

The Effect of Sustainability Scores on Responsible Decision-Making among Clothing Products

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Abstract

Sustainability is a commonplace topic across myriad industries, especially the fashion domain. Despite brands' endeavors to develop sustainable clothes, recent trends demonstrated that change is slow, and sometimes has reverted to unsustainable alternatives. Given the generalized lack of transparency, comparability, and understanding between consumers and fashion-related sustainability, this paper investigates whether sustainability scores (i.e., an 'A' to 'E' scale, with the most and least sustainable items, respectively) resolve these issues. Numerous studies support and call for a methodology resembling sustainability scores, so consumers can make informed decisions. Specifically, alphabet theory, moral wiggle room, and information overload play key theoretical roles in supporting this approach. Hence, five hypotheses examine whether (1a) increasingly sustainability-oriented individuals purchase responsibly, (1b) sustainability scores increase responsible purchasing, (2a) increasingly sustainable product descriptions attract a higher willingness to pay, (2b) increasingly sustainable product scores do the same with less variability, and (3a) sustainability-targeted coupons (i.e., for 'A' and 'B' graded products) attract previously unsustainable buyers. These hypotheses used ordered logistic regressions (with and without mixed effects), multiple linear regressions (with mixed effects), a Levene's test, and a McNemar's test. All hypotheses were supported except hypothesis 2b, which was partially supported; lower willingness to pay variation was not found with sustainability scores. This paper's conclusions have significant real-world applications, including European Union policy implementations, business cases for sustainability, and the importance of sustainability-focused educations. This paper hopes to drive change in the fashion industry, alongside adjacent domains where consumers require clearer information to make responsible decisions.

Keywords: sustainability, sustainability score, labelling, willingness to pay, consumer behavior, fast fashion, alphabet theory, moral wiggle room, information overload

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Resumo

A sustentabilidade é um tema comum em vários setores, especialmente na moda. Apesar dos esforços das marcas para desenvolver roupas sustentáveis, tendências recentes demonstram que a mudança é lenta e, por vezes, reverte para alternativas insustentáveis. Dada a falta generalizada de transparência, comparabilidade e compreensão na sustentabilidade relacionada com a moda, esta tese investiga se as pontuações de sustentabilidade (uma escala de 'A' a 'E', com os itens mais e menos sustentáveis, respetivamente) resolvem estas questões. Vários estudos apelam a esta metodologia para que os consumidores possam tomar decisões informadas. A ‘alphabet theory’, ‘moral wiggle room’ e a ‘information overload’ desempenham teorias fundamentais no suporte desta abordagem. Cinco hipóteses examinam se (1a) indivíduos mais orientados para a sustentabilidade comprem mais responsavelmente, (1b) as pontuações de sustentabilidade aumentam as compras responsáveis, (2a) as descrições de produtos mais sustentáveis atraem uma maior disposição a pagar, (2b) as pontuações de produtos mais sustentáveis fazem o mesmo com menos variabilidade, e (3a) cupões direcionados à sustentabilidade (para produtos classificados como 'A' e 'B') atraem compradores anteriormente não sustentáveis. Foram utilizadas regressões logísticas ordenadas (com e sem efeitos mistos), regressões lineares múltiplas (com efeitos mistos), teste de Levene e teste de McNemar. Todas as hipóteses foram apoiadas, exceto a hipótese 2b, que foi parcialmente apoiada: uma menor variação na disposição a pagar não foi encontrada com pontuações de sustentabilidade. As conclusões têm aplicações significativas, incluindo em políticas da União Europeia, casos de negócios para a sustentabilidade e a importância da educação focada na sustentabilidade.

Palavras-chave: sustentabilidade, pontuação de sustentabilidade, rotulagem, disposição a pagar, comportamento do consumidor, fast fashion, alphabet theory, moral wiggle room, information overload

Título: O Efeito das Pontuações de Sustentabilidade em Decisões Responsáveis entre Produtos de Vestuário

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Introduction

While shopping for any article of clothing, individuals may commonly encounter aisles dedicated to sustainable products (e.g., organic cotton, carbon neutral, or recyclable). However, after recognizing that nearly 60% of examined products falsely advertise their degree of sustainability, one should strongly reconsider whether such aisles are genuinely sustainable (Changing Markets Foundation, 2021). This reevaluation requires a strong degree of informational transparency and comparability, alongside being knowledgeable about sustainability-related factors. This paper proposes a new labelling strategy aimed at tackling these three domains, such that consumers make more informed and responsible decisions. The study examines the extent to which this strategy influences individuals' propensity to purchase responsibly, alongside their willingness to pay.

Explanation of the Research's Significance

Increasingly, consumers worldwide have become more conscious of their environmental footprint. Market research by Simon-Kucher & Partners (2021) highlights that 85% of consumers have made at least a "minor change" in their buying trends, with 63% making a "significant change" in the past 5 years. It is also clear that markets are responding to this increasing preference for sustainability. The fashion industry has already seen a slight increase in share of sustainable product sales, up from 2.11% in 2013 to 4.3% in 2022, and this is forecasted to reach 6.14% by 2026 (Statista Consumer Market Insights, 2023). Albeit a slow growth, some companies have progressed toward transforming their assortments to be more sustainable. For instance, companies like Mango and H&M have increased the percentage of sustainable items in their portfolio from 1% and 10%, to 9% and 23% respectively (Deloitte, 2023; Lectra, 2021).

Environmental Factors

Although small strides are being made in the right direction, attaining true sustainability in the fashion industry is still far from reality, given the present pace of progress and wider market conditions. Despite a façade that espouses sustainable values, enormous companies like Zara and C&A have cut sustainable efforts in favor of profitability; from 30% and 23% of their collections being sustainable, this was reduced to 6% and 3% respectively (Lectra, 2021). The fashion industry has also accelerated the number of collections per year, primarily driven by efficient supply chains and technology. For example, from an average of two collections per year in 2000, brands like Zara presently reach highs of twenty-four per year (Remy, Speelman,

& Swartz, 2016). Combined with consumers who have halved the time they keep a clothing item before disposing of it, one observes the immense scale of overconsumption in the fashion industry (UNEP, 2022). This issue is amplified after recognizing that producing a simple T-shirt and jeans together uses 20 thousand liters of water, equivalent to the average amount consumed by a person across 18 years (Oxfam, 2019). It should be evident that the environmental damage caused by the fashion industry is immense.

Additionally, research from the World Bank shows that the fashion industry contributes 10% to global carbon emissions, surpassing that of “all international flights and maritime shipping combined” (Fleischmann, 2019). Compared to 2019, CO₂ emissions from this sector is expected to be more than 50% greater by 2030, despite the increasingly prevalent sustainable trends (Sadowski, Perkins, & McGarvey, 2021). Moreover, recent years have seen an increase in use of synthetics (e.g., polyester, nylon, acrylic) that presently encompass more than 60% of global fiber production (Opperskalski, Ridler, Siew, & Tan, 2021). Though commonly cited as durable compared to natural fibers, this long-term usability is neglected with an accelerated clothing disposal rate (Masterclass, 2021; Remy et al., 2016). This issue is exacerbated given that more than 85% of synthetics are produced with fossils (Opperskalski et al., 2021). Overall, though just under 20% of global fiber production uses some degree of renewability or recyclability, more than 50% still rely on such “fossil-based” production methods (Opperskalski et al., 2021).

Social Factors

In consideration of social elements, the fast fashion industry is far from sustainable. Research by the Thomson Reuters Foundation found that Bangladesh is the world’s second largest manufacturer of clothing, surpassed by China (Nagaraj, 2018). Although the country has more than 4500 factories that produce clothes, Bangladesh’s recently increased monthly wages of US\$95.50 are “not enough for workers to live a decent life” (BGMEA, 2022; Nagaraj, 2018). Furthermore, employees were not given time to “drink water” nor “use the restroom” (Nagaraj, 2018). In worse cases, sweatshop workers experience physical, verbal, and sexual abuse, whilst simultaneously working more than 14 hours per day in unsanitary conditions (TWC, 2020). These subcontractors have also complained of having to shut down if worker wages increased further, given that brands were not paying enough to support these incomes (Nagaraj, 2018). It should be clear that fast-fashion brands dealing with these manufacturers, are able to maintain their low consumer prices by exclusively contracting cheap and exploitative production in low cost regions (Nguyen, 2022). Hence, brands benefit from both lower prices that attract consumers, and avoid questionable production practices by outsourcing it to subcontractors.

Undoubtedly, such situations occur in similar forms across many countries (e.g., Argentina, Brazil, Pakistan, Thailand, Turkey) (Bureau of International Labor Affairs, 2022).

Furthermore, though such issues predominantly occur in developing nations, it is still frequently uncovered in developed nations too. For instance, the U. S. Department of Labor (2023) examined multiple manufacturing plants in California, and found that about 80% violated the nation's "Fair Labor Standards Act", involving domains like "minimum wages", "overtime", and "child labor" (U. S. Department of Labor, 2022). Some of the worst cases involved employees being paid about \$1.50 per hour. Despite such violations, products from these manufacturers were being marketed as "Made in the USA", thereby misleading consumers who believed that such a label implied more responsible production practices (U. S. Department of Labor, 2023).

Although one must note that some companies are taking sustainable steps (e.g., H&M, The North Face, Timberland), most fall short across multiple domains, especially regarding key social issues like "decent work", "living wages", "race" and "gender" (Fashion Revolution, 2022). For instance, across 250 of the world's largest fashion brands, only 24% disclose "modern slavery" infringements, 8% promote "racial and ethnic equality" across the supply chain, and 4% provide statistics on supply chain workers' income (Fashion Revolution, 2022).

Governance Factors

Although the environmental and social facets of sustainability tend to be easily understood, governance requires some additional clarification. In this case, governance encompasses the regulation of organizational activities, balancing internal and external stakeholder interests, and maintaining "responsible behavior" throughout a firm (Du Plessis, Hargovan, & Harris, 2018; S&P. Global, 2020).

Despite being a common business phenomenon since the late 1990s, a majority of companies fall short of expectations (Du Plessis et al., 2018). According to Fashion Revolution (2022) and their "Fashion Transparency Index" of 2022, more than 70% of examined fashion companies fail to meet half of their governance requirements (some of the worst performers include Champion, Max Mara, and Tom Ford). This includes factors such as disclosure about sustainability department contact information, executive accountability, tax information, and employee incentive programs. At the best, just over 70% of brands publish sustainability department contact information, around 60% disclose their board-level responsibilities, and about 50% have board members tasked with confronting environmental and social issues

(Fashion Revolution, 2022). Other than these elements, the outlook is bleak; around 35% of fashion brands have a “responsible tax strategy”, just over 10% disclose the proportion of executive pay tied to sustainability targets, and only 10% have employee representation on the firm’s board (Fashion Revolution, 2022).

Moreover, the distribution of wealth across a fashion brand’s supply chain is becoming increasingly asymmetric. Whilst CEO pay and corporate profits grew more than 15% in 2021, real worker wages fell (AFLCIO, 2018). Referred to as “greedflation”, this duality is even more evident as brands make soaring profits, whilst suppliers consider closing operations due to low revenues (AFLCIO, 2018; Nagaraj, 2018). Some jurisdictions like Oregon in the USA, have implemented a “pay ratio surtax”, requiring firms to pay an additional tax if executives earn a certain ratio above median employees (i.e., 10% surtax if executives earn more than 100 times that of median employees, and 25% if it is more than or equal to 250 times) (City of Portland, 2017). Though it seemed like an effective way of tackling the issue, it led to greater uses of loopholes to circumvent the surtax (e.g., bonuses) (Ro, 2021). Besides upstream activities, final consumers are also strongly affected by this imbalance. Though increasingly commonplace, “buy now pay later” financing has caused consumers to “go into debt to buy clothes” (Citizens Advice, 2021; Fashion Revolution, 2022). It should be clear that this income disparity across up-stream and down-stream activities is unsustainable for the fashion industry’s long run.

Purpose & Significance

Across the abovementioned areas related to the environment, society, and governance, one possible factor that can substantially transform the fashion industry’s degree of sustainability is standardized transparency. This is reiterated succinctly across multiple sources, all of which state that the veil blocking consumers from seeing a firm’s sustainable (or unsustainable) actions leads to purchasing patterns that would otherwise be different (Albella, Balchandani, Cornbleet, & Lee, 2022; Burstein, 2023; Epp, 2019; Fashion Revolution, 2021; Gildan, 2023; Knowles, 2022; Mason, 2023). The same is true for the type of information provided to consumers. As there is “no standardized language or regulated framework” to interpret a firm’s sustainable actions, consumers cannot correctly understand the real sustainable (or unsustainable) impact a firm is making (Pucker, 2022).

Simultaneously, it is clear that consumers are interested in purchasing sustainable products. Market research finds that about 60% consider sustainability at least “slightly important” in their purchasing decisions, with 22% considering it “extremely important” (Simon-Kucher &

Partners, 2021). Beyond abstractly considering its importance, an average of 45% of Western consumers actively look for sustainable information “somewhat often” when purchasing items, and an average of 13% look for it “very often” (Stifel, 2022). However, despite the interest in sustainable purchasing, consumers simultaneously distrust information provided by brands; only about 38% believe the “sustainability or green claims” provided by fashion brands (Changing Markets Foundation, 2022).

Thus, one should recognize that the fashion industry has had enormous impacts on various environmental, social, and governance-related domains. Though the trend toward sustainable consumption is slowly growing, buyers are more skeptical than ever before about the potentially greenwashed claims made by organizations. Hence, it is no longer enough for firms to simply provide data on their responsible activities; there needs to be a standardized form of transparent information for consumers to trust. The remainder of this thesis builds upon this notion by exploring a method of delivering sustainability information to customers, such that it is transparent, standardized, and understandable. Furthermore, this thesis will examine the influence of such information on purchasing intentions and willingness to pay. Not only would this aim to benefit consumers by rebuilding trust with organizations, but it also aims to curtail the power of greenwashing as much as possible. Standardized transparency would help explicitly point at the true sustainable and unsustainable actions undertaken by an organization.

Statement of Research Questions

When progressing through this thesis, one realizes that a possible method of curtailing such greenwashing is to provide customers with a type of sustainability score. This involves a letter-based grading system (i.e., from A to E, inclusive, with A being the best possible sustainability score, and E being the worst), provided alongside the items’ description. In order to uncover the purchasing-related effects of this metric, alongside the other points mentioned at the end of the preceding section, the following three research questions have been developed:

Research Question 1: *To what extent do sustainability scores influence consumers’ propensity to favor sustainable clothing options?*

Research Question 2: *To what extent do sustainability scores influence consumers’ willingness to pay for clothing items?*

Research Question 3: *To what extent can consumers’ preference for sustainability be influenced by sustainability-focused promotions, when purchasing clothes?*

These research questions aim to guide the remainder of this thesis, alongside the development of relevant hypotheses. Overall, this thesis aims to explore the various effects of sustainability scores on both purchasing intentions and willingness to pay.

