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When and why products presented in unbalanced positions foster sustainable behaviors

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ABSTRACT

While products are typically displayed in visually balanced and stable positions, many retail and advertising contexts feature products in subtly unbalanced or unstable ways. Despite the prevalence of such displays, little is known about how product unbalance influences consumer behavior. Drawing on research on product display, compensatory consumption, and sustainability, this research proposes that displaying products in an unbalanced position reduces consumers' sense of comfort. Consequently, consumers engage in sustainable behaviors, such as choosing eco-friendly products or donating to pro-environmental causes, as a compensatory means to restore that comfort. Four experiments and one follow-up study (laboratory, field, and online) support this mechanism. The results also show that this effect occurs when the product is mass-market but not when it is luxury. Implications for marketing theory and practice are discussed along with possible avenues for future research.

1. Introduction

Product displays often portray items in visually stable, balanced positions. However, in some real-world contexts – such as advertising, retail windows, and digital interfaces – products are also presented in unbalanced or unstable ways (e.g., tilted or resting on inclined surfaces). Examples include advertisements for products, from makeup to food, stacked or placed in lopsided positions (Newman, 2024; Subtl, n.d.), and products shown in physical stores (e.g., in window displays; Inside Wright, n.d.; Retail Design Blog, 2012) or on websites in seemingly unstable positions, such as a pair of sunglasses tilted or resting on a sloped surface (Elizabeth, 2023). While previous research has investigated the effect that different product display tactics have on consumer behavior (e.g., island, end-of-aisle, or shelf signage; Garrido-Morgado et al., 2021), how consumers react to a product's position, i.e., whether it is balanced or unbalanced, has so far been overlooked. This omission is notable because balance is a core perceptual cue linked to stability and psychological comfort, suggesting it may systematically shape consumer responses. Therefore, the question we address in the present research is: Does the mere presentation of a product in a balanced vs. unbalanced position influence consumers' feelings and, consequently, their behaviors? And, if so, why?

We answer these questions by proposing that displaying products in unbalanced (vs. balanced) positions reduces consumers' sense of comfort, thereby increasing their likelihood of engaging in sustainable behaviors (e.g., choosing a more sustainable product or donating more to an environmental cause). This effect arises because unbalanced product displays evoke discomfort, and consumers view sustainable actions as a means of restoring this lost sense of comfort. In making this argument, we build on the well-documented evidence that consumers who experience a sense of inconsistency between the self and the environment engage in *compensatory consumption* (e.g., Cutright et al., 2013; De Angelis et al., 2012; Peluso et al., 2017; Rucker & Galinsky, 2008; Whitson & Galinsky, 2008), defined as the "purchase, use, or consumption of products or services motivated by a desire to offset or reduce a self-discrepancy" (Mandel et al., 2017, p. 134). We argue that product unbalance evokes a discrepancy between a consumer's self, which has an innate need for stability (Han & Newman, 2022), and the

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surrounding environment (i.e., the product in a tilted position). This self-discrepancy leads to discomfort, but we propose that sustainable actions offer an opportunity to offset or reduce it.

In four experiments and a follow-up study, conducted in the laboratory, in the field, and online, employing both real physical products and product images, we find empirical support for our account. We also provide evidence for the moderating role of product type, whereby the effect of product unbalance on sustainable behaviors holds for mass-market but not for luxury products. To strengthen external validity, we use a varied set of dependent measures, including consumers' choice between more and less sustainable product versions, and the amount of real money donated to a pro-environmental cause. Finally, across our experiments, we empirically define product sustainability from both environmental and social standpoints (e.g., Olsen et al., 2014; Sen & Bhattacharya, 2001), thereby showing that our effects manifest across multiple sustainability dimensions.

Our research contributes to consumer behavior theory and marketing practice. Theoretically, our findings offer four main contributions. First, our research fills a significant gap in extant literature on the role of unbalance in consumer behavior. While previous work has mainly examined the effect of consumers' *physical* unbalance on their following product evaluations and choice behaviors (Larson & Billeter, 2013; Meyers-Levy et al., 2010), we look at the effect of *product* unbalance, that is, how products are displayed in either advertising or retailing contexts. More importantly, a key difference with previous work is that we focus on sustainable behavior as a consequence of product unbalance. Second, we contribute to previous studies on the drivers of sustainable consumption behaviors (e.g., Casalegno et al., 2022; Hosta & Zabkar, 2021; Trudel, 2019; White et al., 2019) by establishing product unbalance and feelings of discomfort as novel contextual and psychological antecedents of consumers' sustainable decisions. In this respect, we also advance extant research that has demonstrated that consumers might use sustainable consumption behaviors in a compensatory manner (e.g., Amatulli et al., 2020; Antonetti & Maklan, 2014; Cakanlar et al., 2023), by proposing that sustainable actions might allow consumers to compensate for their feelings of discomfort. Third, we advance knowledge on consumers' feelings of (dis)comfort activated by the consumption context. While Meyers-Levy et al. (2010) investigated the bodily sensation of (dis)comfort, we study (dis)comfort stemming from exposure to product unbalance and how it affects sustainable decision making. Relatedly, we extend extant research on environmental cues that trigger negative feelings (such as perceived lack of control; Consiglio et al., 2018; Cutright, 2012; Cutright et al., 2013) by focusing on the negative feelings triggered in consumers when they see a product in an unbalanced position. Fourth, we contribute to the literature on compensatory behaviors (see Mandel et al., 2017, for a review) by proposing product unbalance as a novel source of self-discrepancy that leads consumers to cope with it through sustainable behaviors. Practically, our research offers relevant and actionable insights to communication and retailing managers interested in understanding how to increase consumer propensity to make sustainable choices. Importantly, we show that displaying products in an unbalanced position is a simple, essentially cost-free, and underutilized tactic. For managers, it can serve as a socially responsible marketing lever (Tihanyi, 2020), meaningfully increasing consumers' propensity to make sustainable choices, particularly in mass-market contexts.

2. Literature review

2.1. Product unbalance and sense of dis(comfort)

Previous research on unbalance has looked at the consequences of individuals' physical unbalance, as well as how product positioning and presentation influence subsequent product evaluations and consumption decisions. In the first stream of literature on individuals' physical unbalance, research found, for example, that standing on a carpeted (vs. hard) tile floor while shopping generated feelings of comfort (vs. discomfort), which then impacted product assessment (Meyers-Levy et al., 2010). Further experimental evidence shows that leaning back in the chair or standing on one foot (rather than both) while performing the study activated feelings of balance and parity, leading participants to choose the compromise option in a three-option choice set (Larson & Billeter, 2013).

