

Own brand or any brand? The impact of recycled material sources on consumers' purchase intentions

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Abstract

Against the backdrop of escalating global resource scarcity and environmental pollution, recycled products have emerged as a critical strategy for addressing environmental challenges. However, the literature has largely emphasized product attributes and external informational cues as drivers of purchase intentions, paying relatively little attention to the sources of recycled materials. Drawing on signaling theory, this study investigates how different sources of recycled materials influence consumer purchase intentions and examines the underlying psychological mechanisms driving this effect. Recycled material sources are categorized into two types—one's own brand and any brand. Results from three experiments indicate that the source of recycled materials significantly influences consumers' purchase intentions. Specifically, when recycled materials originate from the brand itself (vs. any brand), consumers exhibit stronger purchase intentions. This effect emerges because own brand recycled materials enhance perceptions of brand essence. Furthermore, brand status and product category consistency moderate this relationship. This study extends the literature on recycled product adoption and provides actionable implications for firms promoting recycled products.

Keywords: recycled material source; brand essence; brand status; product category consistency; signaling theory

1. Introduction

With the increasing severity of environmental challenges—such as global warming, resource depletion, and marine pollution—governments and international organizations have increasingly

called for proactive measures to address environmental crises (IPCC, 2021). Against this backdrop, the adoption of recycled products derived from reclaimed materials has emerged as a critical approach to mitigating environmental degradation and resource scarcity (Lu & Kwan, 2023). Recycling converts waste into usable materials, thereby reducing reliance on virgin resources, enhancing resource efficiency, and alleviating environmental pollution associated with product waste (Grappi et al., 2024).

As the concept of the circular economy gains traction, an increasing number of brands have introduced recycled products (Adıgüzel & Donato, 2021). For instance, Adidas has collaborated with the marine conservation organization Parley to transform marine debris into materials for athletic footwear, HowBottle produces clothing from recycled plastic bottles, H&M has implemented a clothing recycling program that accepts garments from any brand, Casetify collects used phone cases from various brands and repurposes them into new products, and Uniqlo recycles and reuses garments from its own brand. These practices indicate that companies typically adopt distinct sourcing strategies for recycled materials: sourcing either from their own brand or from any brand. However, whether the source of recycled materials influences consumers' purchase intentions toward recycled products remains unclear. Existing research lacks a systematic theoretical framework and empirical evidence on this issue.

Within the marketing literature, prior studies have extensively examined factors influencing consumer acceptance and purchase of recycled products. For example, eco-labeling (Wang et al., 2022), third-party certification (Pretner et al., 2021), product quality (Sun et al., 2018), functional attributes (Magnier et al., 2019), perceived pollution risk (Meng & Leary, 2021), past identity salience (Kamleitner et al., 2019), and the identifiability of recycled content (Polyportis et al., 2024)

have all been shown to shape consumer evaluations and purchase intentions. However, this body of research primarily focuses on product attributes or external informational cues while largely overlooking the signaling role of recycled material sources. Consequently, the mechanisms through which the source of recycled materials influences consumer cognition and decision-making remain underexplored.

To address this issue, this study draws on signaling theory. In markets characterized by information asymmetry, consumers rely on observable signals to infer product quality and brand attributes (Sewaid et al., 2021), which in turn shape consumer attitudes and behaviors (Frank, 2021). In recycled product markets, the source of recycled materials itself may serve as a salient market signal. When these materials originate from the company's own brand (vs. any brand), they may convey symbolic meanings of brand continuity and consistency. Consequently, consumers are more likely to interpret such products as extensions of the brand's heritage and values, thereby strengthening their perception of the brand essence (Newman & Dhar, 2014). This enhanced perception, in turn, encourages consumers to transfer existing brand-related emotions and beliefs to the new product, ultimately increasing product acceptance and preference (Peng et al., 2023). Moreover, this effect may be contingent upon brand status and product category consistency. This study not only advances research on consumer behavior toward recycled products but also offers valuable managerial insights for companies seeking to enhance the market acceptance of recycled products.

2. Literature review and hypotheses

2.1. Recycled products and consumer attitudes

In recent years, recycled products made from recycled materials (Lu & Kwan, 2023) have

attracted widespread attention from the academic community. Existing research documents consumers' ambivalent attitudes toward such products. On the one hand, they recognize the environmental benefits and perceive these products as environmentally friendly (Calvo-Porrà & Lévy-Mangin, 2020), thereby exhibiting favorable attitudes. On the other hand, the use of recycled materials may serve as a cue for potential disease transmission, activating psychological contagion concerns and leading consumers to avoid products perceived as “contaminated” by others (Lu & Kwan, 2023). In addition, consumers express concerns about the quality and safety of recycled products (Polyportis et al., 2022). They often associate recycled products with lower quality compared with conventionally manufactured new products (Polyportis et al., 2023). For instance, consumers exhibit heightened concerns about the performance of products containing recycled materials (Kuah & Wang, 2020) and often seek more detailed information about product attributes, the materials used, processing methods, and quality assurance before making purchase decisions (Polyportis et al., 2022; Sun et al., 2018). Furthermore, consumers respond differently to recycled products offered by branded versus non-branded firms. Specifically, compared with mass-market, non-luxury brands, luxury brands experience a greater positive impact on consumers' brand attitudes when introducing sustainable apparel made from recycled materials (Kumagai, 2020).

2.2. Sources of recycled materials

Recycled materials refer to usable materials regenerated from waste or discarded products through processing (Adıgüzel & Donato, 2021). These materials typically originate from post-consumer waste and, following a series of procedures—including collection, sorting, cleaning, and treatment—can be reused in the production of recycled products or their components.