Literature Review

Broad Background Research

Alphabet Theory

As an outcome from the research by Zepeda and Deal (2009), Alphabet Theory integrates two principal models within its structure, with the aim of formally depicting the factors that influence the pro-environmental purchasing behavior of consumers. Although primarily structured to explain responsible consumption in the realm of food products, the two models within its framework relate to much broader categories of sustainability. Hence, one may be able to extrapolate the generalized structure of this model to this thesis' domain of sustainable fashion. Figure 1 is a visual representation of the Alphabet Theory, made by Schäufele and Hamm (2017). The two sub-models within this structure become evident and will be discussed below; they are the Value-Belief-Norm (VBN) model from Stern, Dietz, Abel, Guagnano, and Kalof (1999), and the Attitude-Behavior-Context (ABC) model from Guagnano, Stern, and Dietz (1995).

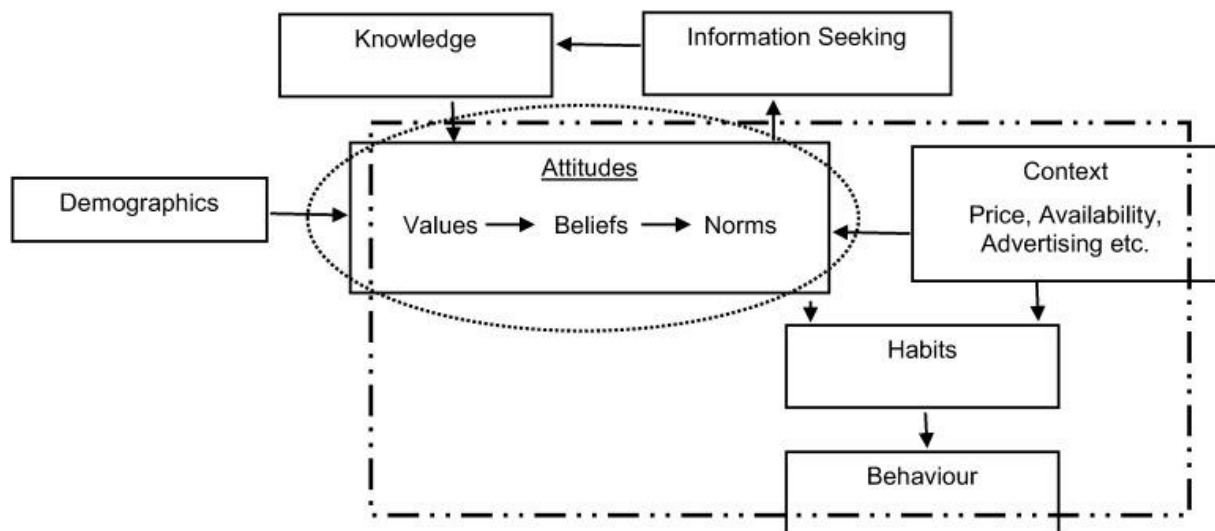


Figure 1 - An illustration of the Alphabet Theory from Zepeda and Deal (2009), depicted by Schäufele and Hamm (2017).

Note the dotted circle represents the VBN model, whilst the dotted and dashed rectangle is the ABC model.

Firstly, Zepeda and Deal (2009) begin their framework with demographic information (e.g., gender, income, rural or urban residence). Including these individual characteristics is

important to the reliability of the framework as it can be a proxy for differences in attitudes toward responsible purchasing (Schäufele & Hamm, 2017). For instance, researchers found that high-income women living in urban areas had a significantly higher probability of choosing sustainable alternatives (Schäufele & Hamm, 2017).

After integrating demographic information into the framework, the next step involves the Value-Belief-Norm model, initially developed by Stern et al. (1999). Starting off, a person begins by containing certain values, or agrees with those values presented to them (e.g., altruism and environmentalism). When such individuals perceive that these values are threatened by an external force (e.g., increasing self-oriented consumption that degrades the environment), and simultaneously recognize that they have the capabilities to restore their favored values (e.g., through activism), they become intrinsically motivated to act and restore their values. The authors highlight that this is typically in the form of a “personal norm” that increases the likelihood that individuals undertake such actions (Stern et al., 1999).

Next, one observes the loop between the Value-Belief-Norm model, the seeking of information, and the use of knowledge. This is of particular importance to the Alphabet Theory, as it accounts for the dynamic nature of attitudes when provided with new information that supports or deconstructs previous beliefs. For example, the attitudes held by an individual consumer of clothes may vary significantly before and after understanding the unsustainable effects of their consumption. This has been observed multiple times in other research studies that examine similar circumstances (Lawley, Craig, Dean, & Birch, 2019; Saeed, Farooq, Kersten, & Ben Abdelaziz, 2019; Stöckigt, Schiebener, & Brand, 2018).

Furthermore, the next step involves the remainder of the Attitude-Behavior-Context model by Guagnano et al. (1995). Additional to the previously discussed Value-Belief-Norm section of the model, these authors also found that external contextual elements influence attitudes and behavior. Specifically, they found that as the strength of the context grew, regardless of whether it was positive or negative, the influence of attitudes on behavior correspondingly fell. In a positive context example, if the price of a sustainable product was very affordable, even those who do not have sustainably-oriented attitude would buy this product. Opposingly, in a negative context example, if a sustainable product is only available to buy in distant stores, even those with an immensely strong sustainability-oriented attitude would be less disposed to purchase it (Guagnano et al., 1995). One should note that the effect of context varies dependent on the individual. Schäufele and Hamm (2017) explains succinctly in their example: a high price for

one individual could be a financial barrier to purchasing the product, whilst for another it may imply high quality.

Lastly, one should note that habits have not been previously discussed in the Value-Belief-Norm nor Attitude-Behavior-Context models. In fact, Zepeda and Deal (2009) add this facet to the model themselves, stating that this sticky phenomenon has the potential to retain sustainable consumers even in challenging contexts, or on the other hand, limit the effectiveness of appealing contexts to unsustainable consumers. Applied to the context of purchasing sustainable clothing items, this concept may not be directly transferrable, given that it is specific to the authors' original sustainable food purchasing context. Though one may propose brand loyalty as a feature that mirrors such habitual purchasing effects, it does not completely match the nuances of this concept as described by the authors.

Overall, as a consolidation of multiple theoretical models and further nuances, Alphabet Theory is a comprehensive framework that encapsulates multiple dimensions that surround purchasing behavior. This is especially true in consideration of sustainability. One should note that this theoretical framework is foundational to examining all three research questions. For instance, its VBN sub-framework will be used to examine individual orientations toward sustainability. Specific to research question 3, the context will be changed (i.e., the addition of sustainability-focused promotions) to explore the impact of novel scenarios on purchasing behavior. Though the original authors developed this model in the context of sustainable food purchasing, other researchers explicitly state that this model should be used "for further studies on purchase behavior" (Schäufele & Hamm, 2017). This thesis will strongly integrate this model in the development and rationalization of its upcoming hypotheses.

Moral Wiggle Room

Most models of decision-making involves the notion of a rational individual. This implies that they would choose to use all the information provided to them when taking any action (Bosco, 2022). In the research conducted by Dana, Weber, and Kuang (2007), this assumption was strongly criticized, after they found that some participants explicitly chose to not receive more information about their impact on another party. The researchers employed the standard dictator game, where one party (the dictator) is given to choose the distribution of a payout between themselves and another party (the recipient). The dictator is the only party able to make this distributive choice, and there are only two options to choose from: (1) the fair outcome where both parties receive the same, and (2) the unfair outcome where the dictator receives more than

the recipient. In the authors' base case, they employed transparency; this meant that the dictator was able to see the pay that both themselves and recipients would receive. In this scenario, 74% chose the fair outcome where both parties would receive the same payoff (Dana et al., 2007). In their second scenario, the authors initially provided the dictator with only their payoff information and hid the amount that would be given to the recipient. However, dictators had the option to unveil this hidden amount and make a more informed decision. This is where the notion of the moral wiggle room comes into play; only 50% of dictators chose to unveil the hidden amount received by the recipient. Most significantly, the portion of dictators choosing the fair outcome dropped from 74% in the base case, to 38% (Dana et al., 2007).

The authors found that dictators in the base case scenario had a higher probability of responding fairly because "they intrinsically dislike appearing unfair, either to themselves or others" (Dana et al., 2007). With the moral wiggle room of the second scenario, dictators remained willfully ignorant, and responded in a manner that was "selfish", "egoistic", "unfair", and "less generous" (Bosco, 2022; Dana et al., 2007; Momsen & Ohndorf, 2020). Notably, Dana et al. (2007) highlight that they do not find that humans are egoistic and competitive with others. Instead, they state that the dictator's "lack of certainty" about the outcomes for the recipient, permits the "self-interested behavior" that arose in their study (Dana et al., 2007).

Moreover, when applied to the context of this thesis, moral wiggle room plays a key role in influencing purchasing behavior when choosing from sustainable and unsustainable alternatives. As will be discussed in the upcoming sections, having transparent or opaque information about a product's true sustainability, employs similar mechanisms as mentioned above. Note that research question 1 is specifically oriented toward the notion of a moral wiggle room. For instance, compared to not having clear information about a product's true sustainability, having such information decreases the potential wiggle room that individuals have, and constrains them to outcomes that are responsible. As in the original research, the strength of this self-interested influence grows when the amount of available information decreases. This approach is also in alignment with the aforementioned Alphabet Theory; contextual information is shown to strongly influence attitudes, habits, and behavior. Dana et al. (2007) also outline this relationship in their research, stating that such differences across the scenarios demonstrates that "behavior [is] contextually driven, in some instances reflecting an apparent preference for fair outcomes, but in others self-interest". Thus, by integrating moral wiggle room into our understanding of sustainable consumer behavior, one begins to recognize the importance of transparent information in making more informed decisions.

Information Overload

The consumer decision making process typically involves five stages: (1) “need recognition”, (2) “information search”, (3) “evaluation of alternatives”, (4) “purchase”, and (5) “postpurchase behavior” (Stankevich, 2017). As purchase platforms seem to have an ever-increasing amount of information (e.g., digital purchasing platforms and webstores), consumers encounter greater challenges when evaluating alternatives. This leads to the heavily researched concept called information overload.

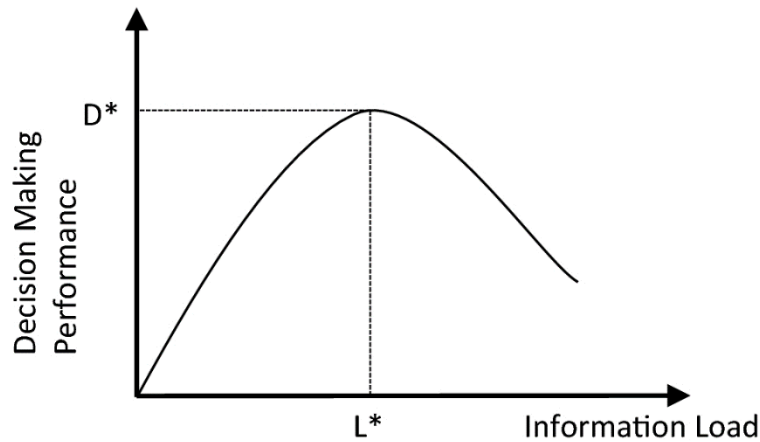


Figure 2 – An illustration of Information Overload, originally developed by Roetzel (2019)
Roetzel (2019) succinctly describes this complex phenomenon in their diagram, represented in Figure 2. The author first defines “information load” as the “amount”, “complexity”, “level of redundancy”, “contradiction”, and “inconsistency” of information. They also define “decision making performance” as the “probability of achieving the best possible decision”. As demonstrated by the inverted-U shape, as the information load increases, decision making performance increases, up to a point (i.e., an information load of L^* , with a decision-making performance of D^*). Beyond this point, additional information diminishes the decision-making performance, leading to poorer outcomes.

This shape emerges due to two possible limitations. Firstly, the decision-maker may have features that limit the degree to which they can use all of the provided information. For instance, a shopper looking to buy new clothes would not be able to remember and cognitively process comparisons across all features of all products in a store in order to find the optimal one for themselves. Secondly, this shape may emerge due to contextual limitations like time or financial resources. In a similar example, it would be unfeasible for a shopper to remain in one store for multiple hours or even days, in order to collect, compare, and select the best item across all alternatives. Hence, it should be evident that more information does not necessarily lead to better decision-making (Roetzel, 2019).

With regards to this paper, one should recognize that the notion of information overload is strongly integrated with both research question 1 and 2. For instance, various upcoming scenarios will examine whether the new sustainability grading approach will help simplify the purchasing process, and help participants choose more responsible items. Similarly, scenarios will also explore whether the approach helps participants recognize the value of products accurately, without being easily exposed and overloaded with greenwashing. Hence, it should be clear that information overload is a strongly related topic that has far-reaching implications for this thesis, as well as its potential real-world applications.

Hypothesis-Specific Research

Consumer Orientation toward Sustainability

To be able to recognize the effects of different means of conveying sustainability information to potential buyers, one must first evaluate an individual's preference for sustainability. This is of paramount importance in order to isolate individual inclinations for purchasing more or less sustainable items. In their research, Sirakaya-Turk, Baloglu, and Mercado (2013) find that an individual's "sustainability values" strongly "predict an individual's choice" for purchasing sustainable goods. Using a similar metric, Schlegelmilch, Bohlen, and Diamantopoulos (1996) find relationships between a buyer's "environmental consciousness" and their "responsible purchasing behavior". A multitude of other researchers find similar positive relationships between one's orientation toward sustainability and their propensity to purchase sustainable products (Hojnik, Ruzzier, & Konečnik Ruzzier, 2019; Huang, Lin, Lai, & Lin, 2014; Kautish, Paul, & Sharma, 2019; Li et al., 2020; Wang, Pham, & Dang, 2020; Zhuang, Luo, & Riaz, 2021). Hence it is clear that this factor should be measured in order to control for its effects on choosing more sustainable options. This is especially important when attempting to isolate the impact of different methods of conveying an item's sustainability, on one's purchase decision and willingness to pay.

In order to evaluate an individual's internal sustainability preferences, researchers have proposed a multitude of methods that attempt to capture and quantify this feature. Shepherd, Kuskova, and Patzelt (2009) suggest the use of a scale that examines an individual's orientation toward sustainability, capturing features such as "freedom", "equality", "solidarity", "tolerance", "respect for nature", and "shared responsibility". Focusing on these features, the authors developed a survey with 20 questions related to the aforementioned elements, all of which were structured as a 7-point Likert scale, with each extreme tied to a fixed statement

(e.g., 1 = “Sometimes some natural resources need to be sacrificed for important developments”, 7 = “All precautions must be taken to protect natural resources in our development efforts”) (Shepherd et al., 2009). Furthermore, as the authors’ constructs demonstrated a high degree of “internal consistency reliability”, “validity”, “item loadings”, and are built upon robust “psychometric properties”, a subset of their questions will be used in this study. Most notably, any questions related to purchasing, product sustainability, manufacturing, and globalization were focused on, given that they strongly resonate with the domain of sustainability in the fashion industry. One must note that Shepherd et al. (2009) examined their data to check for any “socially desirable response bias”, which was “determined to be of little threat to the new scale”. Hence, one may consider that the sustainability orientation captured by this metric to be robust and representative of real preferences.