In the second stream of research, prior work examined how product presentation, in both physical and digital displays and in advertising, can influence purchase intentions and behaviors. Table 1 summarizes the key papers on this topic. For example, studies on both physical and digital product displays have found that a private-label brand is evaluated more favorably when placed close to a national brand in a horizontal display but less favorably in a vertical display, with quality perceptions mediating these effects (Tofighi & Grohmann, 2024). Other research indicates that placing luxury goods higher on a website enhances processing fluency, leading to more positive evaluations and increased preference (Chan & Northey, 2021). Other work suggests that fair-trade goods are associated with high verticality and elevated moral virtues, strengthening altruistic behavior (Basso et al., 2021). Furthermore, product-overlapping displays can lead consumers to use price as a quality cue, thereby reducing perceived uniqueness, but this effect is observed only for utilitarian (not hedonic) products (Meng et al., 2024).

Other studies in this research stream have examined product display in advertising. For example, experimental evidence indicates that orienting a product toward a participant's dominant hand increases their purchase intention, as presenting the product this way can facilitate mental simulation of interacting with it (Elder & Krishna, 2012). Furthermore, dynamic product presentation (Roggeveen et al., 2015), zoom-out videos (Togawa & Sugitani, 2022), and congruent slogans (Zhang et al., 2020) have been shown to boost consumer preference and willingness to pay for hedonic products. Finally, in a study on how models present themselves, Park et al. (2021) demonstrated that those showing their left cheek were perceived as more attractive, leading to higher product evaluations, as the leftward face was perceived as more prototypical.

Rather than studying the effects of unbalance produced by consumers' physical actions or states, we contribute to prior work looking at how product display influences behavior by investigating whether seeing a product in an unbalanced (vs. balanced) position can trigger some discomfort (or a decreased sense of comfort) in consumers, thereby affecting their decision-making. Support for our idea that product unbalance can trigger such a negative feeling in consumers comes from previous research that has studied negative consumer feelings triggered by the unpredictability and instability of the surrounding physical and perceptual environment. In general, situations of self-discrepancy (i.e., inconsistencies between the self and the surrounding environment) lead consumers to experience feelings of discomfort (Higgins, 1987). To illustrate, Cutright (2012) argued that people may sometimes perceive a lack of control over life outcomes, which can lead them to a general sense of discomfort. Consiglio et al. (2018) similarly demonstrated that feelings of discomfort, in the form of a sense of lacking control, may stem from high social density (i.e., a high number of people in a given area) characterizing the physical environment in which a consumer is located.

Fennis and Wiebenga (2015), moreover, suggested that people may experience the uncomfortable feelings of fear, apathy, and withdrawal when they lack "understanding of the regularities that govern the environment and perceiving it as unmanageable and random" (pp. 226–227). In a similar vein, we reasoned that encountering objects (i.e., products) in an unbalanced position may decrease consumers' sense of comfort, as seeing such objects reduces the perceived stability of their surrounding environment. Formally, we hypothesize:

H1a: Seeing an unbalanced (vs. balanced) product reduces consumers' sense of comfort.

Table 1
Key research on the effects of product display on consumer behavior.

Authors, Year	Journal	Method	Independent Variable(s)	Dependent Variable(s)	Process (Mediator (s))	Moderator(s)	Main Findings
Elder & Krishna, 2012	Journal of Consumer Research	Quantitative (Survey)	1. Gender 2. Product orientation3. Dominant hand	1. Purchase intentions2. Customer attitudes toward product	Ease/ability to generate mental simulation	N/A	Aligning a product with a consumer's dominant hand enhances mental simulation and purchase intent, unless the simulation evokes negative experiences, which decrease intent.
Roggeveen, Grewal, Townsend, & Krishnan, 2015	Journal of Marketing	Quantitative (Experiment)	Brand positioning (hedonic vs. utilitarian)	Brand performance	Mental involvement	Dynamic presentation format (relative to static)	Dynamic visual presentations boost consumer preference and willingness to pay for hedonic products by increasing engagement, favoring hedonically superior options over utilitarian ones for both experiential and search products.
Zhang, Xiao, & Nicholson, 2020	Journal of Advertising	Quantitative (Experiment)	1. Product type (hedonic vs. utilitarian)2. Slogan presence	Purchase intention	Imagery fluency	Product presentation dynamism	Dynamic product presentations diminish the impact of contextual backgrounds on imagery fluency, while congruent slogans boost purchase intentions for hedonic products with stationary presentations and incongruent slogans for utilitarian products with dynamic ones.
Basso, Bouillé, & Troiville, 2021	Journal of Business Research	Quantitative (Experiment)	Verticality (high vs. low)	Altruistic behavior (donation)	N/A	Familiarity with product	Consumers metaphorically associate fair-trade products with high verticality and elevated moral virtues, strengthening altruistic behavior, especially when familiarity is high.
Chan & Northey, 2021	Journal of Business Research	Quantitative (Experiment)	High vertical location	Purchase intentions	Processing fluency	N/A	Placing luxury goods higher on a website enhances processing fluency by matching consumer associations, leading to more positive feelings and increased preference.
Park, Spence, Ishii, & Togawa, 2021	Psychology & Marketing	Quantitative (Experiment)	Facial orientation	Product evaluation	Perceived attractiveness	Facial orientation effect	Consumers find models showing their left cheek more attractive, boosting product evaluation due to the leftward face being perceived as more prototypical and aesthetically preferred.
Togawa & Sugitani, 2022	Journal of Consumer Psychology	Quantitative (Experiment)	1. Zoom effects (in vs. out)2. Presentation (static vs. dynamic) 3. Brand positioning (luxury vs. non-luxury)	Study 1: Luxury perceptions. Study 2: Purchase Intention. Study 3: Purchase Intention	Study 2: Perceptual distance, exclusivity, and luxury perception	Study 3: Brand positioning (luxury vs. non luxury)	Zoom-out product videos enhance luxury perceptions and purchase intentions by increasing perceived exclusivity, especially for luxury brands, with brand positioning moderating the effect.
Affonso & Janiszewski, 2023	Journal of Marketing	Quantitative (Experiment)	1. Brand positioning (utilitarian vs. hedonic)2. Perceptual structure (structured vs. unstructured)	Brand performance (product interest, product evaluation, product choice, brand equity, financial evaluation)	Value derived by utilitarian (hedonic) −positioned brands	Brand hedonic-utilitarian benefit	Visual design in marketing shapes brand performance by fostering structured perceptions for utilitarian brands and unstructured ones for hedonic brands, supporting brand claims.
Meng, Fu, Duan, Wang, & Jiang, 2024	Marketing Letters	Quantitative (Experiment)	1. Product display (overlapping vs. non-overlapping)2. Product price	Consumer perception of price-quality judgments	Perceived uniquenessProduct entitativity	Product type (hedonic vs. utilitarian)	Product overlapping displays lead consumers to rely on price as a quality cue by reducing perceived uniqueness and increasing