The use of recycled materials has become an important approach to addressing environmental

challenges. With growing environmental awareness, more brands have begun using recycled materials in the production of new products, including Uniqlo, Patagonia, Adidas, and Nike (Kumagai, 2020; Meng & Leary, 2021). These brands have adopted diverse strategies in applying recycled materials. For instance, Uniqlo recycles materials from its own brand and encourages consumers to return used clothing through a paid recycling program, which is subsequently converted into new production materials. In contrast, Casetify's recycling bins and H&M's clothing recycling program allow consumers to deposit or return unwanted products from any brand. Meanwhile, Patagonia has produced and sold fleece garments made from recycled plastic bottles since 1993, while brands such as Adidas and Nike have devoted substantial efforts to redesigning their material sourcing and manufacturing processes by developing product lines that incorporate recycled materials, such as polyester derived from discarded plastic bottles.

These practices demonstrate that companies adopt different strategies for sourcing recycled materials in their recycling initiatives; however, existing research has not systematically examined how different sources of recycled materials influence consumer responses. Accordingly, this study classifies recycled material sources into two types, "own-brand" sources and "any-brand" sources, and investigates their effects on consumer purchase intentions, thereby advancing the literature on recycled product consumption.

2.3. Signaling theory

Signaling theory describes how, under conditions of information asymmetry, the informed party conveys unobservable qualities or characteristics to the less-informed party through observable signals (Fan et al., 2021). The signaling process involves four core components: a signal sender, the signal itself, a receiver, and subsequent feedback (Shahid et al., 2024). From this

perspective, firms can convey information about otherwise difficult-to-observe attributes through a variety of market signals. For instance, a firm's reputation may signal its reliability and quality to external stakeholders (Swoboda & Batton, 2020). Similarly, signaling theory has been used to explain country-of-origin effects, whereby buyers use a product's country of origin to infer product quality and supplier credibility (Shahid et al., 2024). A firm's family-owned status can likewise operate as an affective signal: communicating family ownership enhances consumers' perceptions that its products are "made with love" (Rauschendorfer et al., 2022).

The signaling perspective has also been applied across a variety of marketplace contexts. In retail service settings, ingredient brands can operate as quality signals, enhancing perceived service quality and willingness to pay while generating significant short-term sales gains (Jiang et al., 2026). In e-commerce, sellers can reduce consumer uncertainty through signals such as website verification, electronic word-of-mouth, and return policies (Pandey et al., 2024). Signaling theory is particularly relevant to corporate social responsibility (CSR) and sustainable marketing, where firms' actions often provide information about attributes that consumers cannot readily observe. CSR initiatives, for example, may signal a firm's underlying values, motives, and commitment to social responsibility (Frank 2021; Herbas Torrico et al., 2018; Hu et al., 2022). Different recycling programs may likewise convey distinct CSR-related signals, thereby shaping consumers' brand attitudes (Hu et al., 2022).

Drawing on signaling theory, the source of recycled materials selected by a company (own brand vs. any brand) serves as a critical market signal: the company acts as the signal sender, while consumers are the signal receivers. Accordingly, this study examines how the source of recycled materials influences consumer perceptions and purchase intentions.

2.4. The effect of recycled material sources

Brand essence refers to consumers' overall perception of a brand's symbolic identity, encapsulating its core characteristics and values (Xu & Mehta, 2022). When a brand's actions are consistent with its core identity, consumers' perceptions of brand essence are strengthened, leading to more favorable attitudes and purchase behaviors (Newman & Dhar, 2014).

From a signaling theory perspective, in contexts characterized by information asymmetry, firms' observable actions serve as signals of their underlying attributes and credibility, thereby shaping consumers' evaluations and behavioral responses (Frank, 2021; Herbas Torrico et al., 2018). For example, a product's origin serves as an important signal that consumers use to infer product quality and brand authenticity. When key materials, craftsmanship, or ingredients originate from developing or less-developed countries, consumers tend to form less favorable evaluations of branded products, even when objective quality remains unchanged (Cheah et al., 2016). Conversely, products produced in a brand's original location tend to maintain a stronger connection with the brand's heritage and identity, which can increase consumers' evaluations of their authenticity and perceived value compared with identical products manufactured elsewhere (Newman & Dhar, 2014).

In the context of recycled products, the source of recycled materials similarly serves as a salient signal from which consumers infer whether the brand has maintained its core identity. Authenticity judgments are closely tied to the consistency of ingredients, craftsmanship, and quality standards, whereas deviations from these elements tend to increase perceptions of inauthenticity (Spiggle et al., 2012). Moreover, consumers frequently associate authenticity with superior ingredients, craftsmanship, expertise, and production know-how (Nunes et al., 2021; Thurnell-Read, 2019). Therefore, when recycled materials originate from the own brand, consumers are more likely to

perceive continuity between the recycled product and the brand's established identity. Reusing the brand's own materials signals that the recycled product inherits the brand's production history, craftsmanship, and quality standards, reinforcing the perception that the product remains faithful to the brand's core values and symbolic identity.

By contrast, when recycled materials are sourced from any brand, consumers may perceive the material origin as uncertain and disconnected from the focal brand. Inconsistencies in material origin or quality cues can challenge consumers' existing brand schemas and weaken perceptions of authenticity (Cheah et al., 2016). Furthermore, products or extensions perceived to be of inferior quality may negatively affect consumers' overall evaluations of the brand (Salinas & Pérez, 2009). Consequently, consumers are less likely to perceive that recycled products made from materials sourced from any brand reflect the brand's core identity, resulting in weaker perceptions of brand essence.