Moving on to means of conveying the notion of sustainability to consumers, a wide breadth of research has already been conducted. Across numerous product categories, researchers found significant results when varying multiple factors, including but not limited to “ethical labeling” (Grunert, Hieke, & Wills, 2014), “fair labor certifications” (Drichoutis, Vassilopoulos, Lusk, & Nayga Jr, 2017), “carbon” and “organic” labelling (Meyerding, 2016), as well as “health claims” (De Marchi, Caputo, Nayga Jr, & Banterle, 2016). On the other hand, there are also some papers that find a low increase in “purchasing behavior” when provided with sustainability-related information such as “the fair trade logo”, despite being highly recognized (Rees, Tremma, & Manning, 2019). Specific to the European Union, Anastasiou et al. (2017) find that the Euro-Leaf logo, an “organic certification”, does not strongly attract more consumers nor change their willingness to pay. To gain a clearer understanding of the overall effects of sustainability labels, one should consider the research by Majer, Henscher, Reuber, Fischer-Kreer, and Fischer (2022). The authors consolidate this domain by finding five main features of labels: “labeling scheme” (e.g., carbon, ethical, or organic information), “labelling organization” (e.g., performed by government entities), “valence” (e.g., positivity or negativity of label), “mass balance certification” (e.g., “100% certified” or other percentages), and other supplemental information. They conclude by stating that sustainability labels generally have a positive impact on various psychological and behavioral variables (e.g., propensity to purchase, positive conscience, willingness to pay) (Majer et al., 2022).

Although they conducted a systematic review of sustainability labelling, their research does not find any investigations that compare the effects of detailed sustainability information with consolidated sustainability grading (i.e., an A-to-E grading scale, with ‘A’ for high level

sustainability, and ‘E’ for low level sustainability). The closest work that mirrors this examination was performed by Atkinson and Rosenthal (2014), though they compare a “report card–style label” with a “simple green graphic”. A proxy for this is the European Union’s Energy Label, that uses an A-to-G grading scale to transparently provide consumers with information on the “energy efficiency of products” (European Commission, 2021a). Sammer and Wüstenhagen (2006) find that this grading scale significantly increased consumers’ willingness to pay for A-graded products, with a 30% premium compared to average prices. Similarly, Faure, Guetlein, and Schleich (2021) alongside Stadelmann and Schubert (2018) found that the sustainability scores significantly increased the proportion of buyers who opted for more efficient appliances. Other than issues pertaining to the label’s recent rescaling (Boyano, Espinosa, & Villanueva, 2020) alongside the need to curtail the rebound effect (Alborzi, Schmitz, & Stamminger, 2017; Waechter, Sütterlin, & Siegrist, 2015), it is clear that transparent and concise information can shift buyers to consume responsibly by overcoming various hindrances like asymmetric information, consumption routines, and informational overloads (Terlau & Hirsch, 2015).

Hence, considering all of the abovementioned information, the following hypothesis is proposed, and relates to the first research question:

***Hypothesis 1a:** A higher preference for sustainability is positively related to sustainable purchasing decisions, in situations with sustainability descriptions as well as sustainability scores.*

This hypothesis was developed in order to retest the findings uncovered by previous researchers. More importantly, it was developed to be an iterative steppingstone to the following hypotheses that become increasingly granular in their focus. Note that in this research, sustainability scores involve a grading scale from A-to-E, with ‘A’ representing the most sustainable product and ‘E’ representing the least sustainable product. The aforementioned sustainability descriptions will also represent such degrees of sustainability, though through the means of text instead of a score (i.e., sustainability descriptions involve sentences that briefly describe the item’s sustainability-related information). Fundamentally, the sustainability scores aim to consolidate information in a manner similar to that done by the European Union’s Energy label.

This hypothesis is also aligned with the previously discussed Alphabet Theory. As individuals have pro-sustainable attitudes (i.e., the interaction across values, beliefs, and norms that favor

sustainability), they will have a greater probability of demonstrating their preference for sustainability in the sustainability-focused questions. Furthermore, as these attitudes interact with the context and their habits, these individuals would also be likely to choose sustainable products, with less concern for the context within which they are placed (i.e., with sustainability descriptions or scores). Hence, the relationships across this hypothesis' elements can be seen as strongly supported by the aforementioned Alphabet Theory.

This hypothesis contributes to literature as it is the first step of exploring a previously unconsidered sustainability labeling method. It aims to migrate the application of the EU's Energy Labels from appliances to fashion; this is especially important in order to simplify the myriad of sustainability labeling options previously discussed. This hypothesis also adds to academia by examining wider sustainability nuances in addition to environmentalism, and their effect on consumption preferences. This will be done by integrating a subset of wide-ranging sustainability questions from Shepherd et al. (2009) into this research's methodology, whilst also not remaining limited to including only environmental factors.

Consumer Orientation toward Sustainability Scores

In consideration of the manners in which sustainability information is conveyed to consumers, a broad range of research provides various insights. O'Rourke and Ringer (2016) find that "providing more or better information on sustainability issues" had no impact on some consumer behavior. The authors also highlight factors that may contribute to this lack of change, including the distrust of corporate statements regarding the true sustainability of their items, alongside "willful ignorance" amongst consumers (O'Rourke & Ringer, 2016). Similar notions are expressed by Sheth, Sethia, and Srinivas (2011), who additionally find that sustainability-related marketing is frequently seen by consumers as "deceptive or misleading", thereby calling for more transparency in order for buyers to shift to more responsible consumption patterns. Weber (2021) extends this further, finding that the plethora of sustainability information provided nowadays leads to an "information overload". Consumers then find it challenging to choose amongst sustainable products, and revert back to choose less sustainable options that were described in a comparably simpler manner. This issue is one of the most commonly cited complications related to the status quo of sustainability labeling, and has been reiterated by a multitude of authors (Annunziata, Mariani, & Vecchio, 2019; Grunert, 2011; Grunert et al., 2014; Horne, 2009).

Building on the notion of a transparent and standardized sustainability grading scale, Lazzarini, Visschers, and Siegrist (2018) specify that “comprehensible and comparable information” helps consumers make much more sustainable and “informed choices”. They also briefly allude to possible alternative methods of communicating sustainability-related information, declaring “a footprint or a traffic signal character” as possible alternatives that could resolve this issue (Lazzarini et al., 2018). Stöckigt et al. (2018) state that consumers would strongly account for sustainability if they were provided with “clear sustainability information” regarding the item. Note that the authors’ specified ‘clarity’, and explicitly state that sustainability should be displayed in a manner as “clear and simple” as price. They also allude to the possibility of an “efficiency classification” as a solution to this issue (Stöckigt et al., 2018). Research from Weber (2021) also reiterates this notion, stating that concepts like sustainability scores could incentivize more responsible consumption, as it significantly decreases consumer uncertainty. Furthermore, work by Jacques, Ginevra, Lena, and John (2021) for the European Commission also found that “graded labels” that consolidate sustainability information into a single comparable figure strongly push consumers to purchase more sustainably. Other studies have also shown that the salience of understandable sustainability information decreases ambiguity (Nikolaou & Kazantzidis, 2016; Shao, 2016), and increases the importance of responsible purchasing, leading to a prioritization of sustainable products by consumers (She & MacDonald, 2017). Furthermore, a sustainability score that transparently consolidates information regarding a host of relevant factors may well be coherently understood across different countries and cultures (Tait, Saunders, & Guenther, 2015). Hence, this implies that such a labelling format could be internationally standardized, thereby leading to a much larger step toward sustainable consumption than previously considered.

Having assimilated the above points, the following hypothesis has been developed for this study, and relates to the first research question:

Hypothesis 1b: *Respondents have a greater probability of selecting more sustainable options when presented with sustainability scores, compared to only sustainability descriptions.*

This hypothesis was constructed in order to compare responsible consumer purchasing patterns in scenarios facing sustainability descriptions (i.e., a situation typically faced nowadays, with both product-related and sustainability-related information) as well as sustainability scores (i.e., a method of delivering sustainability information that is concise, transparent, and comparable with regards to sustainability-related information).

This hypothesis is aligned with the abovementioned discussion of moral wiggle room. When presented with sustainability descriptions, respondents choose whichever product appeals to them the most, in terms of the information provided. Those that have a greater sustainability orientation may tend to favor those with more sustainable attributes. Correspondingly, those with a lower sustainability orientation may favor less sustainable attributes. However, when presented with salient sustainability scores that transparently depict the impact of their purchasing behavior on various external factors, those who would have chosen less sustainable options become self-driven to choose more sustainable ones. This is primarily due to this theory's concept of the self; as individuals "intrinsically dislike appearing unfair, either to themselves or others", they adjust their decisions to be perceived as more fair (Dana et al., 2007). Hence, it should be noted that moral wiggle room is hypothesized to primarily impact those who would choose less sustainable options when not presented with clear sustainability scores.

Furthermore, the hypothesis is also consistent with the notion of information overload. When respondents are presented with sustainability descriptions, there are a multitude of factors that need to be compared across all products; these may be many in number, complex, inconsistent, or even contradictory. Hence, in accordance with research from Roetzel (2019), such types of information lead to an excessively high information load, especially because this thesis will deal with respondents with a bounded rationality and ability to process information. It should be noted that this theory primarily impacts those with a large sustainability orientation if they aim to pick products that are the most sustainable. For instance, when facing sustainability descriptions, it would be challenging to compare each alternative to uncover which is the most sustainable. On the other hand, with sustainability scores, respondents are immediately provided with a comparable sustainability feature that can quickly reduce their experienced information overload. Evidently, the concept of information overload is strongly integrated into the foundations of this hypothesis (Roetzel, 2019).

This hypothesis contributes to literature in a variety of ways. Firstly, it addresses the research gap highlighted by O'Rourke and Ringer (2016) regarding the various means of delivering sustainability-related information alongside their effects on consumer behavior; they state that there is not enough empirical evidence to clearly understand which "metrics and indicators, in which forms" can shift consumers to more responsible options. This hypothesis also examines the proposal from Lazzarini et al. (2018), where they highlight the potential of a "traffic signal" in helping explicitly convey sustainability information to consumers. Though this research

involves more than three levels, as used in a traffic signal, the underlying logic remains consistent. Lastly, this hypothesis aims to examine a possible solution to the highly cited issue of information overload. As a sustainability score, information will be delivered in a concise manner, to attenuate complications in the comparison and selection stages of purchasing.

Willingness to Pay with Sustainability Descriptions

Focusing on the domain of the second research question, one should explore the literature surrounding sustainability information and their influence on consumers' willingness to pay. In general terms, there is a plethora of research that predominantly demonstrates that sustainability information increases buyers' willingness to pay. This finding was displayed across multiple product groups and types of sustainability information, some of which include seafood ("turtle-safe", "wild-caught", "pre-frozen") (Zhou, Hu, & Huang, 2016), clothing ("sustainable", "natural", "eco-friendly", "conventional") (Bernard, Hustvedt, & Carroll, 2013), fruits (multiple dimensions such as "carbon emissions", "water efficiency", and "waste/packaging reduction") (Tait et al., 2015), wine (multiple dimensions such as "pesticides", "sustainable practices", "organic", "carbon neutral") (Schäufele & Hamm, 2017), and various other food items (multiple dimensions such as "sustainable", "CO₂", "water footprint", "gas emissions") (Bastounis et al., 2021).

Interestingly, Barber, Bishop, and Gruen (2014) found that there are some key characteristics that influence one's willingness to pay. The high price premium group (i.e., those willing to pay a higher price for sustainable products) was composed of more females, had higher education levels, and earned higher incomes. Their personality analysis highlighted further insights, stating that those more concerned about society than themselves ended up purchasing more sustainable products. Furthermore, the neutral price premium group (i.e., those willing to pay neither a premium nor discounted price for sustainable products) was characterized by individuals who simultaneously recognized the importance of sustainability as well as "status and self-satisfaction" (Barber et al., 2014). Ha-Brookshire and Norum (2011) found similar conclusions in their research, though they also found that age played a significant role; younger consumers tend to provide a higher willingness to pay for more sustainable products. Farzin, Shababi, Shirchi Sasi, Sadeghi, and Makvandi (2023) reiterate this notion, also reinforcing the idea that a greater degree of "environmental concern" and "altruism" are related to a higher willingness to pay for sustainable products.

On the other hand, some highly cited literature also finds contradictory results for some factors that influence one's willingness to pay for sustainable products. The literature review by Tey, Brindal, and Dibba (2018) consolidates this notion, stating that "previous investigations produced mixed findings" with respect to sustainable apparel. Across the 12 studies they reviewed, they found varying influences of various factors on willingness to pay for sustainable clothes, including income, gender, and age. Opposing the previous paragraph, Kang, Stein, Heo, and Lee (2012) found that lower income individuals have a higher willingness to pay for sustainable products, reasoning that this demographic tends to face greater negative repercussions of a degrading environment than higher income individuals. The authors recognize that though higher incomes imply higher disposable income, their research shows that it does not translate into a higher willingness to pay for sustainable products. Similarly, Lee (2019) finds that older buyers spend more on sustainable and responsible clothing compared to younger buyers. It is clear that there are some contradictory findings in the domain of factors influencing willingness to pay for sustainable products. It would be wise for researchers to add controls related to such characteristics, so that the overall influence of such variables are contained.

Consolidating this subsection's review of various sustainability-related information, alongside factors influencing one's willingness to pay for sustainable products, the following hypothesis is structured for this study, and is tied to the second research question:

Hypothesis 2a: *When presented with sustainability descriptions, the greater the sustainability of an item, the greater will be respondents' willingness to pay for it.*

The logic behind this hypothesis is derived from the previously discussed literature when applied to the context of this study. After controlling for various additional factors that may or may not influence one's willingness to pay for sustainable clothing (e.g., age, gender, income, sustainability orientation), and based on findings from research in both similar and different product categories, one may find a positive significant relationship between the increasing sustainability of a clothing item and respondent's willingness to pay for it.

This hypothesis contributes to literature by exploring the various factors that influence one's willingness to pay specifically for sustainable clothes. Importantly, it provides another source of research that attempts to uncover the relationship between sustainability information and consumer behavior, whilst also allowing for an exploratory understanding of supplemental factors that influence this relationship. Most importantly, this hypothesis acts as a fundamental

step to the next hypothesis that aims to focus deeply on sustainability scores, and compare it to simple sustainability descriptions.