(*continued on next page*)

Table 1 (*continued*)

Authors, Year	Journal	Method	Independent Variable(s)	Dependent Variable(s)	Process (Mediator (s))	Moderator(s)	Main Findings
							entitativity, except for hedonic products.
Tofighi & Grohmann, 2024	International Journal of Retail & Distribution Management	Quantitative (Experiment)	Physical proximity (close vs. distant)	Private label brands (PLB) evaluation	Perceived PLB Quality	Brand display orientation (horizontal vs. vertical)	A private label brand (PLB) is evaluated more favorably when placed close to a national brand (NB) in a horizontal display but less favorably in a vertical display, with quality perceptions mediating these effects.
Present Research		Quantitative (Experiment)	Product position (balanced vs. unbalanced)	Sustainable behaviors (choice, donation)	Sense of comfort	Product type (luxury vs. mass-market)	Unbalanced product positions foster environmentally and socially sustainable behaviors due to a lower sense of comfort, and the effect is more pronounced for mass-market (over luxury) products.

2.2. Compensatory sustainable behaviors

How do consumers react when they experience a reduced sense of comfort after seeing an unbalanced product? To answer this question, we build on the well-established work on compensatory consumption (e.g., Rucker & Galinsky, 2008; Wicklund & Gollwitzer, 2013), which refers to a "broad set of consumer behaviors aimed at offsetting a self-threat" (Kim & Rucker, 2012). In other words, when individuals experience discomfort following self-discrepancy, they seek to resolve it and restore a more general sense of well-being (Higgins, 1987), often through consumption behaviors. To illustrate, previous research has documented that consumers may restore a previously threatened sense of power by buying status-signaling products (Rucker & Galinsky, 2008); they may also restore a lost sense of control by engaging in word-of-mouth (Consiglio et al., 2018), by preferring good-fitting brand extensions (Cutright et al., 2013), or by choosing products with tangible or intangible boundaries (Cutright, 2012). Word-of-mouth can also be used instrumentally, in a compensatory manner, when people feel guilty after realizing they have bought an unsustainable product (Amatulli et al., 2020). Following this logic, we argue that reduced comfort from seeing an unbalanced product may lead to a specific type of compensatory behavior: engaging in more sustainable behaviors.

Previous research has indeed shown that sustainable behaviors can sometimes be used compensatorily. For instance, numerous studies have shown that anticipated guilt (elicited specifically through advertising) is a negative emotion that can drive pro-environmental behaviors (e.g., Antonetti & Maklan, 2014; Carrus et al., 2008; Grappi et al., 2024; Muralidharan & Sheehan, 2018; Onwezen et al., 2013). Feelings of anticipated shame have also been shown to drive sustainable consumption behavior. Specifically, Amatulli et al. (2019) demonstrated that communication messages employing negative message framing (i.e., messages highlighting the detrimental effects of unsustainable product choices) elicit feelings of shame in consumers, which then prompt them to engage in pro-environmental behaviors (both in terms of product choice and donation to charities) as a means to mitigate such aversive feelings.

Generally speaking, the notion that sustainable behaviors can restore self-worth is based on the core idea that sustainability is inherently linked to balance (Salas-Zapata & Ortiz-Muños, 2019) and other related concepts such as equilibrium (Barone et al., 2020), equity (Ryan, 2002), and harmony (Jordan & Kristjánsson, 2017). Previous consumer research has shown that situations characterized by unbalance activate the concept of balance and increase the accessibility of the concept of parity (Larson & Billeter, 2013). Indeed, the link between sustainability and balance clearly emerges from the traditional definition of sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs," as formulated by the United Nations Brundtland Commission in 1987 (https://www.un.org/en/academic-impact/sustainability). Sustainability, in other words, means balancing individuals' needs with those of the environment, society, and future generations (e.g., Kaptein & Wempe, 2001; White et al., 2019). Therefore, we reason that after a temporary loss of perceived sense of comfort in a particular situation (e.g., when a product is displayed in an unbalanced position), consumers might consider engaging in sustainable behaviors to restore their sense of comfort. In making this argument, we concur with the general claim of White et al. (2019, p. 27) that "individuals desire to maintain positive self-views and can reaffirm the positivity of the self-concept through consumption (Dunning, 2007). As a result of the desire to view the self positively, people often exhibit self-defensive reactions to learning that their own behaviors have negative environmental impacts". Based on the above, we formally hypothesize:

H1b: Seeing an unbalanced (vs. balanced) product increases consumers' propensity to engage in sustainable behaviors.
H1c: Sense of comfort mediates the effect of product unbalance on consumers' propensity to engage in sustainable behaviors.

2.3. The moderating role of type of Product: Luxury vs. Mass-Market

We ask whether the effects hypothesized in H1a-H1c hold true across different product types. Specifically, we investigate whether they hold true for both luxury and mass-market products. This investigation appears particularly interesting because there has recently been a lively debate about the sustainability of luxury products (e.g., Cesareo & Patrick, 2026; Kapferer & Michaut-Denizau, 2017; Osburg et al., 2024; Sani-Elia et al., 2023; Sun et al., 2021). One idea that has emerged in the marketing literature is that luxury products and brands have some characteristics that render them *inherently* sustainable. As noted by Amatulli et al. (2017), the inherent sustainability of luxury rests on three considerations. First, luxury firms benefit consumers by offering high-quality, durable products made with safe and reliable materials; second, they benefit the environment by producing limited quantities of their products to preserve their exclusivity, which consumes relatively few resources; and, third, they benefit workers and society by preserving craftsmanship and the traditional artisanal jobs it sustains. Comparing luxury and mass-market products, Amatulli et al. (2020) found that consumers hold higher sustainability expectations for luxury goods,

which they associate with positive values such as perfection and the superior quality of artisanal work. Consumers also perceive luxury goods as more sustainable because they last longer – a sharp contrast with the short lifecycles and overconsumption of natural resources that typify mass-market goods. In this respect, Sun et al. (2021) highlighted how luxury goods, compared to mass-market ones, have higher durability and found that increasing the salience of product durability encourages the choice of fewer high-end products over multiple mid-range products, which "can be an effective means to engage in sustainability" (p. 30).