When consumers perceive that a brand remains faithful to its core identity, existing trust and identification are more readily transferred to new offerings, thereby enhancing purchase intentions (Riley et al., 2015). Accordingly, this study proposes that recycled products using materials from the own brand, rather than from any brand, enhance consumers' purchase intentions by strengthening perceived brand essence. Therefore, we propose:

H1. Compared with using materials from any brand, recycled products that use materials from their own brand significantly increase consumers' purchase intentions.

H2. Perceived brand essence mediates the relationship between recycled material source and consumers' purchase intentions.

2.5. The moderating role of brand status

Brand status captures the extent to which consumers perceive a brand as possessing superior quality, prestige, premium value, and the capability to communicate social standing or achievement, reflecting the brand's social symbolic value and market distinctiveness while influencing consumers' brand attitudes and purchasing behaviors (Fuentes et al., 2023; Lee, 2021; O'Cass & Choy, 2008).

High-status brands are often associated with exceptional craftsmanship, refined production techniques, and superior product quality, while simultaneously conveying symbolic meanings such as rarity, heritage, exclusivity, and prestige (Zeng et al., 2025). Prior research suggests that, when high-status brands introduce new products or engage in brand extensions, consumers hold stronger expectations regarding the consistency between brand image and product attributes (Zhou et al., 2026). When brand actions deviate from the established image, consumers are more likely to experience skepticism and heightened perceived risk, thereby reducing purchase intentions (He et al., 2024). Accordingly, products from high-status brands are generally expected to align with their symbolic attributes, such as superior quality, professionalism, or luxury (Pontes et al., 2017). Moreover, when brands exhibit symbolic or reputational incompatibility, collaborations may generate negative associations that harm brand image and perceived quality (Geylani et al., 2008).

For high-status brands, sourcing recycled materials from the own brand (vs. any brand) signals brand continuity and identity consistency, facilitating consumers' perception of said products as an extension of the brand's core characteristics. This, in turn, enhances perceived brand essence and purchase intentions. Conversely, sourcing recycled materials from any brand may be perceived as inconsistent with brand identity, thereby weakening perceived brand essence and reducing purchase intentions. In contrast, low-status brands possess weaker symbolic capital, and consumers'

perceptions of their core identity are less stable, relying more heavily on functional attributes (Wang et al., 2022). As a result, whether recycled materials originate from the own brand or any brand is unlikely to significantly influence perceived brand essence or purchase intentions. Drawing on the above discussion, we propose:

H3. Brand status moderates the relationship between recycled material source and consumer purchase intentions.

H3a. In a high-status brand context, consumers exhibit higher purchase intentions when recycled materials are sourced from the company's own brand (vs. any brand).

H3b. In a low-status brand context, recycled material source has no significant effect on consumer purchase intentions.

2.6. The moderating role of product category consistency

A product category refers to a set of products viewed by consumers as capable of satisfying similar needs (Ruiz-Real et al., 2024). Prior research indicates that, when encountering new products, consumers tend to categorize them within existing product category frameworks to reduce cognitive effort and enhance understanding (Goh et al., 2013).

In the brand extension literature, extensive evidence suggests that, when an extended product exhibits high category similarity with the parent brand's existing offerings, favorable attitudes and associations toward the parent brand are more readily transferred to the new product (Kim et al., 2014). Conversely, when category consistency is low, brand extensions fail to command a positive price premium and may even reduce consumers' willingness to pay to a level below the category average (DelVecchio & Smith, 2005).

In the context of recycled products, the category consistency between recycled materials and

the final product influences consumers' interpretation of brand actions. When recycled materials and the resulting products belong to the same category, this consistency serves as a cognitive cue that aligns with consumers' existing brand knowledge structures (Goh et al., 2013), making the recycling practice easier to interpret as a natural extension within the brand's domain. Under such conditions, sourcing recycled materials from the own brand (vs. any brand) provides a clearer signal of brand continuity and identity consistency, thereby strengthening perceived brand essence and increasing purchase intentions.

By contrast, when category consistency is low, consumers are less able to integrate the recycling practice into their existing cognitive frameworks. Consequently, regardless of whether recycled materials originate from the company's own brand or any brand, the signals conveyed are less effective, weakening perceived brand essence and diminishing purchase intentions. Based on the above analysis, this study proposes that product category consistency moderates the effect of recycled material source on consumer purchase intentions. Accordingly, we propose:

H4. Product category consistency moderates the relationship between recycled material source and consumer purchase intentions.

H4a. When product category consistency is high, sourcing recycled materials from the company's own brand increases consumers' purchase intentions when compared to sourcing from any brand.

H4b. When product category consistency is low, recycled material source has no significant effect on consumer purchase intentions.

Fig. 1 illustrates our conceptual model.

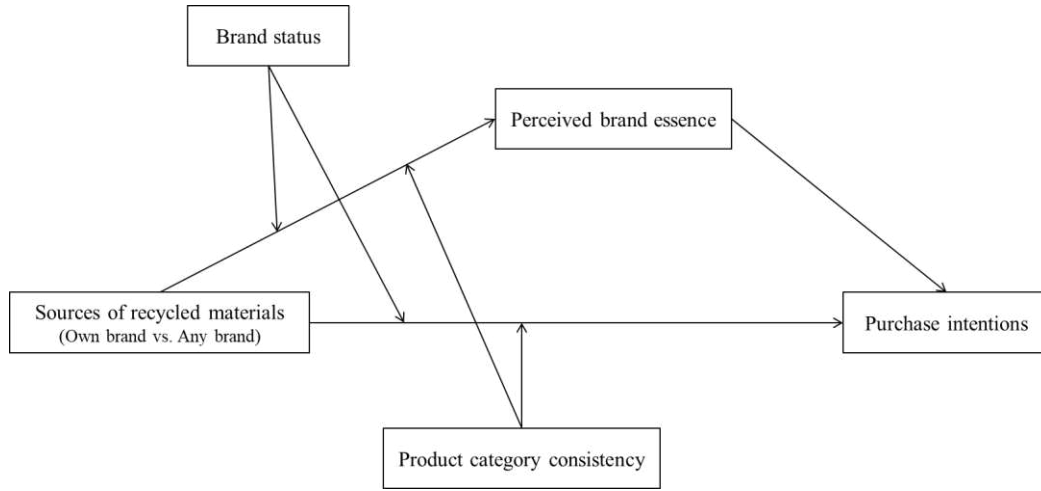


Fig. 1. Conceptual framework.