Willingness to Pay with Sustainability Scores

In consideration of sustainability scores, their influence on consumer willingness to pay should still work in the same direction as that explained in the previous subsection. Goucher-Lambert and Cagan (2015) find that focused “environmental impact metrics” leads to a reduction in the importance of price (i.e., price sensitivity) when consumers consider purchasing products. This approach of using sustainability metrics and scores to clearly convey the real world benefit of purchasing such products, has been cited as a “strategy” to shift consumption to more responsible alternatives (Bastounis et al., 2021). Furthermore, by having clearer information for consumers to process in a comparable, standardized, and transparent manner, research finds that buyer uncertainty should also decrease during the selection stage of the purchasing process (Weber, 2021). This would mean that consumers would be less influenced by the effects of greenwashing, and would choose products by comparing them on an explicit set of variables.

Focusing on research that explicitly examines the influence of sustainability scores (i.e., any type of ranking that transparently communicates the product’s degree of sustainability) resulted in only one paper that was related to this domain. van Osch et al. (2017) examined the influence of an A-to-D sustainability scale for salmon, on willingness to pay (i.e., ‘A’ implied a 30% reduction in environmental pressure, ‘D’ implied 0% reduction in environmental pressure, with increments of 10% in between). Their research involved a choice experiment across salmon, with varying degrees of sustainability scores and production location (i.e., local or abroad). Overall, they uncovered that as sustainability scores increased, the willingness to pay for salmon increased. Specifically, ‘A’, ‘B’, and ‘C’ graded products captured a €9.26, €3.65, and €1.72 premium respectively, in comparison to a ‘D’ graded product (van Osch et al., 2017). Hence, it should be clear that products with a better sustainability score attract a higher willingness to pay in comparison to those with a worse sustainability score. The authors cite a multitude of benefits of incorporating a grading-style system instead of sustainability labels (e.g., organic, carbon-neutral). For instance, it provides producers with an “incentive” to “continuously improve the production process”, compared to labels that incorporate a “pass-fail mentality” (van Osch et al., 2017). Furthermore, the European Union’s Energy Label that is already a norm for most domestic appliances, implies that such a system would already be well understood when applied in other contexts (e.g., clothing sustainability). Overall, such a grading system would resolve a multitude of issues involved in the present state of sustainability

labelling. Most importantly, it would address the “lack of transparency”, “consumer confusion”, and “low creditability” involved in typical labelling programs (van Osch et al., 2017).

Thus, having recognized the broad influence of sustainability metrics on the willingness to pay of consumers, as well as the impact of sustainability scores in the seafood industry, the following hypothesis has been developed for this study, and is tied to the second research question:

Hypothesis 2b: *When presented with sustainability scores, the greater the sustainability of an item, the greater will be respondents’ willingness to pay for it. However, the variation of willingness to pay will be greater in the condition with sustainability descriptions, than with sustainability scores.*

The rationale behind the construction of this hypothesis involves the notion that such scores help reduce uncertainty amongst consumers about the true underlying sustainability of various items. This is strongly connected to the previously discussed notion of information overload. As sustainability descriptions allow for variable interpretations of their meaning, and imply a lack of concrete comparisons across alternatives, information overload is bound to take place. This is predicted to imply variable respondent willingness to pay. Opposingly, sustainability scores should provide a clear comparison across alternatives, thereby curtailing information overload. This is predicted to lead to less variability in individual willingness to pay for given products. Furthermore, it should be noted that congruent with the previously discussed literature, increases in the degree of sustainability lead to an increased willingness to pay. However, most of this research does not quantitatively address the uncertainty faced by consumers in comparing one item to another in terms of sustainability. This hypothesis incorporates this uncertainty, that was only discussed rather than tested in previous studies.

This hypothesis contributes to literature as it builds upon the request for future research proposed by Weber (2021); this thesis examines a non-food category alongside consumer willingness to pay, which was previously unaddressed. Additionally, this hypothesis supports the domain of sustainability-related research by proposing another strategy of labelling that focuses on transparency, standardization, and comparability. As previously mentioned, only one other paper was found to have explored sustainability in this manner. Compared to the uncertainty and varying interpretability of other labeling policies (e.g., organic, locally sourced, carbon neutral), this hypothesis examines the potential for a structured alternative that has shown to be much more comprehensible than the status quo (van Osch et al., 2017). In addition

to understanding whether consumers increasingly choose more highly scored sustainable clothes, this hypothesis allows the researchers to understand the magnitude of change with regards to buyers' willingness to pay.

Influencing Responsible Decision-Making

Next, in an attempt to further influence consumers' purchasing patterns such that more consumption is directed to responsible products, one now focuses on the third research question. O'Rourke and Ringer (2016) explored the impact of sustainability-related information on buyer choices, and segmented their analyses into those relating to "direct" and "nondirect" users; "direct users" involved those who actively looked for sustainability-related information prior to purchasing a product, whilst "nondirect users" were those that did not look for such information. Their research uncovered that "direct users" become attracted to items that have better sustainability metrics, especially those related to health and self-interest. Opposingly, "nondirect users" remain unaffected by such information, and at times, may even decrease their willingness to pay for sustainable items by citing that they are "more expensive and lower quality than equivalent conventional products" (O'Rourke & Ringer, 2016). The authors highlight that shifting this type of buyer to choose more responsibly requires a strategy that "connect[s] into existing decision-making processes". This notion is reiterated by Grunert et al. (2014), who state that despite products having sustainability information displayed on their labels, it is only used when buyers are motivated to do so.

A manner in which one could tackle the issues raised by O'Rourke and Ringer (2016) as well as Grunert et al. (2014) concerning the lack of motivation, concern, and use of sustainability labels involves incentives. Prior research has found that various incentive structures strongly motivate individual consumers to act more responsibly. For instance, Ito (2015) examined an energy-focused scheme in California. Those that were able to reduce their energy consumption by at least 20% in the summer, compared to the previous year, would benefit from a 20% discount on their bill (Trudel, 2019). The researcher found that this incentive led to a 5% drop in energy use in some areas. A similar study by Mahmoodi, Prasanna, Hille, Patel, and Brosch (2018) examined the influence of bonuses for household energy-use reduction, penalties for increases, and both simultaneously, on market acceptance. They found that bonuses in the absence of penalties were the most attractive to households, having been rated significantly more appealing than both bonuses and penalties simultaneously, as well as penalties by themselves which were the least appealing.

Extracting these learnings to the context of the fast fashion industry, one may consider applying some form of bonus for responsible purchasing behavior. Research shows that though consumers appreciate “specific dollar” discounts for general products, a percentage discount is much more appealing when presented with sustainable products (Tseng, 2016). Furthermore, though not significantly effective in establishing long-term customer loyalty, coupons have been shown to strongly push buyers to try out new products that were previously outside their consideration set (Guan, Atlas, & Vadiveloo, 2018; Ross, 2014).

Hence, having now understood the potential methods that have been shown to shift consumer purchasing into targeted directions, alongside the importance of attracting a new segment of consumers to try our sustainable products, the following hypothesis has been developed to target the third research question:

Hypothesis 3a: Respondents favor more sustainable options with coupons.

This hypothesis was constructed in order to test the effectiveness of targeted coupons in shifting consumers to purchase more responsible clothing items. Note that though this notion has been tested in previous studies, it has not been examined when considering clothing items, nor when presented with the type of sustainability information in this study (i.e., sustainability scores).

Moreover, this hypothesis is entangled with the previously discussed Alphabet Theory. The provision of coupons touches upon the contextual dimension of the model. As represented in Figure 1, coupons impact the pricing of a product, thereby leading to a favorable change of context. According to this theory, as the context becomes increasingly more appealing (i.e., coupons that lower prices), the influence of individual attitudes on behavior decreases. Hence, both individuals that do and do not have a strong sustainability orientation, would begin to favor products that were perceived to be of higher quality, more sustainable, and cheaper than in previous scenarios. Thus, this hypothesis is supported by the Alphabet Theory.

Furthermore, this hypothesis contributes to literature as it addresses several issues raised by previous researchers. Weber (2021) recognizes that there are not enough studies that simultaneously examine the influence of “eco-rankings and price strategies”, and calls for future authors to explore this domain closely. This hypothesis tackles this domain by involving eco-rankings in the form of sustainability scores, as well as tackling the pricing strategy of sustainability-targeted coupons, in order to examine the overall effect on consumer purchasing patterns. Additionally, when concluding their research, O'Rourke and Ringer (2016) highlight the need for more research about incentivizing individuals who do not consider sustainable

features, to shift their consumption to more responsible alternatives. They note that more studies should be done to examine ways in which “sustainability information [can] be connected into peoples’ actual purchasing processes” (O'Rourke & Ringer, 2016). This hypothesis looks to directly address these requests for research, by examining the influence of sustainability-directed coupons on purchasing behavior.

Research Methodology

The following sections will sequentially outline the design of the study, the data that was collected, and the proposed analysis. All of the details included in this section were pre-registered with Prof. Dr. Susann Fiedler prior to conducting any data collection. This was done in order to ensure transparency, adherence, and reduce analytical biases.

Study Design

This study will be observational, and conducted in the form of a survey. The survey will be structured in seven sections. Across all facets of the survey, there is no blinding that took place.

Section 1 – Introduction & Consent

Prior to any further steps in the survey, respondents will be introduced to the fundamentals of what will be examined, without disclosing too much information that could prime them to respond in a particular manner. In addition, the introduction included a description of a raffle to incentivize participation in the study, alongside confidentiality disclosures, a statement of voluntary departure from the study, and a minimum age requirement. The introduction to the survey was written as follows:

Welcome to the research study! We are interested in understanding consumer behavior when presented with multiple items. You will be presented with information, and be asked to answer some questions. Your responses will be kept completely confidential. The study should take you around 5-8 minutes to complete. At the end, you have the option to provide your email address to enter into a raffle with 2 chances to win EUR50 for your participation. Note that email addresses will only be used for this purpose, after which they will be deleted. By consenting, you acknowledge that your participation is voluntary, you are more than 18 years old, and that you may stop participating at any time. Please note that this survey is best displayed on a laptop or desktop.

After reading through this introduction, respondents had the option to consent and begin the study, or do not consent and exit the study.

Section 2 – Scenario #1: Sustainability Descriptions

Having consented to participating in the study, participants now enter into the first of three scenarios. They are introduced to the scenario with the following statement:

Imagine that you are shopping for some new t-shirts. Consider the points that you would typically keep in mind when shopping. You now enter into the shop and find the following T-shirts.

With this prompt in mind, respondents now face five images of black or grey t-shirts with a description of each. Each t-shirt is slightly different from each other, though none of them have

any distinguishing features, text, or visible branding. Note that T-shirts were used for the purpose of this study as they are not directed to any gender, can be worn without any specific pattern or preference, and are widely available across retailers. In addition, black or grey T-shirts were used as they would minimize any respondent preferences due to a liking or disliking for a specific color. Similarly, each description is different from each other. Unbeknownst to the respondent, each description is linked to a given sustainability score (i.e., a grade from ‘A’ to ‘E’ inclusive, with ‘A’ graded products being the most sustainable, and ‘E’ graded products being the least sustainable). However, none of the sustainability scores are presented in this scenario, and respondents only see the sustainability descriptions. Dependent on the implicit score of the product, descriptions have between no lines of sustainability information (i.e., for ‘E’ graded products), and four lines of sustainability information (i.e., for ‘A’ graded products). In total, all items had 5 descriptive lines, and those not related to sustainability included filler information (e.g., ironing recommendations, neckline, collar, breathability, fit). Each item had a sliding scale between EUR 0 and EUR 100, and respondents faced the following prompt:

Consider the following 5 T-shirts. Please indicate your willingness to pay for each with the sliding scale, in Euros. This number should realistically show the amount you would pay for each T-shirt.

After providing their willingness to pay for each of the five items, respondents faced the same five T-shirts alongside the same descriptions for each. This time, their provided willingness to pay was displayed alongside the item and labelled as ‘Final Price’. Respondents now face the following prompt:

Consider the same 5 T-shirts below, this time with prices. Select the option that you would realistically purchase.

This section collects information regarding respondents’ willingness to pay in Euros, for each T-shirt across various sustainability scores. Additionally, it records the choice that respondents make when choosing the option that they would most likely purchase. Importantly, this section also logs the various T-shirt images and sustainability descriptions that were randomly allocated to a particular participant’s response, and the randomized order in which they were presented.

Having selected the one option that they would most likely purchase in the real-world, respondents conclude the first scenario of this study.

Section 3 – Scenario #2: Sustainability Scores

Respondents now face the second scenario that explores sustainability scores. Respondents are introduced to this scenario with the following statement:

Still shopping for new T-shirts, you enter a different store. The T-shirts available here are generally similar to those in the previous store. Consider the points that you would typically keep in mind when shopping. You now enter into the shop and find the following T-shirts.

Having understood that this scenario is similar to the previous one, respondents are now presented with another five T-shirts, alongside their descriptions. Note that both the T-shirts and descriptions used here are different from those in the previous scenario. Furthermore, this scenario presents the previously hidden information regarding each description's sustainability score to the respondent. In this manner, they are able to observe all five descriptive lines regarding each item, in addition to the respective item's sustainability score. Other than the provision of this additional information, respondents face the same question structure and prompt as mentioned previously, with regards to their willingness to pay:

Consider the following 5 T-shirts. Please indicate your willingness to pay for each with the sliding scale, in Euros. This number should realistically show the amount you would pay for each T-shirt.

Similarly, having provided their willingness to pay for each item, they once more face these five T-shirts, descriptions, and sustainability scores, and are asked the following:

Consider the same 5 T-shirts below, this time with prices. Select the option that you would realistically purchase.

Note that the choice to have the scenario without sustainability scores previous to this one was to minimize any possible response bias, priming, or spillover into this section. By not providing respondents with sustainability scores initially, they are not completely aware that this study will be adjusting this variable in the next scenario that they will face.

This section records the same data as section 2 (i.e., willingness to pay, selected T-shirt, and randomization information). After selecting the item that they would most likely purchase given the aforementioned information as well as their provided willingness to pay, the respondents conclude the second scenario of this study.

Section 4 – Scenario #3: Sustainability Scores & Coupons

Similar to the previous two scenarios, respondents now enter into the third and final scenario of this study. They are provided with a similar prompt in order to contextualize them for this section of the survey:

You are now entering into the final store. Again, the T-shirts here are similar to those in previous stores. Consider the points that you would typically keep in mind when shopping. You now enter into the shop and find the following T-shirts.

Respondents face another set of five T-shirts, descriptions, and sustainability scores. The items' images and descriptions are unique to this scenario and have not been used in previous sections. As in previous scenarios, respondents are able to see an image of each item, its sustainability description, and its sustainability score. However, dissimilar from previous scenarios, all the items already have prices. These figures are from those provided by the respondent in the second scenario. Furthermore, items with an 'A' and 'B' sustainability score have discounts applied to them: 'A' graded items have a 10% discount and 'B' graded items have a 5% discount. The final values after discounts are still exactly those provided by respondents in the previous scenario. After reading through the provided information, respondents are requested to do the following:

Consider the 5 T-shirts below. Select the option that you would realistically purchase.