The evidence above suggests that luxury products and brands are more likely than their mass-market counterparts to be associated with the ideas of balance and sustainability (Amatulli et al., 2019); therefore, we argue that the way in which a product is positioned might not make a difference in terms of consumers' propensity to engage in sustainable luxury consumption behavior, and consumers might prefer to buy the more sustainable option regardless of whether the product is positioned in a balanced or unbalanced position. This is less likely to happen with mass-market goods, where product positioning might increase consumers' tendency to engage in sustainable behaviors. In other words, we expect that seeing a mass-market product in an unbalanced (vs. balanced) position might produce the effect hypothesized in H1a-H1c. Conversely, seeing a luxury product in an unbalanced (vs. balanced) position will not affect consumers' propensity to engage in sustainable behaviors. Formally, we hypothesize that:

H2: Type of product moderates the effect of product display, such that seeing an unbalanced (vs. balanced) product will increase consumers' propensity to engage in sustainable behaviors only if the product is mass-market (but not if it is luxury).

3. Overview of studies

We conducted four studies (see Table 2 below) and one follow-up study to test our predictions. Studies 1a (in laboratory with real behavior) and 1b (field) demonstrate that consumers actually behave in a more sustainable manner when products are presented in an unbalanced (vs. balanced) position; we also conducted a follow-up study to rule out that unbalance without sustainability would lead to the same effects. Study 2 (online) sheds light on the mechanism behind this effect by showing that an unbalanced product position leads to more sustainable product choices by reducing perceived comfort. Finally, Study 3 (online) offers a contingency perspective and investigates the moderating role of product type, showing that the unbalanced product position has a positive effect on sustainable behavior only when the product is mass-market (vs. luxury). To strengthen external validity, we used different operationalizations of sustainable behavior, donation amounts and product choice, capturing the same underlying phenomenon: consumers' willingness to adopt sustainable behaviors, whether environmental or social.

4. Study 1a

4.1. Procedure

Participants (N = 200, M_{age} = 24.86, SD = 7.20, 59.5% male, 40.5% female) came to the behavioral laboratory of a European university and were randomly assigned to one of two conditions (product position: balanced vs. unbalanced) in a between-subjects experiment. Participants were unaware of the study's goals and were told they were participating in a study on the effectiveness of marketing communications. After they walked in, a research assistant handed them €1 split into ten 10-cent coins. Participants then saw a bottle of water presented in either a balanced (i.e., flat on the table) or unbalanced (i.e., on top of a smaller cup) position (see Appendix A for all stimuli and manipulations, and Appendix B for all scales and scale items). They were then asked how many of those 10-cent coins they wanted to donate to a well-known pro-environment NGO, and to leave the donation coins on the table. They then provided some demographic information and were debriefed.

4.2. Results

An independent sample *t*-test with product position as the independent variable and the donation amount as the dependent variable found a significant effect (t(198) = -2.97, p = 0.003), such that when participants saw the bottle in the unbalanced position, they donated more money to the pro-environment NGO ($M_{Unbalanced}$ = €.73, SD = €.30) compared to when the bottle was in the balanced position ($M_{Balanced}$ = €.59, SD = €.32). This result supports H1a.

5. Study 1b

5.1. Procedure

We ran a field study at a watch shop in a European city. Participants (N = 119; M_{age} = 43.31, SD = 14.99; 50.4% male, 49.6% female) were randomly assigned to one of two conditions (product position: balanced vs. unbalanced) in a between-subjects experiment. As in Study 1a, participants were unaware of the study's goals and were told they were participating in a study on the effectiveness of marketing communications. Participants in the balanced condition saw the watch lying on a watch rest, whereas those in the unbalanced condition saw the watch lying sideways on the table (see Appendix A). Participants in both conditions were then told that they could find the watch they were looking at in two versions: a "standard" version, with a watch band produced in a slightly more polluting plant (in terms of carbon

Table 2
Summary of main studies.

Study	Type	Sample	Design	Hypotheses Tested	Key Findings
1a	Laboratory	*N* = 200 students from a private European university	2-cell between-subjects design (balanced vs. unbalanced)	H1a	When consumers see a bottle in an unbalanced (vs. balanced) position, they donate more money to a popular pro-environment NGO (non-governmental organization).
1b	Field	*N* = 119 clients of a watch shop in a European city	2-cell between-subjects design (balanced vs. unbalanced)	H1a	When consumers see a watch in an unbalanced (vs. balanced) position, they are more likely to choose the sustainable (and more expensive) version of it.
2	Online	*N* = 92 Amazon Mechanical Turk participants	2-cell between-subjects design (balanced vs. unbalanced)	H1a, H1b, H1c	When consumers see a glass water bottle in an unbalanced (vs. balanced) position, they are more likely to choose the version produced in a balanced working environment (and more expensive), due to a lower sense of comfort.
3	Online	*N* = 251 Prolific participants	2x2 between-subjects design (balanced vs. unbalanced; mass-market vs. luxury)	H1a, H2	When consumers see a mass-market (vs. luxury) bottle of wine in an unbalanced (vs. balanced) position, they are more likely to choose the sustainable version of it, due to a lower sense of comfort.

emissions) and a price aligned with the average market price; or a "sustainable" version, with the watch band produced in a plant with low carbon emissions and with a price 20% higher compared to the average market price. They were then asked to choose between the standard, less expensive one and the sustainable, more expensive one (order of presentation counterbalanced). Finally, they also completed a manipulation check for the (un)balanced position of the watch (2 items, averaged to form an index; r = 0.71, $p < 0.001$; see Appendix B).