3. Study overview

This research tested the proposed hypotheses through one pilot experiment and three studies. Specifically, the pilot experiment assessed the effectiveness of the recycled material source manipulation (own brand vs. any brand), while Study 1 explored the impact of recycled material source on purchase intentions, with perceived brand essence serving as the underlying mechanism. Studies 2 and 3 further investigated whether brand status and product category consistency, respectively, moderated this effect.

4. Pretest

A pretest was conducted to assess the effectiveness of the recycled material source manipulation. The sample consisted of 60 individuals recruited through Credamo, an online data collection platform (60.0% female; $M_{\text{age}} = 25.98$; see Appendix A). Following Park and Kim (2024), running shoes were selected as the experimental stimulus. Participants first read the following scenario: “Please imagine that you have made a running plan and are preparing to purchase a pair of running shoes. While browsing an online shopping website, you encounter the following product.” (see Fig. 2).



Fig. 2. Recycled product.

Participants were then randomly assigned to the own-brand condition or the any-brand condition. In the own-brand (any-brand) condition, participants read the following description: “Brand Statement: Brand A’s eco-friendly athletic shoes are made from 100% recycled Brand A shoes (shoes from any brand). We have established a complete life-cycle management system: Targeted Recycling—smart recycling bins are set up in brand-owned stores, allowing consumers worldwide to deposit Brand A athletic shoes (athletic shoes of any brand) into these bins in exchange for a discount on their next purchase; Product Labeling—these athletic shoes use 100% recycled materials from our own brand’s (any brand’s) used shoes. Through recycling, sorting, patented fine processing, and advanced remanufacturing technology, strict quality control is maintained at every step” (see Fig. 3). Finally, participants completed a manipulation check of material source (“The materials of this pair of shoes come from: 1 = any brand, 2 = own brand”) and provided demographic information. The results confirmed that the manipulation of recycled material source was effective. A chi-squared test indicated that, in the own-brand and any-brand conditions, 93.33% and 96.67% of participants, respectively, correctly identified the material source ($\chi^2 = 48.654, p < .001$).



Brand statement

Brand A's eco-friendly athletic shoes are made from 100% recycled Brand A shoes.

Complete Life-cycle Management System

We have established a complete life-cycle management system:

Targeted Recycling

Smart recycling bins are set up in brand-owned stores, allowing consumers worldwide to deposit Brand A athletic shoes into these bins in exchange for a discount on their next purchase.

Product Labeling

These athletic shoes use 100% recycled materials from our own brand's used shoes. Through recycling, sorting, patented fine processing, and advanced remanufacturing technology, strict quality control is maintained at every step.

Fig. 3. Advertisement page.

5. Study 1

Study 1 examines how recycled material source (own brand vs. any brand) affects consumers' purchase intentions, with perceived brand essence serving as a potential mediator.

5.1. Design and participants

Study 1 employed a single-factor (recycled material source: own brand vs. any brand) between-subjects experimental design. The required sample size was calculated using G*Power 3.1. At a significance level of $\alpha = .05$ and statistical power of $(1 - \beta) = 0.95$, a minimum of 147 participants was required to detect an effect size of $f = 0.30$. A total of 202 participants (64.4% female; $M_{\text{age}} = 31.73$) were recruited online via the Credamo platform (see Appendix A). The study was pre-registered (<https://osf.io/jpmhr>).

5.2. Procedure

First, participants were asked to read the following description: "Please imagine that you have made a running plan and are preparing to purchase a pair of running shoes. While browsing an online shopping website, you encounter the following product" (see Fig. 2). Participants were then randomly assigned to either the own-brand condition or the any-brand condition. The stimulus

materials were identical to those used in the pretest. Participants next completed a three-item measure of purchase intentions (Cronbach's $\alpha = .927$, see Appendix B), adapted from Park and Kim (2024). Next, participants completed a five-item measure of perceived brand essence (Cronbach's $\alpha = .898$, see Appendix B), adapted from Xu and Mehta (2022) and Newman and Dhar (2014). Finally, participants completed a manipulation check of material source ("The materials of this pair of shoes come from: 1 = any brand, 2 = own brand") and reported demographic information.

5.3. Results

5.3.1. Manipulation check

The majority of participants correctly identified the source of the recycled materials. A chi-squared test indicated that 95.05% of participants in the own-brand condition and 95.05% in the any-brand condition correctly identified the material source ($\chi^2 = 163.980, p < .001$), confirming the effectiveness of the manipulation.