This section only captures information related to participants' selected T-shirt and randomization data. After selecting the item that they would most likely purchase when presented with this set of items in reality, respondents conclude this section of the survey.

Section 5 – Sustainability Orientation

Having passed through all of the scenarios of this study, respondents now encounter questions pertaining to their sustainability orientation. They are presented with six questions structured in a Likert-scale format, with a statement on each extreme of the scale in order to anchor respondents. These questions are derived from the literature by Shepherd et al. (2009), where they developed a scale that examines an individual's orientation toward sustainability. The questions used will focus on domains such as purchasing, product sustainability, manufacturing, and globalization, as they are most strongly connected with the domain of sustainable fashion. For more information on the selected questions, refer to 'Appendix 1 – Sustainability Orientation Questions'. Note that as mentioned in the literature review, these questions were found to have a high degree of "internal consistency reliability", "validity", "item loadings", and use robust "psychometric properties" (Shepherd et al., 2009). Thus, respondents are presented with the following prompt to help them respond to this section:

In this section, respond to the statements below based on how much you agree with them. If you agree with the statement on the left completely, select the left-most option. If you agree with the statement on the right completely, select the right-most option. If you agree with both statements to variable extents, select the options in between.

The data collected from this section involves responses to each of the sustainability-related prompts, as well as the randomized order in which they were displayed. Upon completion of these questions, respondents conclude this section of the survey.

Section 6 – Suspicion-Based Biases

As this survey involves a within-subjects design, it would be necessary to control for any potential biases that may have influenced participants' responses. Hence, this section briefly asks respondents whether they feel like they already know what the researchers are studying, along with some further comments. Participants face the following questions:

(1) At this point, do you feel like you know what the researchers are studying?

(2) If you would like to add any further information related to the above question, feel free to use the below text box.

The first question in this section is a simple yes, maybe, or no choice. The second question is an optional open text field that allows respondents to add any information they feel would be relevant to their previous response. Upon completion of this question, respondents move on to the final section of this study.

Section 7 – Demographic Information

This final section collects standard demographic information that has either been shown to statistically influence responses, as shown in the above literature review (e.g., age, gender, income, etc.), or would be relevant to this specific study. Hence, respondents are asked whether they shop for their own clothing items, their age, gender, employment status, household income, country of residence, highest level of education, and university name (if any). After completing this section, respondents face two final questions related to the incentives provided in the beginning of this study. They are asked if they would like to participate in the raffle, for two chances to win EUR 50 in any voucher of their choice. They are also asked to provide their email address, which will only be used to contact them if they win the raffle. This information will be deleted once the rewards have been distributed. Furthermore, it is not mandatory for respondents to respond to these questions in order to participate in the study. After completing these final questions, respondents have concluded the entire study.

For more detail on what the survey looked like to respondents, refer to 'Appendix 4 – Survey Questions'.

Randomization

From the participants' side, there is no necessary randomization required in this study. However, from the side of the survey, there are many elements that have been randomized. This includes the randomization of T-shirt images, sustainability descriptions, and the order in which they are presented in a scenario.

The T-shirt images were retrieved from Kusawa (2022). These images were published under the CC0 public domain license, where any party can use the images for any purpose including commercial, without any permissions. Though the original database includes 1993 images of T-shirts, only 15 were used in this study (i.e., 5 in each of the three scenarios). These T-shirts were either black or grey, had no distinguishing features, no branding, no textures, no patterns, and a standard white background. In this manner, the images of the T-shirts acted as additional filler information to the survey, that also added to its interactivity with the respondents. This specific selection was also done in order to minimize any possible preferential bias that may occur resulting from various specific features of the T-shirts. For more detail on the chosen T-shirt images, refer to 'Appendix 2 – T-Shirt Images'. When each of the three scenarios were presented to respondents, they faced a random selection of five images from the previously chosen group of 15. This randomization was performed within the survey platform with the help of JavaScript.

Next, the sustainability descriptions were also randomly allocated across the three scenarios in this survey. Initially, three descriptions were formulated for each sustainability level, for a total of 15 descriptions (e.g., three 'A' level descriptions, three 'B' level descriptions, etc.). Using similar JavaScript as in the randomization of the T-shirt images, each scenario used one randomly chosen sustainability description for each sustainability score (e.g., in each scenario, there was one 'A' level description, one 'B' level description, etc.). These descriptions were selected once and not repeated in any other scenario faced by a single respondent. One must note that though the sustainability description was always visible to the participant, the sustainability score was only presented in scenarios 2 and 3. For further details on the specific sustainability descriptions used, refer to 'Appendix 3 – Sustainability Descriptions'.

Lastly, the randomization of the order of items in a scenario was performed. This was done to minimize the possibility of any anchoring biases that may occur by systematically displaying the most sustainable option at the top of the page, and the least sustainable option at the bottom.

This was simply performed on the survey platform by enabling the choice randomization option, and did not require any further specific code.

Transformed Variables

This study only involves one variable that will be transformed for analytical purposes. The data collected from ‘Section 5 – Sustainability Orientation’ will be converted from six Likert-scale responses, into a single index that is a percentage; higher values would indicate a greater orientation toward sustainability. This transformation is coherent with that originally performed by Shepherd et al. (2009).

Data Collection Procedures

Participants in this study will be recruited through academic routes given its ease of access, high conversion rate, and its cost effectiveness compared to alternatives. The survey will be communicated to potential respondents through paths such as academic platforms (e.g., internal university mailing lists) and professional networks (e.g., LinkedIn). Specifically, the Vienna University of Economics and Business’ internal ‘Umfragen’ mailing list will be used to distribute the survey across the university. Other internal and professional networks at the Católica Lisbon School of Business and Economics will be used to gather participants from this university. For further information on a sample of how the survey was shared to participants, refer to ‘Appendix 5 – Survey Distribution Email’.

Moreover, the previously mentioned raffle would also be communicated to respondents, in order to achieve higher conversion and completion rates. This involves two €50 coupons, to be distributed from companies based on participants’ preference. The winners of this raffle will be selected once the survey closes, and will be notified with the email address they provide at the end of the survey. This information will be subsequently deleted in order to ensure complete anonymity of responses.

In addition, a pilot study will be conducted, prior to distributing the survey across the university. This will be done to ensure that the survey functions as expected, data is collected appropriately, questions are understandable, and the survey is not too long.

Sample Size Selection

The targeted sample size will be 378 participants. Given that there will be a rate of non-response and non-completion, up to 450 participants will be contacted to achieve this figure. Nonetheless, given that time and resource constraints may limit the extent of effective data collection during

the period of this thesis' development, there may be fewer respondents than expected. The survey should continue to be distributed until at least 200 responses have been collected.

This target sample size of 378 was selected after conducting an indicative power law computation on the target population. This includes currently enrolled university students, including but not limited to those from the Católica Lisbon School of Business and Economics as well as the Vienna University of Economics and Business. Other characteristics are open to variation and are not the target of this study (e.g., gender, income, residence). With this target population in mind, one should note that the Vienna University of Economics and Business has around 21000 current students (WU, 2021), and the Católica Lisbon School of Business and Economics has about 2000 (CLSBE, 2022). Note that such figures do not exclude those under the age of 18, though this case is typically rare given the nature of university education. With a targeted confidence interval of $\pm 5\%$, a confidence level of 95%, and a standard deviation of 0.5, one is able to retrieve the above target sample size of 378 participants. This was computed as follows:

$$Sample\ size = \frac{\frac{z^2 \times p \times (1 - p)}{e^2}}{1 + \left(\frac{z^2 \times p \times (1 - p)}{e^2 \times N}\right)}$$

$N = \text{population size}; e = \text{margin of error}$
 $z = \text{confidence level } Z - \text{score}; p = \text{standard deviation}$

$$Sample\ size = \frac{\frac{1.96^2 \times 0.5 \times (1 - 0.5)}{0.05^2}}{1 + \left(\frac{1.96^2 \times 0.5 \times (1 - 0.5)}{0.05^2 \times 23000}\right)}$$

$$Sample\ size = 377.849$$

As discussed in this paper's literature review, there are very few studies that implement the methodology used in this paper, and thus, some parameters used to compute the target sample size were based on mathematical rules (e.g., the standard deviation of 0.5 was selected as it was quoted as being a conservative starting point if lacking previous studies to be based on, and also as it yielded the highest target sample size which would help improve this study's statistical analyses) (Qualtrics, 2022).

Data Exclusion

Outliers will be considered as those that are more than three standard deviations from average responses. Outliers will be further examined to explore whether outlier clusters emerge. If this is the case, then separate analytical models will be developed for such clusters, so as to examine

the characteristics of these particular responses deeper. Alternatively, if outliers emerge as one-off instances, they will be excluded from further analyses.

Next, an attention check will be included in the survey to ensure that respondents are reading through the questions, and considering their responses before providing it. This attention check will be concealed in ‘Section 5 – Sustainability Orientation’, as it is the only part of the study where such a question can be placed. Respondents that do not pass this attention check will also be excluded from further analyses.

Those that do not complete the survey in its entirety will also have their response excluded from further analyses. Note that surveys that have completed all sections, except the final part pertaining to the raffle reward, will still be included in the study. This is because the raffle is an optional section that was included only for the purpose of incentivizing participation.

Findings

This section explores the results that were uncovered after executing the study. Note that prior to the distribution of this survey, a pilot study was conducted. Other than the coding of results, there were no major adjustments necessary to the survey design. Additionally, note that information regarding the data processing, survey, and T-shirts are available at: https://osf.io/2h8sr/?view_only=c3a0b023babd404d80a7ef7f91bc56d2.

Summary Statistics

After distributing the survey, a total of 542 responses were collected, of which 342 adhered to the requirements of this study (i.e., consented to participate, passed the attention test, at least 18 years old, and not full-time employed outside university). Table 1 below, displays the summary statistics regarding the participants’ demographic data. It should be evident that there is a balance of male and female respondents, though a very small representation of non-binary or third gender participants. Furthermore, most respondents were students; this should not be surprising given that academic and professional routes were used to contact potential participants. The distribution of annual income is highly concentrated on the less than €25000 category, with very few participants reporting higher levels, alongside another majority that choose not to disclose their earnings. Moreover, many participants reside in Austria, a few in Portugal, and a very small proportion spread across the rest of the world. This distribution took place because of the wide range of participants that were reached using the Vienna University of Economics and Business’ ‘Umfragen’ mailing list. Though academic and professional routes to participants were also used at the Católica Lisbon School of Business & Economics, many

individuals did not respond to the survey. Next, given the nature of university students, most participants had attained secondary education (common amongst new Bachelor's students), had done some university but no degree yet (common amongst ongoing Bachelor's students), or had a Bachelor's degree (common amongst new or ongoing Master's students). Similar to the abovementioned reasoning involving the 'Umfragen' mailing list, most participants were currently studying at the Vienna University of Economics and Business. Lastly, when asked whether they felt they knew what the survey was examining, respondents predominantly replied saying 'Maybe' or 'Yes', whilst a very small minority responded saying 'No'. One should consider the limitations of this finding, and how it may influence this study's conclusions.

Table 1 - Respondent Demographic Summary Statistics

	<u>Category</u>	<u>Min.</u>	<u>Q1 (25%)</u>	<u>Q2 (50%)</u>	<u>Mean</u>	<u>Q3 (75%)</u>	<u>Max.</u>	<u>Percent</u>
	Age	18	21	23	22.81	24	45	-
	Purchases clothes for themselves (Yes)							96.78%
Gender	Female							54.68%
	Male							43.27%
	Non-binary/third gender							0.88%
	Prefer not to say							1.17%
Employment Status	Student							82.16%
	Employed part time							14.62%
	Unemployed looking for work							2.34%
	Unemployed not looking for work							0.88%
Annual Income	Less than €25000							45.91%
	€25000-€49999							12.87%
	€50000-€99999							8.77%
	€100000-€199999							3.22%
	More than €200000							0.58%
	Prefer not to say							28.65%
Residence	Austria							83.33%
	Portugal							7.60%
	Other							9.07%
Highest Education Attained	Primary							0.58%
	Some Secondary							0.29%
	Secondary							21.64%
	Vocational or Similar							3.22%
	Some University but no degree							25.73%
	University – Bachelors							40.06%
	Graduate/Professional Degree							7.02%
	Prefer not to say							1.46%
University Name	Católica Lisbon School of Business & Economics							10.53%
	Nova School of Business and Economics							1.46%
	Vienna University of Economics and Business							73.10%
	Other							14.91%
Suspicion	Yes							47.07%
	Maybe							49.12%
	No							3.80%

Next, Figure 3 provides summaries of participants' willingness to pay in Euros across scenarios 1 and 2. Recall that in scenario 1 respondents observe only sustainability descriptions, and in scenario 2 respondents additionally observe sustainability scores for each T-shirt. Scenario 3 is not included here as it only collects data on respondents' final choice, and does not have questions regarding willingness to pay. This will be discussed in the following paragraph.

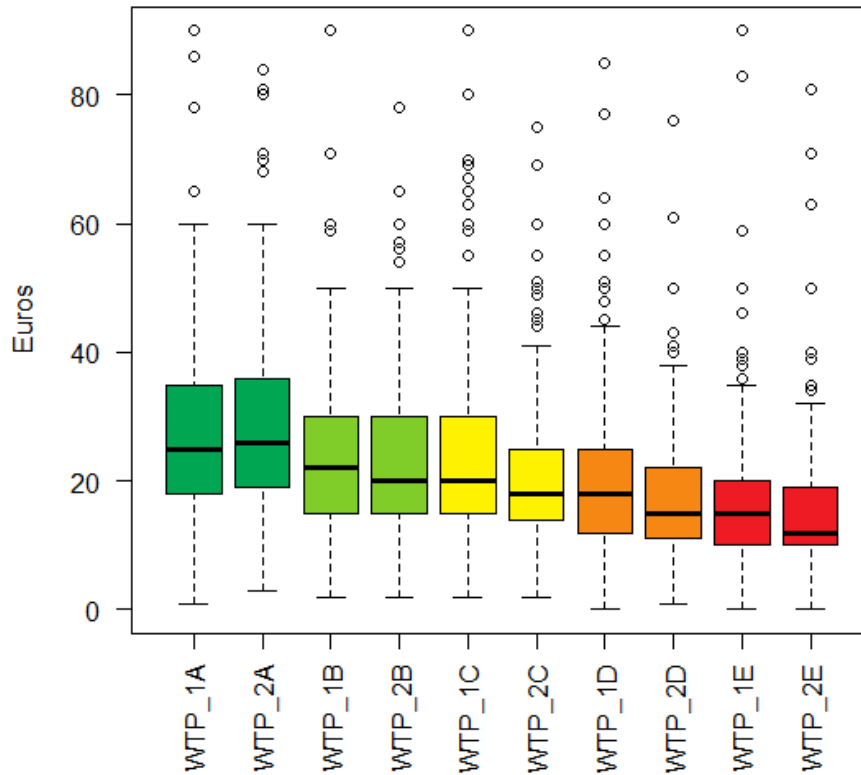


Figure 3 - Box plots of willingness to pay across scenario 1 and 2 for T-shirts of varying sustainability levels. Each colour represents a differing sustainability level, from green to red symbolizing A to E graded products respectively. The y-axis is willingness to pay in Euros. The x-axis presents each scenario-product combination of willingness to pay.