5.2. Results

An independent sample *t*-test conducted on the product position manipulation check index found a significant difference (t(116) = 8.30, $p < 0.001$), such that when the watch was lying on the rest it was perceived as more in balance than when it was lying on its side on the table ($M_{Balanced}$ = 4.98, SD = 1.74 vs. $M_{Unbalanced}$ = 2.59, SD = 1.35), confirming the success of our manipulation.

A binary-logit regression analysis with product position (0 = balanced position, 1 = unbalanced position) as the independent variable and choice (0 = standard version, 1 = sustainable version) as the dependent variable found a significant effect (b = 1.06, SE = 0.39, Wald $\chi^2(1) = 7.44$, $p = 0.006$), such that individuals who saw the watch in the unbalanced position were significantly more likely to choose the sustainable but more expensive watch ($N_{Unbalanced_Sustainable}$ = 42 vs. $N_{Unbalanced_Standard}$ = 16, $\chi^2(1) = 11.66$, $p < 0.001$), while they were indifferent between the two versions when the watch was in the balanced position ($N_{Balanced_Sustainable}$ = 29 vs. $N_{Balanced_Standard}$ = 32; $\chi^2(1) = 0.15$, $p = 0.701$). This result further supports H1a.

5.3. Follow-up study

One could argue that seeing products in an unbalanced position affects consumers' responses even when the two product options differ in elements other than sustainability, such as performance. This would mean that the product display effect is not specifically tied to sustainability but applies to other product dimensions. To rule out this possibility and confirm that our findings are unique to product unbalance linked to sustainability, we ran a follow-up study (Prolific Academic; N = 152, M_{age} = 37.74, SD = 13.35; 45.8% male, 51.0% female; 3.2% other), which was designed as Studies 1a and 1b, only this time we used an unsustainable product[2] (i.e., alkaline batteries). Participants in the balanced condition saw the alkaline batteries placed flat on a table, whereas those in the unbalanced condition saw the batteries diagonally leaning (see Appendix A). Participants in both conditions were then told that they could find the batteries in two versions: a "standard" version, which sells for the average market price, and a "better" version, with better performance that costs 20% more than the standard one. Note that relative to the prior studies, we did not mention sustainability at all. Participants were then asked to choose between the standard, less expensive batteries and the better, more expensive ones (order of presentation counterbalanced). A binary-logit regression analysis with product position (0 = balanced position, 1 = unbalanced position) as the independent variable and choice (0 = standard version, 1 = better performance version), as the dependent variable found no significant effect (b = -0.09, SE = 0.33, Wald $\chi^2(1) = 0.07$, $p = 0.790$), confirming that it is not just the product position that affects choice, but also the sustainability dimension inherent to the choice setting. This finding is consistent with our account that sustainability, rather than other product characteristics (e.g., performance), fosters the predicted compensatory function following an unbalanced product display.

[2] We thank an anonymous reviewer for this suggestion.

6. Study 2

6.1. Procedure

Participants (N = 92; M_{age} = 34.18, SD = 9.68; 56.5% male, 43.5% female) recruited online via Amazon Mechanical Turk were randomly assigned to one of two conditions (product position: balanced vs. unbalanced) in a between-subjects experiment. Participants were unaware of the study's goals and were told they were participating in a study on the effectiveness of marketing communications. To manipulate product position, participants saw an image of a glass water bottle either placed flat on a table (balanced position) or leaning diagonally (unbalanced position) (see Appendix A). As in the prior study, they were told the water bottle came in two versions. The first was produced in a workplace marked by imbalance, disparity, and disequilibrium between employees and employer with only partial respect for workforce rights; it sold for 20% less than the average version. The second, a more socially sustainable version, was produced in a workplace marked by balance, parity, and equilibrium between employees and employer, as well as full respect of workforce rights; however, it cost 20% more than the average version. They were then asked which of the two water bottles they would choose. We then measured participants' sense of comfort (6 items; Meyers-Levy et al., 2010, α = 0.96), as well as a manipulation check for the (un)balanced position of the bottle (2 items, averaged; r = 0.87, $p < 0.001$; see Appendix B).

6.2. Results

An independent sample *t*-test conducted on the product position manipulation check index found significant differences (t(90) = 7.60, $p < 0.001$), such that when the bottle was placed flat on the table it was perceived as more in balance than when it was diagonally leaning ($M_{Balanced}$ = 5.14, SD = 1.77 vs. $M_{Unbalanced}$ = 2.38, SD = 1.71), confirming the success of our manipulation.

A mediation analysis (PROCESS, Model 4, Hayes, 2022) with product position as the independent variable (0 = balanced, 1 = unbalanced), sense of comfort as the mediator, and product choice as the dependent variable found a significant indirect effect (b = 0.30, SE = 0.19, $CI_{95\%}$: 0.003, 0.718): when the glass water bottle was placed diagonally leaning (unbalanced position), respondents felt a lower sense of comfort (b = -1.06, SE = 0.33, t(90) = -3.23, $p = 0.002$), which in turn predicted higher choice for the socially sustainable but more expensive water bottle (b = -0.28, SE = 0.15, z = -1.89, $p = 0.058$) (see Fig. 1). These results support H1c.

7. Study 3

7.1. Pretest

We conducted a pretest (Prolific Academic; N = 154, M_{age} = 38.17, SD_{age} = 10.65; 64.3% male, 35.7% female) to ensure that consumers perceive luxury goods as more sustainable than mass-market goods. This finding would be consistent with previous literature suggesting that luxury goods are inherently more sustainable than mass-market goods (Amatulli et al., 2017), due, for instance, to their higher durability (Sun et al., 2021). Participants were randomly assigned to see the same bottle of wine placed flat on a table as in the main study (the balanced

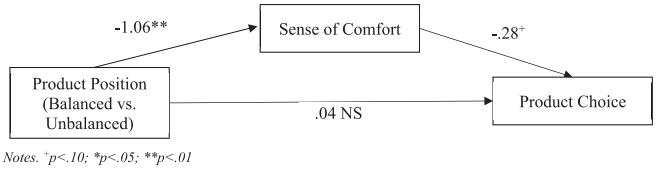

Fig. 1. Mediation in Study 2 Notes. $^{+}p < 0.10$; *p < 0.05; **p < 0.01.

condition), which we described as either a luxurious, exclusive wine for unique occasions (luxury condition) or as an ordinary, affordable wine good for every day (mass-market condition). We then measured perceptions of sustainability using a three-item measure adapted from Adigüzel and Donato (2021) ("To what extent is the wine described: environmentally friendly, sustainable, eco-compatible" 1 = not at all; 7 = very much; α = 0.96). Replicating the findings from prior literature, an independent sample *t*-test confirmed that when the bottle of wine was described as luxurious it was perceived as significantly more sustainable than when it was described as mass-market (M_{Luxury} = 3.90, SD = 1.53 vs. $M_{Mass\text{-}market}$ = 3.26, SD = 1.29; t(152) = 2.78, p = 0.003). We therefore used these stimuli in the main study.