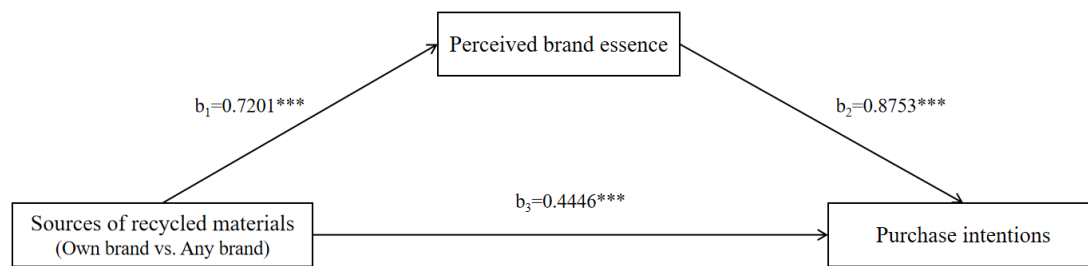
5.3.2. Main effect test

A one-way ANOVA showed that participants in the own-brand condition reported significantly higher purchase intentions than those in the any-brand condition ($M_{\text{any-brand}} = 4.690, SD = 1.412$; $M_{\text{own-brand}} = 5.795, SD = 0.939$; $F(1, 200) = 42.927, p < .001$). This finding supports H1.

5.3.3. Mediation effect test

PROCESS Model 4 for SPSS (Hayes, 2018) was employed to assess the mediating mechanism using 5,000 bootstrap resamples. "Recycled material source" served as the independent variable, "purchase intentions" as the dependent variable, and "perceived brand essence" as the mediator, while demographic characteristics were included as covariates. The results showed that recycled material source significantly predicted perceived brand essence ($B = 0.7201, SE = 0.1341, 95\% CI$

[0.4557, 0.9844], $p < .001$). Perceived brand essence, in turn, had a significant effect on purchase intentions after controlling for recycled material source and covariates ($B = 0.8753$, $SE = 0.0758$, 95% CI [0.7258, 1.0247], $p < .001$). The direct effect of recycled material source on purchase intentions was significant ($B = 0.4446$, $SE = 0.1334$, 95% CI [0.1815, 0.7076], $p = .001$). The indirect effect via perceived brand essence was also significant ($B = 0.6303$, $SE = 0.1314$, 95% CI [0.3948, 0.9033]), indicating a mediating effect. These findings support H2 (see Fig. 4).



Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Fig. 4. Mediation effect test results.

5.4. Discussion

The results of Study 1 demonstrate that recycled material source significantly influences consumers' purchase intentions toward recycled products. Specifically, sourcing materials from the own brand (vs. any brand) leads to higher purchase intentions, with perceived brand essence serving as a mediating mechanism. Study 2 further examines the moderating role of brand status while re-testing the mediating mechanism.

6. Study 2

Building on Study 1, which examined the effect of recycled material source (own brand vs. any brand) on consumers' purchase intentions and the mediating role of perceived brand essence, Study 2 investigates the moderating role of brand status in this relationship and further tests the mediating mechanism of perceived brand essence.

6.1. Design and participants

Study 2 employed a 2 (recycled material source: own brand vs. any brand) $\times$ 2 (brand status: high vs. low) between-subjects experimental design. The required sample size was estimated using G*Power 3.1. At a significance level of $\alpha = .05$ and statistical power of $(1 - \beta) = 0.95$, a minimum of 210 participants was required to detect an effect size of $f = 0.25$. A total of 264 participants (57.2% female; $M_{\text{age}} = 31.08$) were recruited online via the Credamo platform (see Appendix A). The study was pre-registered (<https://osf.io/jpmhr>).

6.2. Procedure

First, participants read the following scenario: “Please imagine that you are considering purchasing a white T-shirt. While browsing an online shopping website, you encounter this product” (see Fig. 5). Participants were then randomly assigned to one of four conditions. The manipulation of recycled material source was consistent with the protocol of Study 1, with the product changed from shoes to T-shirts. Brand status was manipulated based on prior research (O’Cass & Choy, 2008; Ramkumar et al., 2021). Specifically, the high-status brand was described as follows: “Brand A is positioned in the premium market and enjoys a strong reputation internationally.” Separately, the low-status brand was described as follows: “Brand A is a mass-market brand with high market penetration.” After reading these statements, participants completed measures of purchase intentions (Cronbach’s $\alpha = .941$) and perceived brand essence (Cronbach’s $\alpha = .936$) using the same scales used in Study 1. They also completed manipulation checks for material source (“The materials of this T-shirt come from: 1 = any brand, 2 = own brand”) and brand status (Cronbach’s $\alpha = .915$, see Appendix B), adapted from Lee (2021). Finally, participants reported demographic information.



Fig. 5. Stimulus material from recycled product T-shirts.

6.3. Results

6.3.1. Manipulation check

The manipulation of recycled material source was successful. A chi-squared test showed that 97.73% of participants in the own-brand condition and 91.67% in the any-brand condition correctly identified the material source ($\chi^2 = 211.747, p < .001$). In addition, a one-way ANOVA indicated that participants exposed to the high-status brand condition reported significantly higher perceived brand status than those exposed to the low-status brand condition ($M_{\text{high-status}} = 6.008, SD = 0.901$; $M_{\text{low-status}} = 4.434, SD = 1.342$; $F(1, 262) = 125.028, p < .001$), confirming the effectiveness of the brand status manipulation.