Across Figure 3's x-axis are the various scenarios and sustainability levels faced by respondents. For instance, 'WTP_1A' contains information about the A-graded items displayed to respondents in scenario 1. Similarly, 'WTP_2A' contains information about the A-graded items displayed to respondents in scenario 2. The other columns are structured similarly. For ease of reference, each sustainability level has been color coded from green (for A-graded items) to red (for E-graded items). From the diagram, it is evident that as the sustainability score worsens from 'A' to 'E', respondents' median willingness to pay drops from about €25 to €12. One should also note that the size of the box decreases as sustainability scores worsen, displaying that the distribution of responses becomes less spread for T-shirts with worse levels. Additionally, when comparing within sustainability levels, it should be noted that only for A -

graded items does the provision of sustainability scores (scenario 2) improve willingness to pay. In all other cases, scenario 2 can be seen as having a lower median willingness to pay within each sustainability level. Note that respondents' willingness to pay were bounded between €0 and €100 with the survey's sliding scale, therefore constraining the breadth of the box plots. Detailed information regarding the summary statistics of respondents' willingness to pay in scenarios 1 and 2 is in 'Appendix 6 – Summary Statistics of Willingness to Pay'.

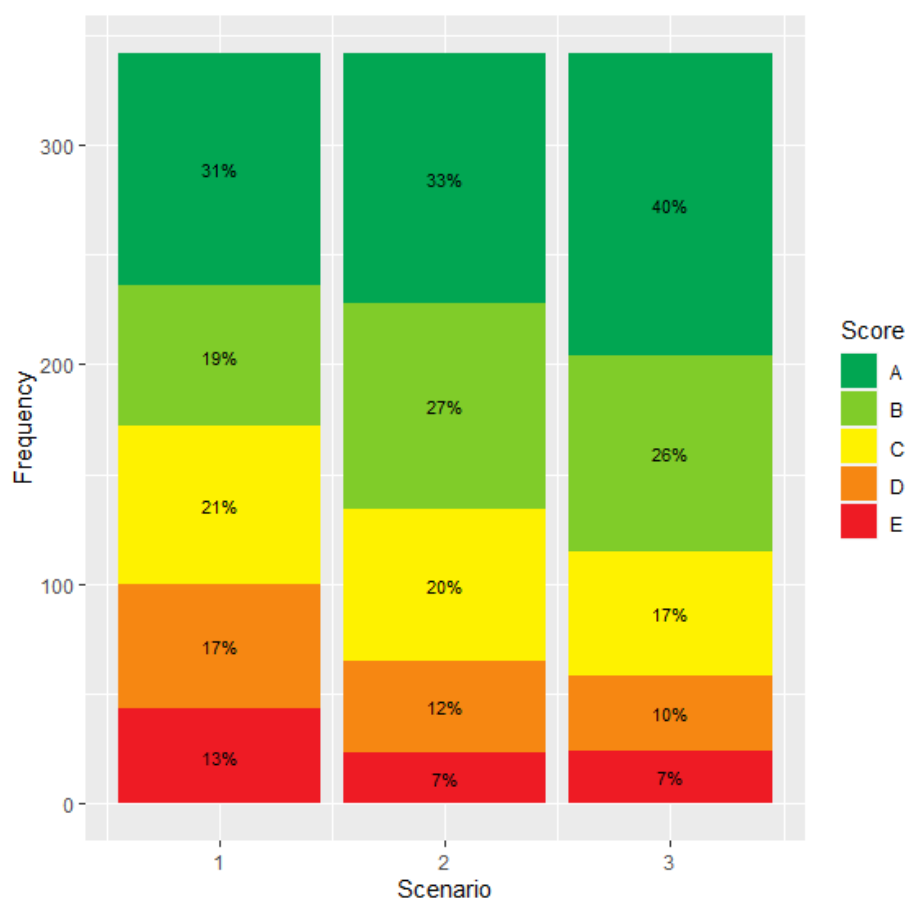


Figure 4 - Stacked bar chart of respondents' chosen sustainability level across all three scenarios. Each of the colours represent a particular sustainability score. This ranges from green to red, for A to E graded products respectively. The y-axis is the frequency of responses, with a maximum of 342. The x-axis presents each of the three scenarios in order.

Next, in consideration of the distribution of chosen T-shirt descriptions across the three scenarios, figure 4 provides a summarized overview of this data in a stacked bar chart. In this figure, one observes the three scenarios on the x-axis, and the frequency of the chosen sustainability score on the y-axis. Similar to the previous figure, the colors of each bar are coordinated with the chosen sustainability score. From this figure, it is evident that overall, more sustainable items are predominantly favored by respondents in comparison to less sustainable alternatives. Across all three scenarios, A-graded items are the most frequently chosen items, whilst E-graded items are the least chosen. Interestingly, when moving from

scenario 1 to scenario 2 (i.e., when displaying sustainability scores), the portion of respondents choosing C-graded, D-graded, and E-graded items fell by 1, 5, and 6 percentage points respectively. Oppositely, the portion of respondents choosing A-graded or B-graded items rose by 2 and 8 percentage points. Hence, it can be seen that the introduction of this information seems to shift respondents to more sustainable alternatives, without controlling for other factors. Moving from scenario 2 to 3 (i.e., maintaining sustainability scores but adding coupons for A-graded or B-graded items in scenario 3), there was a similar shift in respondents' choices. B-graded, C-graded, and D-graded items fell by 1, 3, and 2 percentage points respectively, whilst E-graded items did not change. However, the portion of respondents choosing A-graded items grew by 7 percentage points. It should be noted that the post-coupon price for both A-graded and B-graded items in scenario 3 were exactly the same as those provided in scenario 2 by respondents. Hence, the effect of the changed preference in scenario 3 can be strongly attributed to the coupons. This will be tested analytically in later sections. Overall, it can be seen that as more sustainability information and incentives to purchase sustainably are introduced, respondents choose more sustainable products, not controlling for other factors.

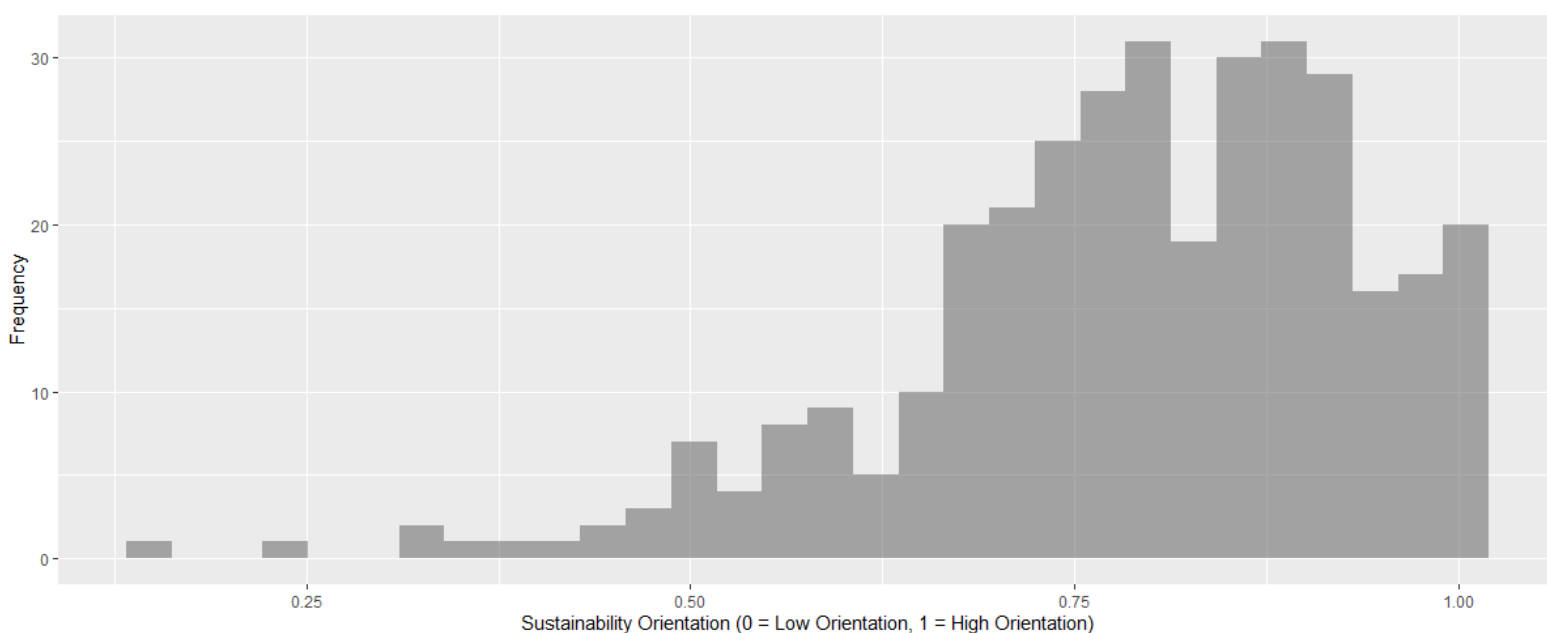


Figure 5 – Histogram of sustainability orientation.

The y-axis presents the frequency of any of the sustainability orientation values. The x-axis presents the range of sustainability orientation values, from 0 to 1, inclusive.

Lastly, figure 5 depicts the distribution of sustainability orientation results when computed from the previous sustainability questions. This was performed by taking the sum of values to the previous 5 questions, and dividing them by the maximum possible value of 35 (i.e., scoring 7 on each of the 5 questions). This results in an index between 0 and 1, where 1 demonstrates a

high orientation to sustainability, whilst 0 is a low orientation to sustainability. From this figure, it can be seen that the distribution is strongly concentrated on higher values. Similar to the previous figure, this diagram seems to present respondents as typically more focused on sustainability than not, given that the median value is already relatively high compared to the range of the scale. For more details on the statistics behind this figure, see ‘Appendix 7 – Summary Statistics of Sustainability Orientation’. Additionally, for more information regarding the effectiveness of the various randomization techniques that were employed in this study, refer to ‘Appendix 8 – Randomization Checks’.

Exploratory Analyses

Respondent Suspicion

From the 342 participants in this study, 43 chose to provide further information on whether they felt that they knew what the researcher was studying. This information was collected through an open and optional text box where participants could type anything. From these individuals, 11 provided information that was unrelated to the purpose of this question (e.g., comments about the survey, and personal information that was deleted to preserve their privacy), 7 provided incorrect predictions about what the researchers were studying (e.g., effect of consumption on the climate, clothes’ effect on the environment, sustainable production methods), and 6 were aligned with the actual purpose of the study, but were vague (e.g., related to marketing and sustainability, and consumption behavior in the fashion industry). The remaining 19 responses were detailed and aligned with the underlying purpose of the authors (e.g., consumer preferences and willingness to pay with sustainable products, and consumer behavior when presented with sustainability labels). For more information regarding these statements provided by participants, see ‘Appendix 9 – Text Responses Regarding Participant Suspicion’

Overall, it can be observed that by the end of the study (i.e., when participants were asked if they knew what the study was about), some participants were able to broadly state the underlying purpose of the study. This point is of particular importance in further research studies that aim to explore this domain in further depth.

Price Premium

Although previous sections have already explored the difference in willingness to pay across different sustainability levels in scenario 1 and 2, figure 6 converts these values into a price premium. This premium is computed with E-graded items as the benchmark (i.e., how much

more expensive or cheaper are other graded T-shirts compared to E-graded T-shirts). From this figure, one observes that as items become more sustainable, they capture a higher willingness to pay premium compared to less sustainable alternatives. Similar to the previous discussion about price, this figure also shows that some results from scenario 2 (i.e., WTP_2A and WTP_2B) have higher premiums than in scenario 1. However, this feature becomes minimal when considering C-graded and D-graded items. Further detail with regards to the statistics behind this figure is available in ‘Appendix 10 – Willingness to Pay Premium Statistics’.

What should be most important is the value of this premium across all sustainability levels. A-graded items have an average premium of 100.15% in scenario 1 (i.e., with sustainability descriptions) and 159.70% in scenario 2 (i.e., with sustainability scores). This trend is also evident with B-graded items, with an average premium of 77.23% in scenario 1 and 100.86% in scenario 2. C-graded and D-graded items do not have differences in their premiums across the two scenarios, with about 69% and 37% respectively.

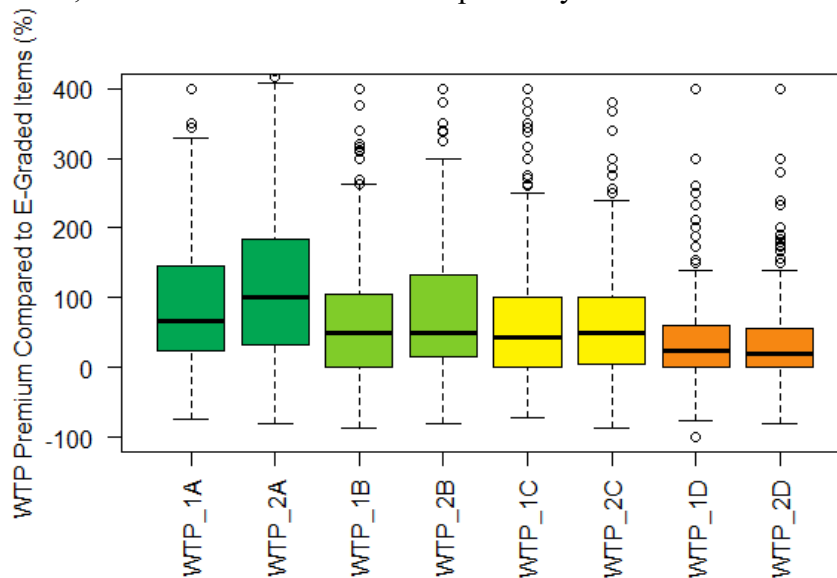


Figure 6 - Percentage premium for T-shirts with varying sustainability levels, compared to E-graded T-shirts. Each of the colours represents a differing product sustainability level, ranging from green to orange, for A to D graded products respectively. The y-axis is the willingness to pay premium compared to E graded products as a percent. The x-axis displays each of the scenario-product combinations and their willingness to pay.

In addition to the exploratory analyses conducted here, further information regarding the influence of various survey-related features (i.e., order, T-shirt images, and T-shirt colors) on participants’ willingness to pay and chosen product is available in ‘Appendix 11 – Influence of the Survey’s Structure on Outcomes’.