7.2. Procedure

Participants (N = 251; M_{age} = 35.32, SD = 11.16; 59.8% male, 40.2% female) were recruited through the Prolific Academic platform for an online 2 (product position: balanced vs. unbalanced) by 2 (product type: mass-market vs. luxury) between-subjects experiment. Participants were unaware of the study's goals and were told they were participating in a marketing communication study. As in the pretest, they saw an image of a bottle of wine described as either a luxurious, exclusive wine for unique occasions (luxury condition) or an ordinary, affordable wine good for everyday use (mass-market condition). To manipulate the product's position, the bottle was either placed flat on a table (balanced position) or placed diagonally off the edge (unbalanced position) (see Appendix A). As in Study 1b, participants were told the wine came in two versions. The "standard" version was described as a classic wine with a slightly fruity aroma, priced in line with the market average. The "sustainable" version shared the same qualitative characteristics but was produced through a fully environmentally friendly process and cost 20% more than the average market price. They were then asked which wine they would choose. As in Study 2, we then measured participants' sense of comfort (6 items, α = 0.93). The study concluded with a manipulation check for the luxuriousness of the wine ("To what extent is the bottle of wine a luxurious, exclusive vs. ordinary, mass-market product?" 1 = ordinary; 7 = exclusive), as well as for the (un)balanced position of the bottle (2 items, averaged; r = 0.95, p < 0.001; see Appendix B), and some demographic information (i.e., age, gender).

7.3. Results

Manipulation checks. A two-way ANOVA with product position and product type as independent variables and the balance index as dependent variable found only a significant effect of product position ($M_{Balanced}$ = 5.44, SD = 1.76 vs. $M_{Unbalanced}$ = 1.17, SD = 0.53; F(1, 247) = 712.14, p < 0.001, η_p^2 = 0.742), such that when the bottle of wine was unbalanced it was perceived as such compared to when it was in a balanced position. A similar ANOVA on the luxuriousness measure found a main effect of product type (M_{Luxury} = 3.91, SD = 1.95 vs. $M_{Mass\text{-}market}$ = 1.70, SD = 1.00; F(1, 247) = 139.86, p < 0.001, η_p^2= 0.362), a main effect of product position ($M_{Balanced}$ = 2.90, SD = 1.98 vs. $M_{Unbalanced}$ = 2.54, SD = 1.76; F(1, 247) = 4.31, p = 0.039, η_p^2= 0.017), and a marginally significant interaction (F(1, 247) = 3.78, p = 0.053, η_p^2= 0.015). When the wine was mass-market, there were no differences in perceived luxuriousness across balanced and unbalanced positions ($M_{Balanced_Mass}$ = 1.71, SD = 1.05 vs. $M_{Unbalanced_Mass}$ = 1.69, SD = 0.96; F(1, 247) = 0.01, p = 0.922). However, when the wine was luxury, it was perceived as more luxurious when in a balanced ($M_{Balanced_Luxury}$ = 4.33, SD = 1.89) rather than unbalanced ($M_{Unbalanced_Luxury}$ = 3.56, SD = 1.95) position (F(1, 247) = 7.39, p = 0.007, η_p^2= 0.029), though both were perceived as significantly more luxurious than both mass-market conditions (all pairwise comparisons p < 0.001), confirming the success of our manipulations.

Choice. A moderated mediation analysis (PROCESS, Model 14, Hayes, 2022) with product position as the independent variable (0 = balanced, 1 = unbalanced), sense of comfort as the mediator, product type as the moderator (0 = mass-market, 1 = luxury), and product choice (0 = standard version, 1 = sustainable version) as the dependent variable found a significant index of moderated mediation (b = -0.65, SE = 0.31, $CI_{95\%}$: −1.32, −0.10). When the wine was in an unbalanced position, consumers felt a lower sense of comfort (b = -1.58, SE = 0.16, t(249) = -10.05, p < 0.001), which in turn predicted a higher choice for the sustainable wine when it was mass-market (comfort x product type interaction: z = 2.23, p = 0.025; conditional indirect effect for mass-market: b = 0.45, SE = 0.22, $CI_{95\%}$: 0.047, 0.929). Conversely, there were no differences in choice when the wine was luxury (conditional indirect effect: b = -0.21, SE = 0.25, $CI_{95\%}$: −0.720, 0.275) (see Fig. 2). These results collectively support H2.

8. General discussion

Across four studies and one follow-up study, we demonstrate that the way in which a product is presented, whether in a balanced or unbalanced position, influences consumers' tendency to engage in sustainable behaviors. Our results show that when products are presented in an unbalanced position, consumers are more likely to donate money to a pro-environmental NGO and to choose more sustainable (even though more expensive) versions of products. Importantly, we defined sustainability as a condition in which individuals' needs are balanced with those of the environment, society, and future generations (e.g., Kaptein & Wempe, 2001; White et al., 2019). This means that, whatever the dimension involved, environmental or social, sustainability implies a sense of balance and harmony. This explains why individuals may favor more environmentally or socially sustainable options: encountering unbalanced products diminishes their sense of comfort, and adopting sustainable behaviors restores psychological equilibrium. Additionally, we consider product type as a moderator, contrasting luxury and mass-market goods. Our results show that unbalanced product positions promote sustainable behaviors only when the product is mass-market, not when it is luxury.

8.1. Theoretical Implications

Our research contributes to the literature in four relevant ways. First, our research fills a significant gap in extant literature on the role of unbalance in consumer behavior. Compared to previous studies that looked at either the effect of the unbalanced position of consumers (e.g., Larson & Billeter, 2013; Meyers-Levy et al., 2010), or the display of products in stores (physical or digital) or in advertising (e.g., Meng et al., 2024; Tofighi & Grohmann, 2024), we look at the effect of product unbalance, and focus on sustainable behavior, rather than general attitudinal responses, as the core consequence of the unbalance. Given today's growing interest in sustainability (White et al., 2019), our focus on sustainable behavior lends relevance to our findings and paves the way for further investigations into the effects of displaying unbalanced (vs. balanced) products on consumers' sustainable behavior.