6.3.2. Main effect test

A one-way ANOVA first examined the main effect of recycled material source on purchase intentions. Participants in the own-brand condition reported significantly higher purchase intentions than those in the any-brand condition ($M_{\text{any-brand}} = 4.780, SD = 1.463$; $M_{\text{own-brand}} = 5.588, SD = 1.186$; $F(1, 262) = 24.292, p < .001$), supporting H1. A 2×2 factorial ANOVA was then conducted with “recycled material source” and “brand status” as independent variables and “purchase intentions” as the dependent variable. The results revealed significant main effects of recycled material source ($F(1, 260) = 26.726, p < .001, \eta_p^2 = .093$) and brand status ($F(1, 260) = 19.027, p < .001, \eta_p^2 = .068$),

as well as a significant interaction effect between recycled material source and brand status ($F(1, 260) = 9.225, p = .003, \eta_p^2 = .034$). Simple effects analyses indicated that, in the high-status condition, sourcing recycled materials from the company's own brand significantly increased purchase intentions ($M_{\text{own-brand}} = 6.167, SD = 0.667; M_{\text{any-brand}} = 4.884, SD = 1.460; F(1, 260) = 33.677, p < .001$). In contrast, in the low-status condition, recycled material source had no significant effect on purchase intentions ($M_{\text{own-brand}} = 5.010, SD = 1.309; M_{\text{any-brand}} = 4.677, SD = 1.470; F(1, 260) = 2.274, p = .133$). These findings support H3 (see Fig. 6).

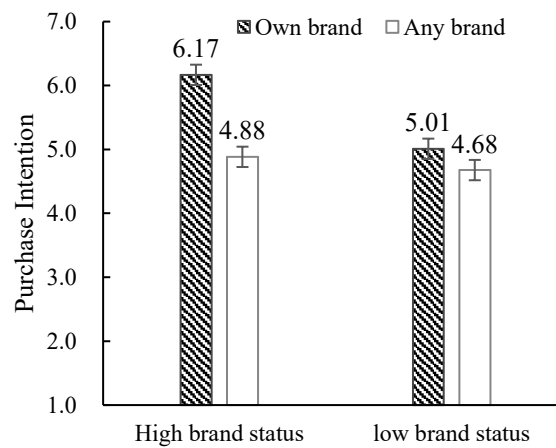
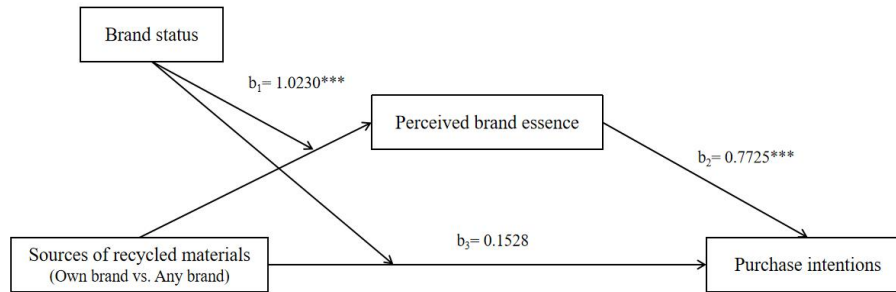


Fig. 6. Interaction between material source and brand status.

6.3.3. Moderated mediation effect test

A moderated mediation analysis was conducted using PROCESS Model 8 with 5,000 bootstrap samples (Hayes, 2018). “Recycled material source” was specified as the independent variable, “purchase intentions” was specified as the dependent variable, “perceived brand essence” was specified as the mediator, and “brand status” was specified as the moderator. Demographic variables were included as controls. The interaction between recycled material source and brand status had a significant effect on perceived brand essence ($B = 1.0230, SE = 0.2832, 95\% \text{ CI } [0.4652, 1.5808], p < .001$). Perceived brand essence significantly predicted purchase intentions ($B = 0.7725, SE =$

0.0476, 95% CI [0.6788, 0.8662], $p < .001$). However, the interaction term did not have a direct effect on purchase intentions ($B = 0.1528$, $SE = 0.2327$, 95% CI [-0.3054, 0.6110], $p = .5120$). The index of moderated mediation was significant ($B = 0.7902$, $SE = 0.2208$, 95% CI [0.3769, 1.2441]). Conditional indirect effect analysis showed that the mediating role of perceived brand essence was significant when brand status was high ($B = 0.9481$, $SE = 0.1799$, 95% CI [0.6099, 1.3169]) but not when brand status was low ($B = 0.1578$, $SE = 0.1419$, 95% CI [-0.1225, 0.4291]). These results support H2 and H3 (see Fig. 7).



Note: b_1 = source of recycled materials * brand status $\rightarrow$ perceived brand essence, b_2 = perceived brand essence $\rightarrow$ purchase intentions, and b_3 = source of recycled materials * brand status $\rightarrow$ purchase intentions.

Fig. 7. Moderating effect of brand status.

6.4. Discussion

Study 2 further confirms the effect of recycled material source on consumers' purchase intentions and demonstrates the moderating role of brand status. Specifically, when brand status is high, sourcing recycled materials from the company's own brand (vs. any brand) enhances perceived brand essence and increases purchase intentions. In contrast, when brand status is low, recycled material source does not significantly influence purchase intentions.

7. Study 3

Study 3 examines whether product category consistency serves as a boundary condition for the

effect of recycled material source (own brand vs. any brand) on consumers' purchase intentions toward recycled products and whether perceived brand essence accounts for this effect.

7.1. Design and participants

Study 3 employed a 2 (recycled material source: own brand vs. any brand) $\times$ 2 (product category consistency: consistent vs. inconsistent) between-subjects experimental design, in which participants were randomly allocated across the four conditions. A total of 244 participants (60.7% female; $M_{\text{age}} = 30.40$) were recruited online via the Credamo platform (see Appendix A). The study was pre-registered (<https://osf.io/drpga>).