Analytical Models & Tests

Hypothesis 1a – Orientation toward Sustainability

As the first hypothesis developed for this study, it is stated as follows: ‘a higher preference for sustainability is positively related to sustainable purchasing decisions, in situations with sustainability descriptions as well as sustainability scores.’ This hypothesis involves a dependent variable with 5 ordered categorical levels (i.e., ‘A’, ‘B’, ‘C’, ‘D’, and ‘E’ graded items), and the most appropriate model to use is an ordered logit regression. Though alternatives like generalized additive models could be used, as they require larger datasets to be reliable, they have not been implemented here (Greene, 2018).

Assumption Checks

Prior to developing the model, one should note that the observations used in this dataset will be independent of each other, as each response was provided by a unique participant in the study, and their data was not replicated in multiple responses. Adhering to this statistical assumption would help ensure that the models’ coefficients are not biased. Furthermore, the models used in this and following sections will minimize any multicollinearity. ‘Appendix 12 – Correlation Matrix for Numeric Variables in the Study’, visually represents the correlations between all the numeric variables examined. Given that data related to willingness to pay will be the dependent variable in later examinations, concerns about multicollinearity are not major.

Model Analysis

Table 2 represents the regression outputs from ordered logistic regressions, with participants’ chosen sustainability level (i.e., the chosen A-graded to E-graded items) as the dependent variable. Across all six models, the independent variable of interest is participants’ ‘sustainability orientation’. The models have been divided into three categories: (1) models 1 and 2 are the minimal models without any control variables, (2) models 3 and 4 are the maximal models with every possible control variable measured, and (3) models 5 and 6 are the final models to be used in this paper. Furthermore, models 1, 3, and 5 focus on data from scenario 1 (i.e., sustainability descriptions for each T-shirt) whilst models 2, 4, and 6 focus on data from scenario 2 (i.e., sustainability scores for each T-shirt). The intercepts at the bottom of the figure display the cut points between each of the five levels (i.e., ‘A’, ‘B’, ‘C’, ‘D’, and ‘E’ graded items, with ‘A’ and ‘E’ having the highest and lowest interval respectively). Note that all coefficients have not yet been exponentiated (i.e., $e^{coefficient}$) in the figure. Concerning control variables, one observes that there are not many that are statistically significant at the 95%

confidence level, especially those models based on scenario 1. However, with reference to the maximal regressions (i.e., models 3 and 4), some control variables have been included in the final regression (i.e., models 5 and 6) as they add to the predictive power of the model, compared to other controls. Looking at these final models and considering reported gender, male participants have a 1.670 (i.e., $e^{0.513}$) greater odd of choosing a sustainable T-shirt compared to any of the combined less sustainable levels, compared to female participants in scenario 2. This value is statistically significant beyond the 95% confidence level, though the same variable's coefficient for scenario 1 is insignificant. Other control variables in these final models are also insignificant at a 95% confidence level.

Considering the variable of interest related to this section's hypothesis, 'sustainability orientation' is a continuous index with values between and including 0 and 1. This measures the extent to which a participant is oriented toward sustainability based on the aforementioned Likert-scale questions. Given that this hypothesis implies a one-sided right tail examination, it can be seen that both coefficients are statistically significant beyond the 95% confidence level; note that the significance stars calculated in table 2 involve a two-sided examination. Considering this hypothesis, the coefficient of 'sustainability orientation' has a one-sided p-value of 0.046 for model 5 and 0.005 for model 6. This demonstrates that there is a significant positive relationship between participants' sustainability orientation and their propensity to choose any of the more sustainable options rather than the less sustainable alternatives. In scenario 1, a participant that has a very high sustainability orientation of 1, compared to a participant with a very low sustainability orientation of 0, has a 3.158 (i.e., $e^{1.150}$) greater odd of choosing a more sustainable product than a less sustainable one, holding all other variables constant. Similarly, in scenario 2, a participant with a sustainability orientation of 1, compared to one with an orientation of 0, has a 6.385 (i.e., $e^{1.854}$) greater odd of choosing a more sustainable product than a less sustainable alternative, holding other variables constant. Reflecting upon the initially stated hypothesis 1a, it should be clear that there is a statistically significant positive relationship between a participant's sustainability orientation and the odds that they would choose a more sustainable product, compared to a less sustainable one, in both scenarios. This is in accordance with the myriad of research that also highlight similar nuances with regards to one's sustainability orientation and their propensity to choose sustainable products (Hojnik et al., 2019; Huang et al., 2014; Kautish et al., 2019; Li et al., 2020; Schlegelmilch et al., 1996; Sirakaya-Turk et al., 2013; Wang et al., 2020; Zhuang et al., 2021).

	Dependent Variable: Chosen Item (A to E Graded Item)					
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
	(1)	(2)	(3)	(4)	(5)	(6)
Sustainability Orientation	0.909 (0.667)	1.580** (0.690)	1.060 (0.745)	1.816** (0.797)	1.150* (0.682)	1.854** (0.723)
Suspicion.Maybe			-0.095 (0.211)	0.023 (0.210)		
Suspicion.No			0.261 (0.572)	-0.015 (0.591)		
BuysOwnClothes.No			1.126* (0.681)	0.450 (0.666)	1.054 (0.663)	0.350 (0.644)
Age			0.002 (0.045)	0.044 (0.045)		
Gender.Male			-0.094 (0.211)	0.492** (0.216)	-0.025 (0.200)	0.513** (0.205)
Gender.Non-binary/third gender			0.414 (1.055)	-0.265 (0.950)	0.450 (1.006)	-0.050 (0.914)
Gender.Prefer not to say			0.164 (1.259)	0.758 (0.950)	-0.045 (1.283)	0.493 (0.895)
Employment.Part Time			0.145 (0.296)	0.011 (0.312)		
Employment.Unemployed and searching			1.219* (0.724)	0.147 (0.754)		
Employment.Unemployed and not searching			-0.162 (1.072)	0.873 (1.174)		
AnnualIncomeEUR.25k-49k			-0.024 (0.335)	-0.073 (0.332)		
AnnualIncomeEUR.50k-99k			0.254 (0.373)	0.234 (0.366)		
AnnualIncomeEUR.100k-199k			-0.029 (0.571)	-0.502 (0.607)		
AnnualIncomeEUR.200k+			-0.642 (1.089)	-0.205 (1.493)		
AnnualIncomeEUR.Prefer not to say			-0.234 (0.251)	-0.237 (0.255)		
Residence.Portugal			-0.910 (0.735)	0.086 (0.703)		
Residence.Other			-0.598 (0.443)	-0.422 (0.440)		
HighestEduc.Some secondary			-1.436 (2.004)	0.203 (1.946)	-2.424 (1.958)	-0.873 (1.881)
HighestEduc.Secondary			-0.662 (1.302)	1.343 (1.195)	-1.260 (1.299)	0.964 (1.165)
HighestEduc.Vocational			-0.675 (1.410)	1.594 (1.314)	-1.406 (1.379)	1.392 (1.257)
HighestEduc.Some university			-0.270 (1.301)	1.372 (1.198)	-0.880 (1.296)	1.042 (1.164)
HighestEduc.Bachelors			0.028 (1.309)	1.507 (1.206)	-0.579 (1.290)	1.245 (1.157)
HighestEduc.Graduate or professional degree			-0.985 (1.371)	1.559 (1.276)	-1.461 (1.332)	1.372 (1.206)
HighestEduc.Prefer not to say			-0.930 (1.613)	0.706 (1.452)	-1.708 (1.564)	0.497 (1.388)
University.Nova SBE			0.531 (0.915)	0.285 (0.897)		
University.WU Vienna			-0.719 (0.647)	0.024 (0.617)		
University.Other			-0.927 (0.638)	-0.749 (0.617)		
Intercept.E D	-1.225** (0.547)	-1.401** (0.574)	-2.281 (1.784)	1.160 (1.732)	-1.981 (1.390)	0.112 (1.284)
Intercept.D C	-0.166 (0.539)	-0.210 (0.556)	-1.177 (1.779)	2.385 (1.729)	-0.895 (1.385)	1.321 (1.279)
Intercept.C B	0.732 (0.540)	0.811 (0.557)	-0.229 (1.779)	3.446** (1.732)	0.036 (1.385)	2.366* (1.283)
Intercept.B A	1.524*** (0.544)	1.955*** (0.564)	0.610 (1.781)	4.655*** (1.740)	0.856 (1.387)	3.540*** (1.290)
Observations	342	342	342	342	342	342

Table 2 - Ordered logistic regressions, examining the influence of participants' sustainability orientation on their chosen item, with various control variables. Each column of variables pertains to a particular scenario, with (1) and (2) being the minimal models, (3) and (4) being the maximal models, and (5) and (6) being the final models.

Note:

* p<0.1; ** p<0.05; *** p<0.01

Robustness Checks

To consider the robustness of these values, some analyses have been conducted, including Hauck-Donner checks, P-value histograms, coefficient histograms, and accuracy tests. Firstly, both of the models did not have any Hauck-Donner effects identified in any of their estimates. This implies that there are no coefficients that are very large (i.e., with an absolute value greater than 10) whilst simultaneously being insignificant. This also shows that the predictors cannot predict with near-perfect accuracy the category of the dependent variable.

Next, given the previously referenced minimal and maximal regression models, it is possible to create a list of all possible models that lie between these extremes, thereby involving every possible combination of predictors. ‘Appendix 13 – P-Value Histogram for Sustainability Orientation’ displays the P-values for the ‘sustainability orientation’ predictor across all possible models. The black vertical line displays this study’s confidence level at a P-value of 0.05; anything less than this P-value will be considered statistically significant. The red vertical line displays model 5’s sustainability orientation P-value for scenario 1 (0.046), whilst the blue vertical line does the same for scenario 2 (0.005). Looking at the distribution of the P-values for scenario 1, one observes that it is spread widely across both the significant and insignificant partitions, with a larger majority in the insignificant section. Hence, when considering the robustness of scenario 1’s sustainability orientation coefficient, it should be approached with caution. Looking at the P-values for scenario 2, one observes that all possible models provide P-values that are within the region of significance, thereby implying that these coefficients may be considered strongly reliable.

Furthermore, building upon a similar notion, ‘Appendix 14 – Coefficient Histogram for Sustainability Orientation’ displays the distribution of exponentiated coefficients for the sustainability orientation predictor across all possible models. Similar to the previous analysis, the red vertical line displays the above model’s exponentiated sustainability orientation coefficient for scenario 1 (3.158), whilst the blue line displays the same for scenario 2 (6.385). It should be noted that these lines do not intersect their respective histograms at the edges of their distribution, and are approximately centralized within their frequencies. This demonstrates that given all possible distributions with the data collected from this study, the final coefficients displayed in the above final models are not at the extremes of the possible values collected. Hence, they may be considered reliable. Interestingly, the distribution of scenario 2’s coefficients involves two peaks, where the first is lower than where the current coefficient lies. Upon analysis of the underlying models used to develop this diagram for scenario 2, it was

found that including gender as a control variable led to the elevated distribution with an average exponentiated sustainability orientation coefficient of 6.382. This was contrasted to models that did not control for gender, represented by the lower distribution with an average exponentiated coefficient of 4.643.

Lastly, accuracy tests were developed in order to examine the predictive power of the above models on a test dataset. Temporarily, the main dataset was randomly split 75% into training data and 25% into testing data. Similar to the above analysis, given the minimal and maximal regression models previously developed, every possible iteration was formulated based on the training set, and examined on the test set. Note that this means that the regression coefficients may change to a minor extent due to the partially smaller training set and by random chance. A histogram depicting the distribution of the models' predictive power has been placed in 'Appendix 15 – Predictive Accuracy Histogram for Chosen Item'. The red line represents the predictive accuracy of the final model for scenario 1 (0.291), whilst the blue represents the same for scenario 2 (0.267). Across the distribution of possible model accuracies, it is clear that both models for scenarios 1 and 2 do not lie at the extreme ends of possibilities, implying that the general model is reliable in terms of its expected predictive power. Generally, this demonstrates that the abovementioned final models for scenarios 1 and 2 (i.e., model number 5 and 6) lie within the expected range of predictive power compared to alternative model configurations.

Hypothesis 1b – Orientation toward Sustainability Scores

Concerning the second hypothesis, recall that it was stated as follows: 'respondents have a greater probability of selecting more sustainable options when presented with sustainability scores, compared to only sustainability descriptions'. The examination of this hypothesis requires two models have already been developed and discussed in the previous section. The dependent variable remains the same as before (i.e., the chosen product's sustainability level in scenario 1 and scenario 2), and so does one of the independent variables of interest (i.e., a participant's sustainability orientation). Given that the analysis conducted will mirror that of the previous section, all of the previously adhered to assumptions, discussed examinations, and analyzed robustness checks will also apply here, in addition to the points that will be discussed.

Model Analysis

Building upon the previous section's discussion regarding the impact of individual orientations toward sustainability and with reference to table 2, one observes a large difference between scenario 1 (i.e., sustainability descriptions) and scenario 2 (i.e., sustainability scores). The

exponentiated coefficient for the influence of individual sustainability orientation on chosen product is much larger in scenario 2 than scenario 1. In the case of the above regressions, when moving from a very low sustainability orientation (i.e., 0) to a very high sustainability orientation (i.e., 1), respondents facing sustainability descriptions have a 3.158 (i.e., $e^{1.150}$) greater odd of choosing a high sustainability product than any of the combined lower sustainability products. However, when facing sustainability scores, the same movement from a very low to a very high sustainability orientation leads to a 6.385 (i.e., $e^{1.854}$) greater odd of choosing a high sustainability product than any of the combined lower sustainability products. Given that both figures are statistically significant beyond the 95% confidence level, and holding all other factors constant, introducing sustainability scores doubles the odd that participants choose higher sustainability products than any of the combined lower levels. In addition, though male-reporting participants also have a 1.670 (i.e., $e^{0.513}$) greater odd of choosing a high sustainability product than any of the combined lower ones when facing sustainability scores, it is not possible to compare this to scenario 1 given its insignificance.