Relatedly, as our second contribution, we enrich previous literature on the drivers of sustainable consumption behaviors (e.g., Casalegno et al., 2022; Hosta & Zabkar, 2021; Trudel, 2019; White et al., 2019) by establishing product unbalance and feelings of discomfort as novel contextual and psychological antecedents of consumers' sustainable decisions. We also advance extant research that has demonstrated that consumers might use sustainable consumption behaviors in a compensatory manner (e.g., Amatulli et al., 2020; Antonetti & Maklan, 2014; Cakanlar et al., 2023), by proposing that sustainable actions might allow consumers to compensate for their feelings of unbalance and discomfort. Additionally, we offer new insights into consumers' feelings of (dis) comfort triggered by the consumption context, with a focus on how the product is presented, highlighting its role in sustainable behaviors. While Meyers-Levy et al. (2010) investigated the bodily sensation of

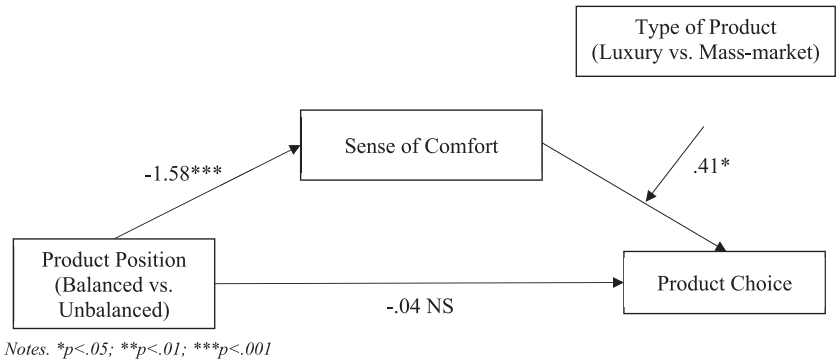

Fig. 2. Moderated Mediation in Study 3 Notes. *p < 0.05; **p < 0.01; ***p < 0.001.

(dis)comfort, we study the feeling of (dis)comfort stemming from exposure to product unbalance and how it affects sustainable decision making. Relatedly, we extend extant research on environmental cues that trigger negative feelings (such as perceived lack of control; Consiglio et al., 2018; Cutright, 2012; Cutright et al., 2013) by focusing on the negative feelings triggered in consumers when they see a product in an unbalanced position. Finally, we contribute to the literature on compensatory behaviors (see Mandel et al., 2017, for a review) by proposing product unbalance as a novel source of self-discrepancy that leads consumers to cope with it through sustainable behavior.

8.2. Managerial Implications

From a managerial perspective, our research offers relevant and actionable insights for communication and retailing managers interested in making more socially responsible decisions that can increase consumer propensity to make sustainable choices. Importantly, our findings show that this effect holds both when sustainability regards the environment and when it concerns societal aspects (i.e., working conditions). First, the findings of Studies 1a and 2 suggest that visual merchandising and retail managers who sell both traditional and sustainable versions of products can increase the choice share of their sustainable products by presenting them in an unbalanced position. While still benefiting their bottom line, this simple change in presentation benefits managers' bottom line while also producing positive consequences for the environment and society more broadly.

Second, given the widespread awareness that mass-market (e.g., fast fashion) companies are typically associated with environmental (e.g., overconsumption, overproduction, limited lifespan of products, excessive use of natural resources) and societal (e.g., lower wages and poor working conditions) issues (e.g., Roozen & Raedts, 2020), mass-market managers might be particularly interested in knowing what marketing actions they could take to induce their customers to buy more sustainable versions of the products they sell. Specifically, our findings from Study 3 suggest that communication managers of mass-market brands can increase sales of sustainable versions of their products by simply presenting them in an unbalanced way in their communication messages (online or offline). Good examples of such cases are the Science Story collection introduced by H&M in 2021 (H&M, 2021), which included a variety of product collections celebrating forward-thinking sustainability processes, or the Primark Cares collection (Primark, n.d.), also launched in 2021, which highlights the company's commitment to make all of its clothes from recycled or sustainable materials by 2030, reduce its carbon emissions, and improve the lives of the people in its supply chain, by guaranteeing, for example, fair and safe working conditions.

Third, the unbalanced position of a product can help advertising agencies develop creative and effective ideas for communication campaigns. This aligns with prior work examining the influence of a model's gaze (To & Patrick, 2021) and facial orientation (Park et al., 2021) on product evaluations. Fourth, Study 1a offers guidance for pro-environmental organizations, whether not-for-profits or NGOs: presentation and communication strategies built around unbalanced product positions can make crowdfunding and donation-collection initiatives more effective.

Finally, while our findings offer interesting, actionable insights for managers, we advise them to use the tactic of unbalanced product positioning with caution, given two considerations. First, to be effective, especially in a retail setting, our tactic presumes that a sustainable option should be available for consumers. Since exposure to a product in an unbalanced position triggers discomfort, it is important that consumers have the opportunity to compensate for this aversive feeling by choosing a sustainable alternative or engaging in sustainable behaviors in the same context. Without this possibility, consumers would have no chance to restore a sense of comfort with potential negative consequences for the retailer. Second, retailers should use our tactic selectively for a few items in their stores. Indeed, if they used it extensively, consumers might perceive stores as chaotic, triggering an avoidance reaction that leads them to stop shopping and leave the store altogether.