7.2. Procedure

Consistent with the procedure used in Study 2, a white T-shirt was employed as the stimulus product in Study 3. Participants first read the following scenario: "Please imagine that you are considering purchasing a white T-shirt. While browsing an online shopping website, you come across this product" (see Fig. 5). They were then randomly assigned to one of four conditions. In the high category consistency condition, the T-shirt was described as being made from recycled used clothes from Brand A (any brand). In the low category consistency condition, the T-shirt was described as being made from recycled used plastic bottles from Brand A (any brand). All other descriptions were consistent with those used in Study 2. Participants then completed measures of purchase intentions (Cronbach's $\alpha = .941$) and perceived brand essence (Cronbach's $\alpha = .915$) using the same scales used in Study 1. They also completed manipulation checks for material source ("The materials of this T-shirt come from: 1 = any brand, 2 = own brand"), an attention check ("The recycled material in this scenario is: 1 = plastic bottle, 2 = old clothes"), and a manipulation check for product category consistency ("Do you think the recycled material and the final product belong

to the same product category? 1 = no, 2 = yes”). Finally, participants provided demographic information.

7.3. Results

7.3.1. Manipulation check

The manipulation check confirmed the effectiveness of both recycled material source and product category consistency. In the own-brand (any-brand) condition, 96.72% (93.44%) of participants correctly identified the material source ($\chi^2 = 198.574, p < .001$). In the consistent (inconsistent) category condition, 93.44% (97.54%) of participants correctly perceived whether the recycled material and the final product belonged to the same category ($\chi^2 = 202.323, p < .001$).

7.3.2. Main effect test

A one-way ANOVA first examined the main effect of recycled material source on purchase intentions. Participants in the own-brand condition reported significantly higher purchase intentions than those in the any-brand condition ($M_{\text{any-brand}} = 4.626, SD = 1.520; M_{\text{own-brand}} = 5.473, SD = 1.215; F(1, 242) = 23.118, p < .001$), supporting H1. A 2×2 factorial ANOVA was then conducted with recycled material source and product category consistency as independent variables and purchase intentions as the dependent variable. The results showed significant main effects of material source ($F(1, 240) = 24.514, p < .001, \eta_p^2 = .093$) and product category consistency ($F(1, 240) = 10.409, p = .001, \eta_p^2 = .042$), as well as a significant interaction effect ($F(1, 240) = 6.208, p = .013, \eta_p^2 = .025$). Simple effects analyses indicated that, under high category consistency, sourcing recycled materials from the own brand significantly increased purchase intentions ($M_{\text{own-brand}} = 5.962, SD = 0.565; M_{\text{any-brand}} = 4.689, SD = 1.504; F(1, 240) = 27.698, p < .001$). In contrast, under low category consistency, recycled material source had no significant effect on purchase intentions ($M_{\text{own-brand}} =$

4.984, $SD = 1.474$; $M_{\text{any-brand}} = 4.563$, $SD = 1.545$; $F(1, 240) = 3.025$, $p = .083$). These findings support H4 (see Fig. 8).

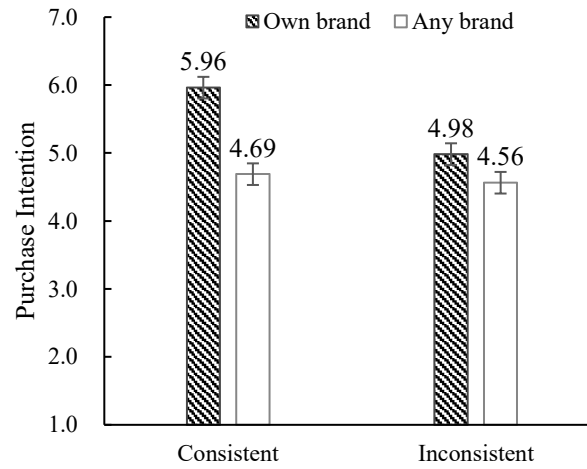
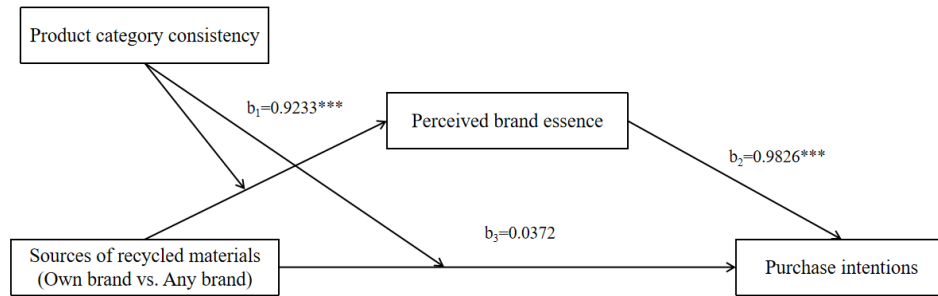


Fig. 8. Interaction between material source and product category consistency.

7.3.3. Moderated mediation effect test

Following Hayes (2018), moderated mediation analysis was conducted using the PROCESS macro (Model 8) in SPSS. “Recycled material source” was specified as the independent variable, “purchase intentions” was specified as the dependent variable, “perceived brand essence” was specified as the mediator, and “product category consistency” was specified as the moderator. Demographic variables were included as controls. A bootstrap procedure with 5,000 samples and a 95% CI was employed. The interaction between recycled material source and product category consistency significantly affected perceived brand essence ($B = 0.9233$, $SE = 0.2655$, 95% CI [0.4003, 1.4463], $p < .001$). Perceived brand essence significantly predicted purchase intentions ($B = 0.9826$, $SE = 0.0435$, 95% CI [0.8969, 1.0683], $p < .001$). After controlling for perceived brand essence, the interaction term did not have a significant direct effect on purchase intentions ($B = 0.0372$, $SE = 0.2078$, 95% CI [-0.3723, 0.4467], $p = .858$). The index of moderated mediation was significant ($B = 0.9072$, $SE = 0.2633$, 95% CI [0.4027, 1.4231]). Conditional indirect effect analysis

revealed that the mediating effect of perceived brand essence was significant under high category consistency ($B = 1.1379$, $SE = 0.1736$, 95% CI [0.8171, 1.4903]) but not under low category consistency ($B = 0.2307$, $SE = 0.2022$, 95% CI [-0.1619, 0.6302]). These results support H2 and H4 (see Fig. 9).



