from not at all to very much ( $\alpha = 0.97$ ). Further, respondents evaluated package attractiveness with Orth and Crouch (2014)’s three-item, six-point scale anchored from very unattractive to very attractive, very unlikable to very likable, and not very beautiful to very beautiful ( $\alpha = 0.94$ ). Finally, respondents answered manipulation check questions regarding their perception of the product as a person using two items adopted from Wan et al. (2017) to indicate whether they thought of the product as a person and whether

**Table 1.** Descriptive Statistics of Measures

	Anthropomorphic		Non-anthropomorphic	
	M	SD	M	SD
Product evaluation	4.46	0.86	4.10	1.04
Perceived personal relevance	4.18	0.97	3.60	1.32
Package attractiveness	4.32	0.85	3.96	1.03
Perception of the product as a person	3.77	1.04	2.76	1.03

the product seemed like a person on a six-point scale from not at all to very much ( $r = 0.92$ ,  $p < .001$ ). We averaged the responses to each multiple-items to create an index. The descriptive statistics of these measures are shown in [Table 1](#).

## 5. Results

### 5.1. Manipulation Check

First, we conducted an anthropomorphism manipulation check. An independent-samples t-test showed that the respondents perceived the product to be more humanized under the anthropomorphic condition ( $M = 3.77$ ) than under the non-anthropomorphic condition ( $M = 2.76$ ,  $t(338) = 9.02$ ,  $p < .001$ , Cohen's  $d = 0.98$ ). Thus, the manipulation of anthropomorphism was considered successful.

### 5.2. Hypothesis Testing

H1 predicts that anthropomorphizing a sustainable product improves consumers' evaluation of it. We performed an independent-samples t-test to test this hypothesis with product evaluation as a dependent variable. This test revealed that the effect of product anthropomorphism was significant ( $t(338) = 2.92$ ,  $p < 0.01$ , Cohen's  $d = 0.32$ ). Consistent with H1, the anthropomorphized sustainable product was evaluated more favorably than the non-anthropomorphized sustainable product ( $M_{\text{anthropomorphic}} = 4.46$  vs.  $M_{\text{non-anthropomorphic}} = 4.10$ ).

Next, we assessed whether product anthropomorphism influences consumers' evaluation of the sustainable product through two mediators, perceived personal relevance (as predicted in H2) and package attractiveness (as predicted in H3). To test these effects, we performed a parallel mediation analysis using the PROCESS macro with 5,000 bootstrap samples ([Hayes, 2018](#)). Product anthropomorphism

was coded as 1 for the anthropomorphic condition and 0 for the non-anthropomorphic condition.

The results identified significant mediation effects through both perceived personal relevance ( $\beta = 0.18$ , 95% confidence interval (CI) = [0.09, 0.29]) and package attractiveness ( $\beta = 0.16$ , 95% CI = [0.06, 0.27]). The respondents perceived stronger personal relevance of the sustainable product in the anthropomorphic condition versus the non-anthropomorphic condition. This intensified perception in turn enhanced their product evaluation. These results are consistent with H2. Similarly, the respondents who observed the anthropomorphized sustainable product evaluated package attractiveness more favorably than those who observed the non-anthropomorphized sustainable product leading to more positive product evaluation. Therefore, H3 is supported. These were indirect-only mediations since the direct effect of product anthropomorphism on product evaluation was non-significant.

## 6. General Discussion

This study aimed to investigate whether anthropomorphizing a sustainable product positively influenced consumers' product evaluation. According to our findings, an anthropomorphized sustainable product enhances consumers' product evaluation compared with a non-anthropomorphized sustainable product. Additionally, we identified two mediators that were activated in the process: perceived personal relevance and package attractiveness. We found that consumers favored the anthropomorphized product through a more substantial perceived personal relevance and a more potent perceived package attractiveness.

### 6.1. Theoretical Contributions and Practical Implications

This study contributes to the literature on sustainable consumption and anthropomorphism. Even though prior research examined the effects of anthropomorphism in sustainable contexts, the stream has not investigated the impact of this communication tactic on sustainable product evaluation. Our findings afford us a deeper understanding of the relationship between anthropomorphism and consumer responses to sustainable products, while clarifying the psychological process using personal relevance and package evaluation as mediators. These results indicate that anthropomorphizing sustainable products is an effective marketing tool for improving consumer responses. This effect occurs because consumers perceive the products as more relevant to them and their packages as more attractive.

These findings have practical implications. In particular, sellers should devise communication strategies that portray sustainable products as more humanized to improve consumer acceptance. Consumers may have low interest in sustainable consumption because it seems abstract and distant from them; after all, such activities aim to provide long-term benefits to others and the natural world (White et al., 2019; Reczek et al., 2018b). Anthropomorphizing the products can increase consumers' interest and make them feel closer to the products, thus mitigating negative thoughts and emotions regarding sustainable consumption. Moreover, manufacturers should design attractive packages for sustainable products because anthropomorphizing the products directs consumers' attention to their designs. When product packages are likable, consumers' product evaluation is enhanced.

### 6.2. Future Research

This research has several limitations. First, it is necessary to conduct additional studies that replicate our findings and test potential reasons that anthropomorphizing sustainable products appears to increase consumers' product evaluations. Consumers view sustainable products as more psychologically distant and abstract than traditional products because sustainable choices involve putting aside more prox-

imal and immediate interests (Reczek et al., 2018b). However, Reczek et al. (2018b) provided evidence that presenting detailed product descriptions on sustainable attributes increases purchase likelihood for consumers with concrete mindsets. Thus, anthropomorphizing sustainable products with sustainability information may shift consumers' mindsets from more abstract to more concrete thinking and higher personal relevance, increasing product evaluation. This process may also occur through their increased confidence in the products. By including these processes, future research will be able to more thoroughly examine possible mechanisms that explain more positive consumer evaluations of products that feature anthropomorphized product attributes and benefit descriptions.

Second, it would be beneficial to investigate the relationship between anthropomorphizing sustainable products and consumers' perception of product quality. Previous studies found that consumers become more concerned about the efficacy of sustainable products when strength-related attributes are valued, leading them to prefer less sustainable products or to increase the amount of a given sustainable product to compensate for its perceived inferiority (Lin & Chang, 2012; Luchs et al., 2010). Anthropomorphizing sustainable products may mitigate concerns about product quality or effectiveness through hidden mediators. Future research should explore this relationship to understand the anthropomorphism effect more deeply.

Third, further research should examine the link between anthropomorphizing sustainable products and product evaluation. This study anthropomorphized a sustainable product using a verbal device and described the product in the first person. Our findings should be tested using different devices because various other devices can induce anthropomorphic tendencies (Macinnis & Folkes, 2017). Finally, future research may extend our findings to different product categories to test their generalizability.

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## 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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LUMINOUS  
INSIGHTS

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