8.3. Limitations, future Research, and Conclusion

Our work is not without limitations. First, while our studies offer converging evidence for the critical role of discomfort in explaining our proposed effect, we acknowledge that other psychological mechanisms might also help explain the effect of product display on sustainable choices. Future work could, for instance, examine self-signaling (Friske et al., 2023), moral licensing (Ryoo, 2022), and social desirability (Zhu et al., 2024). Second, and related to the first point, while we offered evidence that the sense of discomfort activated by a product placed in an unbalanced position leads people to choose the sustainable (vs. standard) version of a product, we acknowledge that our experiments mostly used product choice as the dependent variable, which might make it difficult to fully capture *why* discomfort leads to sustainable behaviors. Future work could test whether our effect holds even when employing different types of continuous measures. Third, since our findings suggest that discomfort, rather than unbalanced product display per se, is the proximal driver of sustainable behavior, one could view product positioning as part of a broader class of discomfort-inducing contextual cues. Therefore, future research could examine whether other sources of situational discomfort (e.g., cluttered shelves, noise, crowding) produce similar sustainability-oriented responses. Fourth, all our studies were conducted in Italy and the United States, both of which are known to be individualistic cultures (Hofstede, 1980). Future work could examine the potential moderating role of certain cultural differences, such as individualism (vs. collectivism). Since sustainability seems more relevant in collectivistic cultures, given dominant values such as harmony and public well-being, it would be interesting to explore our effects in collectivistic contexts (e.g., China), as we might expect even stronger effects than those we observed in our studies. Fifth, we measured discomfort and choice immediately after viewing the unbalanced

products, so our effects may have been short-term. Future studies could explore whether the unbalanced product position and subsequent discomfort remain effective beyond the immediate choice setting. Sixth, our research investigated product display by manipulating whether the product was presented in an unbalanced or balanced position; future studies could replicate our findings by manipulating other characteristics of retail contexts, such as architectural elements or visual merchandising displays, and examining the interplay of multiple product positions. Seventh, we investigated the effects of product positioning in an unbalanced (vs. balanced) manner without focusing on a specific industry or type of NGO; thus, future studies could explore potential differences across product categories and NGO types. Finally, given that our paper investigates the role of a product-related moderator, future studies could explore the potential role of consumer-related moderators, such as environmental concern and need for comfort. Finally, all our studies employed experimental designs; future work could explore our effects using other methodologies, such as panel studies and more complex field experiments with real purchase data, to strengthen the ecological validity of our findings.

In sum, we theorize and demonstrate that displaying products in an unbalanced (vs. balanced) position is an easy, cost-effective way to encourage more sustainable consumer behavior – whether choosing environmentally friendly options, donating more to pro-environmental organizations, or selecting goods that meet social sustainability standards. This effect emerges only in mass-market contexts, not luxury ones. It is driven by the reduced sense of comfort that an unbalanced product evokes, which consumers seek to restore through sustainable consumption.

CRediT authorship contribution statement

Cesare Amatulli: Writing – review & editing, Writing – original draft, Supervision, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Matteo De Angelis:** Writing – review & editing, Funding acquisition, Formal analysis, Conceptualization. **Alessandro M. Peluso:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Ludovica Cesareo:** Writing – review & editing, Writing – original draft, Methodology, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A:. All study stimuli

Study 1a Manipulations: Balanced vs. Unbalanced Product Position

Balanced product position *Unbalanced product position*





Study 1b Manipulations: Balanced vs. Unbalanced Product Position

Balanced product position *Unbalanced product position*





Follow-up Study Manipulations: Balanced vs. Unbalanced Product Position

Balanced product position ***Unbalanced product position***



Study 2 Manipulations: Balanced vs. Unbalanced Product Position

Balanced product position ***Unbalanced product position***



Study 3 Manipulations: Balanced vs. Unbalanced Product Position

Balanced luxury product position ***Unbalanced luxury product position***



Balanced mass-market product position ***Unbalanced mass-market product position***

(*continued on next page*)

(*continued*)

Balanced luxury product position	*Unbalanced luxury product position*
	

Appendix B:. Scales and scale items used in Each study

- **Sense of comfort** (studies 2 and 3; Meyers-Levy, Zhu, & Jiang, 2010)
  - o "Please look at the image above and indicate to what extent right now you feel:", Comfortable, Softly relaxed, Physically supple, At ease, Content, Restful; 1 = not at all, 7 = very much. The items were averaged to form a sense of comfort index.
- **Product choice** (study 1b)
  - o The watch you see can be found on the market in two different versions:
    A "sustainable" version, with the strap produced in a factory that emits very little carbon dioxide, but is priced 20% above the average market price.
    A "standard" version, with the strap produced in a factory that emits a little more carbon dioxide, but is priced in line with market prices.
    Which of the two versions of the watch would you purchase?

- The standard but less expensive one
- The sustainable but more expensive one

- **Product choice** (study 2)
  - o In the market, you can find two versions of the bottle of water you have seen in the pictures before (and shown again below):

a) A version with a bottle entirely produced in a working environment characterized by conditions of BALANCE, PARITY, and EQUILIBRIUM among employees and employer, as well as full respect of workforce rights.However, this version costs 20% more than the average version.

b) A version with a bottle entirely produced in a working environment characterized by conditions of UNBALANCE, DISPARITY, and DISEQUILIBRIUM among employees and employer, as well as only partial respect of workforce rights. However, this version costs 20% less than the average version.

What version would you buy? Please choose one.

- The more "UNBALANCED" but LESS EXPENSIVE version
- The more "BALANCED" but MORE EXPENSIVE version

- Product choice (study 3)

For the luxury (ordinary) product conditions.

o This bottle of luxury (ordinary) wine can be found on the market in two different versions:

A "standard" version: From the very refined texture, which is distinguished by its strong personality and slightly fruity taste. The price of this version is in line with that of other champagnes on the market.

A "sustainable" version: with quality characteristics similar to the standard version but produced in a completely environmentally friendly manner. The price of this version is 20% higher than the standard version of the product and the other versions on the market.

Which of the two versions of this luxury (ordinary) wine would you buy?

- The sustainable but more expensive one
- The standard but less expensive one

- **Product position manipulation-check items** (study 1b)
  - o "On a scale of 1 to 7, how do you think the watch is displayed?" 1 = in unbalance; 7 = in balance.
  - o "Is it exposed in an unbalanced or balanced position?" 1 = in an unbalanced position; 7 = in a balanced position.
- **Product position manipulation-check items** (study 2)
  - o "Please rate how the above bottle of water is shown in the picture:"
    - 1 = in unbalance; 7 = in balance,
    - 1 = disequilibrium; 7 = in equilibrium.
- **Sustainability measure** (study 3 pretest; Adigüzel & Donato 2021)
  - o "To what extent is the wine described: environmentally friendly, sustainable, eco-compatible" 1 = not at all; 7 = very much.

Data availability

Data will be made available on request.

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