Note: b_1 = source of recycled materials * product category consistency $\rightarrow$ perceived brand essence, b_2 = perceived brand essence $\rightarrow$ purchase intentions, and b_3 = source of recycled materials * product category consistency $\rightarrow$ purchase intentions.

Fig. 9. Moderated mediation effect results.

7.4. Discussion

Study 3 further confirms the effect of recycled material sources on consumers' purchase intentions toward recycled products and reveals the moderating role of product category consistency. Specifically, when category consistency is high, sourcing materials from one's own brand significantly enhances perceived brand essence and increases purchase intentions. In contrast, when category consistency is low, the source of recycled materials has no significant effect on purchase intentions.

8. Conclusions

8.1. Research conclusions

Drawing on signaling theory, this study systematically examined the underlying mechanisms

and boundary conditions through which recycled material source (one's own brand vs. any brand) influences consumers' purchase intentions toward recycled products across three experiments. The results are summarized below. First, recycled material source significantly influences consumers' purchase intentions. Compared with using materials from any brand, sourcing recycled materials from the company's own brand significantly increases purchase intentions. This relationship is mediated by perceived brand essence. Second, brand status moderates the effect of recycled material source on purchase intentions. In the high brand status condition, consumers exhibit higher purchase intentions when recycled materials are sourced from the own brand (vs. any brand). In contrast, in the low brand status condition, recycled material source has no significant effect on purchase intentions. Third, product category consistency also influences how recycled material source affects consumers' purchase intentions. When recycled materials and the final product belong to the same category, sourcing materials from the own brand (vs. any brand) significantly increases purchase intentions. In contrast, when category consistency is low, recycled material source has no significant effect on purchase intentions.

8.2. Theoretical contributions

First, this study enriches research on consumer decision-making regarding recycled products. Existing research has largely examined the impact of product attributes or external informational cues, such as eco-labels, third-party certifications, and past identity salience, on consumers' adoption of recycled products. In contrast, limited research has investigated recycled material source as a signaling cue. Drawing on signaling theory, this study distinguishes between recycled materials sourced from one's own brand and those from any brand and demonstrates their differential effects on purchase intentions. The findings show that sourcing materials from the company's own brand

significantly enhances consumers' purchase intentions compared with sourcing them from any brand. These results align with prior research (Kamleitner et al., 2019), suggesting that disclosing materials' origins can increase consumer purchase intentions, and add to current knowledge by highlighting the importance of material source as a key signal in recycled product contexts.

Second, this study expands the application of perceived brand essence to sustainable consumption research. Prior research has primarily examined how factors such as brand familiarity, country of origin, and design source influence consumers' perceptions of brand essence (Newman & Dhar, 2014; Xu & Mehta, 2022). The present study extends this line of inquiry to recycled products by identifying perceived brand essence as a key psychological mechanism through which recycled material source influences consumers' purchase intentions. By integrating perceived brand essence into the sustainable consumption domain, this study enriches understanding of the psychological processes underlying recycled product evaluations and broadens the theoretical scope of brand essence research.

8.3. Practical implications

First, this study provides new insights into the marketing of recycled products. The results indicate that, compared with the practice of using recycled materials from any brand, sourcing recycled materials from a company's own brand strengthens brand identity consistency, enhances consumers' perceptions of brand essence, and significantly increases their purchase intentions. Accordingly, companies should prioritize the use of recycled materials from their own brand when promoting recycled products. In practice, companies can enhance the controllability and consistency of material sources by establishing closed-loop recycling systems, setting up brand-specific collection points, and implementing product take-back programs, thereby improving consumer

recognition and purchase intentions.

Second, this study provides important insights for companies with different brand statuses in formulating recycled product promotion strategies. High-status brands need to maintain their brand image and convey strong signals of brand consistency to retain their status. Accordingly, they should prioritize using recycled materials sourced from their own brand to reinforce a consistent brand identity and enhance market acceptance of recycled products. In contrast, lower-status brands can adopt more flexible sourcing strategies without damaging consumer perceptions. Under this approach, rather than emphasizing the brand origin of recycled materials, they could allocate more resources to product design, functional value, or environmental attributes to improve consumer recognition and acceptance of recycled products.

Third, companies should carefully consider the category congruence between recycled materials and the final product. When the two are aligned, consumers are more likely to perceive continuity between the brand's use of its own recycled materials and its brand essence, thereby enhancing acceptance of recycled products. Accordingly, companies should prioritize using recycled materials sourced from their own brand that are category-consistent with the final product to further strengthen purchase intentions.

8.4. Limitations and future research

First, the experimental stimuli focused primarily on footwear and apparel. As product categories may differ in material characteristics, usage contexts, and consumer perceptions, whether these findings extend to other product categories (e.g., electronics or household goods) warrants further investigation. Future research could extend the analysis to a broader range of product categories. Second, this study relied primarily on scenario-based experiments, which may not fully

capture real-world consumption contexts. Future research may use field experiments to further assess the robustness and external validity of these findings.

Data availability

The data and supporting materials underlying the findings of this study are available as supplementary files accompanying this submission. The shared materials include the original datasets made available to the authors by the survey platform following platform-level quality-control procedures, the SPSS data files used for statistical analyses, SPSS output files documenting the reported analyses, and relevant variable coding information. Responses excluded by the survey platform before data release were not accessible to the authors. Any information that could directly identify individual participants has been removed to protect participant privacy.

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