Delving deeper into the effect of introducing sustainability scores to compare sustainability across products, table 3 displays three ordered logistic regression with mixed effects (i.e., participants). All three models are setup on the entire dataset, with the addition of the ‘scenario 2’ dummy variable that extracts the effect of sustainability scores on decision making. The dependent variable remains the same as previously discussed (i.e., participants’ chosen item’s sustainability level), with model 1 being the minimal equation without controls, model 2 being the maximal equation with every possible control, and model 3 being the final control as specified in the previous section. Note that the coefficients have not been exponentiated. In the final model, besides statistically significant intercepts, four other coefficients are also significant beyond the 95% confidence level. Sustainability orientation remains significant, as in the previous section, with a greater odd of 4.549 (i.e., $e^{1.515}$) for participants to choose a higher sustainability levels, compared to any of the combined lower ones, when moving from a low (i.e., 0) to a high sustainability orientation (i.e., 1). Similarly, male reporting participants have a 1.266 (i.e., $e^{0.236}$) greater odd of choosing more sustainable items compared to any of the lower levels, compared to female reporting participants. Moreover, participants with a bachelors degree have a 1.469 (i.e., $e^{0.385}$) greater odd of choosing sustainable products rather than any of the less sustainable alternatives, compared to those with a primary education. Importantly, focusing on the ‘scenario 2’ variable, participants in scenario 2 have a 1.513 (i.e., $e^{0.414}$) greater odd of choosing any of the sustainable products than their less sustainable

counterparts. Being statistically significant, one can state that by introducing sustainability scores, participants have a greater odd of choosing sustainable products compared to less sustainable ones when controlling for other factors, thus supporting this section's hypothesis.

	Minimal	Maximal	Final
	(1)	(2)	(3)
Scenario 2	0.412 *** (0.143)	0.410 *** (0.142)	0.414 *** (0.000)
Sustainability Orientation		1.489 ** (0.616)	1.515 *** (0.000)
Suspicion.Maybe		-0.036 (0.170)	
Suspicion.No		0.141 (0.465)	
BuysOwnClothes.No		0.749 (0.521)	0.664 (0.520)
Age		0.025 (0.036)	
Gender.Male		0.194 (0.172)	0.236 *** (0.000)
Gender.Non-binary/third gender		-0.019 (0.808)	0.148 (0.812)
Gender.Prefer not to say		0.536 (0.838)	0.265 (0.825)
Employment.Part Time		0.095 (0.243)	
Employment.Unemployed and searching		0.653 (0.582)	
Employment.Unemployed and not searching		0.263 (0.928)	
AnnualIncomeEUR.25k-49k		-0.056 (0.268)	
AnnualIncomeEUR.50k-99k		0.244 (0.298)	
AnnualIncomeEUR.100k-199k		-0.272 (0.471)	
AnnualIncomeEUR.200k+		-0.583 (0.997)	
AnnualIncomeEUR.Prefer not to say		-0.235 (0.204)	
Residence.Portugal		-0.456 (0.575)	
Residence.Other		-0.529 (0.352)	
HighestEduc.Some secondary		-0.622 (1.660)	-1.594 (1.313)
HighestEduc.Secondary		0.407 (1.025)	-0.123 (0.181)
HighestEduc.Vocational		0.506 (1.116)	-0.010 (0.436)
HighestEduc.Some university		0.612 (1.025)	0.109 (0.171)
HighestEduc.Bachelors		0.852 (1.033)	0.385 *** (0.000)
HighestEduc.Graduate or professional degree		0.302 (1.082)	-0.060 (0.306)
HighestEduc.Prefer not to say		-0.027 (1.244)	-0.556 (0.684)
University.Nova SBE		0.474 (0.731)	
University.WU Vienna		-0.355 (0.507)	
University.Other		-0.872 * (0.505)	
Intercept.E D	-2.307 *** (0.174)	-0.328 (1.433)	-0.852 *** (0.000)
Intercept.D C	-1.103 *** (0.132)	0.875 (1.430)	0.355 *** (0.000)
Intercept.C B	-0.029 (0.119)	1.946 (1.432)	1.433 *** (0.076)
Intercept.B A	1.075 *** (0.131)	3.049 ** (1.437)	2.538 *** (0.096)
Log Likelihood	-1040.311	-1022.677	-1030.606
AIC	2092.621	2113.355	2097.212
BIC	2119.789	2267.305	2178.715
Num. obs.	684	684	684
Groups (RespondentID)	342	342	342
Variance: RespondentID: (Intercept)	0.654	0.429	0.543

*** p < 0.01; ** p < 0.05; * p < 0.1

Table 3 - Ordered logistic regressions with mixed effects (participants), examining the influence of scenarios on participants' chosen item, with various control variables. Each column of coefficients pertains to the (1) minimal model, (2) maximal model, and (3) final model.

Robustness Checks

The coefficients for ‘scenario 2’ remain relatively consistent across the minimal, maximal, and final models (i.e., when exponentiated 1.510, 1.507, and 1.513 respectively). Exploring the robustness of this value further, and mirroring discussions in the previous section, it is possible to generate a list of all possible regressions given various combinations of control variables. This comprehensive modelling was performed, and coefficients of the ‘scenario 2’ variable are visually represented in ‘Appendix 16 – Coefficient Histogram for Scenario 2’. The x-axis displays the various values of the exponentiated ‘scenario 2’ coefficient, whilst the y-axis displays its frequency. With a mean of 1.511, an interquartile range of 0.007, and a standard deviation of 0.006, the coefficients have a small range. The black dashed vertical line represents the final model’s exponentiated coefficient at 1.513 (i.e., $e^{0.414}$). This value is relatively centered within the distribution of values, located at the 64th percentile. Hence, given this information, alongside the narrow range of coefficients, one may consider the above final model’s scenario 2 coefficients as robust.

Hypothesis 2a – Willingness to Pay with Descriptions

Moving on to the next hypothesis in this study, one should recall that it is structured as follows: ‘when presented with sustainability descriptions, the greater the sustainability of an item, the greater will be respondents’ willingness to pay for it’. Implied in this hypothesis is that the dependent variable is respondents’ willingness to pay, and that the independent variable of interest is the item’s sustainability level. Hence, the most appropriate model to be used in this circumstance involves a multiple linear regression with mixed effects.

Assumption Checks

Before delving into the model, it is of paramount importance that various assumptions behind this model be verified for the upcoming conclusions to be considered reliable. Firstly, of the possible independent variables that will be included in this model, only two are numeric and require a verification of their linear relationship with the dependent variable. ‘Appendix 17 – Linear Relationship Checks (Scenario 1)’ visually depicts the relationship between participants’ sustainability orientation and age, with their willingness to pay, on the left and right figures respectively. The points’ colors have been categorized according to the sustainability level of the item (i.e., from ‘A’ to ‘E’ inclusive). It can be observed in both diagrams that a best-fit line involving either sustainability orientation or age, as well as any item sustainability level, has an R-squared figure of approximately zero. In combination with a visual inspection of the figures,

it should be noted that there is no clear linear relationship between the variables and willingness to pay. Though one may state that this is indicative of no linear relationship between the predictors and willingness to pay, it should also be noted that there is no evidence of a non-linear relationship in the data. Hence, the upcoming analyses may be considered reliable in the context of a linear relationship (or lack of a non-linear relationship). Furthermore, with reference to the previously mentioned ‘Appendix 12 – Correlation Matrix for Numeric Variables in the Study’, there is no multicollinearity.

Moving forward, in consideration of the minimal, maximal, and final models that will be developed below, it is necessary to first examine assumptions related to their residuals. Whilst examining the variance of residuals alongside fitted values, it was evident that a typical funnel-shape was emerging, leading to the violation of this model’s assumption (i.e., errors have constant variance). After a log-transformation on the dependent variable (i.e., willingness to pay), such patterns stopped emerging; note that it was necessary to remove four participants from the analysis as they provided willingness to pay values with zeros. ‘Appendix 18 – Constant Residual Variance Checks (Scenario 1)’ displays this constant variance across all three models that will be discussed below. Given the complexity of this mixed linear model, one may use these diagrams to confidently state that the residual’s variance across the range of the fitted values were relatively constant, thereby adhering to this assumption for the model.

Furthermore, when checking the independence of the model’s residuals from other numeric variables, there were no significant patterns observed. ‘Appendix 19 – Independent Residuals Checks (Scenario 1)’ visually displays this lack of relationship, given by the vast spreads of residuals for all three models when combined with participants’ sustainability orientation and age. Furthermore, correlations between these variables and the residuals are approximately zero across all combinations. Hence, one may state that the residuals derived from the models that will be discussed, are independent from other numeric variables in the model.

The final assumption check to be performed concerns the distribution of residuals for each of the models. Ideally, a normal distribution should be approximated by the residuals for the models to be considered reliable. ‘Appendix 20 – Normal Distribution of Residuals Checks (Scenario 1)’ presents a Q-Q plot for each of the three models. With the red line indicating a perfectly normal distribution, it is evident that across the vast majority of residuals, especially those in the center, a normal distribution is well adhered to. This is the case across the minimal, maximal, and final model. Thus, one can state that the residuals derived from these models are

normally distributed, thereby adhering to the final major assumption of this section. Furthermore, no major outliers were identified in the dataset.

Model Analysis

Having adjusted the data to adhere to all of the previously mentioned assumptions, table 4 displays the three models to be discussed in this section: (1) the minimal model only with the items' sustainability level, (2) the maximal model with all possible control variables, and (3) the final model with selected control variables. All the models presented here are multiple linear regressions with mixed effects (i.e., participants) that have a log of respondents' willingness to pay as the dependent variables. These models have been setup using data exclusively from scenario 1 (i.e., sustainability descriptions).

Upon examination of the maximal model's control variables, it is evident that other than the independent variables of interest, sustainability orientation and the male gender are statistically significant beyond the 95% confidence level. For this reason, they should be included in the final model given their significant influence on outcomes. The vast majority of other control variables are insignificant. In the final model, sustainability orientation and the male gender are still statistically significant beyond the 95% confidence level, with a coefficient of 0.517 and 0.166 respectively. With a log-transformed dependent variable, these values need to be exponentiated for further interpretation. Hence, it is observed that as individual sustainability orientation moves from zero (i.e., very low) to one (i.e., very high), there is a 67.699% (i.e., $(e^{0.517} - 1) \times 100$) increase in participants willingness to pay, with all other factors remaining constant. Furthermore, compared to female respondents, male respondents have an 18.057% (i.e., $(e^{0.166} - 1) \times 100$) greater willingness to pay for items, controlling for other factors. One should note that the selection of this specific configuration for the final model was due to the significance of some control variables, as well as the high predictive power of the model compared to others. 'Appendix 21 – Predictive Accuracy Histogram for Scenario 1's WTP' visually depicts the distribution of predictive accuracy of all possible models with every combination of control variables. When evaluated against a test set, this final model had an r-squared value of 0.596, indicated by the black dashed vertical line, which is the highest among models with the sustainability orientation and gender control variables.

	Dependent variable:		
	logWTP		
	Minimal (1)	Maximal (2)	Final (3)
ItemA	0.545*** (0.025)	0.545*** (0.025)	0.545*** (0.025)
ItemB	0.424*** (0.025)	0.424*** (0.025)	0.424*** (0.025)
ItemC	0.397*** (0.025)	0.397*** (0.025)	0.397*** (0.025)
ItemD	0.219*** (0.025)	0.219*** (0.025)	0.219*** (0.025)
Sustainability Orientation		0.500** (0.200)	0.517*** (0.184)
Suspicion.Maybe		-0.021 (0.056)	
Suspicion.No		0.017 (0.151)	
BuysOwnClothes.No		-0.121 (0.153)	-0.129 (0.147)
Age		0.003 (0.012)	
Gender.Male		0.153*** (0.056)	0.166*** (0.053)
Gender.Non-binary/third gender		0.199 (0.286)	0.165 (0.277)
Gender.Prefer not to say		-0.253 (0.258)	-0.218 (0.243)
Employment.Part Time		-0.145* (0.079)	
Employment.Unemployed and searching		0.110 (0.182)	
Employment.Unemployed and not searching		0.018 (0.312)	
AnnualIncomeEUR.25k-49k		0.080 (0.088)	0.101 (0.082)
AnnualIncomeEUR.50k-99k		0.089 (0.099)	0.096 (0.095)
AnnualIncomeEUR.100k-199k		-0.126 (0.152)	-0.132 (0.147)
AnnualIncomeEUR.200k+		0.260 (0.347)	0.166 (0.336)
AnnualIncomeEUR.Prefer not to say		-0.003 (0.067)	0.013 (0.062)
Residence.Portugal		-0.007 (0.190)	
Residence.Other		0.003 (0.118)	
HighestEduc.Some secondary		0.455 (0.606)	
HighestEduc.Secondary		0.186 (0.357)	
HighestEduc.Vocational		0.212 (0.388)	
HighestEduc.Some university		0.236 (0.357)	
HighestEduc.Bachelors		0.229 (0.359)	
HighestEduc.Graduate or professional degree		0.232 (0.375)	
HighestEduc.Prefer not to say		0.234 (0.426)	
University.Nova SBE		0.054 (0.241)	
University.WU Vienna		-0.007 (0.169)	
University.Other		0.063 (0.168)	
Constant	2.637*** (0.030)	1.902*** (0.489)	2.140*** (0.159)
Observations	1,690	1,690	1,690
Log Likelihood	-913.446	-931.916	-913.460
Akaike Inf. Crit.	1,840.892	1,933.832	1,860.919
Bayesian Inf. Crit.	1,878.920	2,123.969	1,953.271
Note:	* p<0.1; ** p<0.05; *** p<0.01		

Table 4 - Multiple linear regression with mixed effects (participants), examining the influence of items' sustainability descriptions (scenario 1) on willingness to pay, with various control variables.
Each column of coefficients pertains to the (1) minimal model, (2) maximal model, and (3) final model.

In consideration of the independent variables of interest, one looks at the ‘Item’ coefficients for the various sustainability levels. Firstly, one must note that across all three models, the coefficients are statistically significant beyond the 95% confidence level. Importantly, the values of the coefficients, their standard errors, and hence significance are consistent across the models. This is primarily due to the nature of the data collection process; since all participants had to provide their willingness to pay for all items across their sustainability levels (i.e., A-graded through to E-graded inclusive), the ‘item’ variable represents a balanced set of data. Importantly, it also displays no omitted variable bias that is correlated with the ‘item’ variable, since this would lead to fluctuating coefficients across the models. From the final model, D-graded, C-graded, B-graded, and A-graded items have a willingness to pay higher than E-graded items of 24.483% (i.e., $(e^{0.219} - 1) \times 100$), 48.736% (i.e., $(e^{0.397} - 1) \times 100$), 52.806% (i.e., $(e^{0.424} - 1) \times 100$), and 72.461% (i.e., $(e^{0.545} - 1) \times 100$) respectively. Clearly, despite not having access to sustainability scores, participants have incrementally higher willingness to pay as items become more sustainably described. Hence, with these values in mind, alongside their statistical significance, one may state that this section’s hypothesis is supported.

Though a robustness check would typically be relevant after discussing the main predictors’ coefficients, since the ‘item’ variable’s values, standard errors, and significance does not vary across models, such checks are not necessary in this case. One may consider the previously discussed coefficients as robust given their consistency across all possible models.

Contrasting to the conclusions drawn by Barber et al. (2014), those individuals with a higher willingness to pay for sustainable products were not composed of females, insignificantly more educated, and insignificantly had higher incomes. However, the above final model is coincident with the authors’ findings that those with greater orientations toward sustainability and society had greater willingness to pay for sustainable products. Lastly, contrasting to the work performed by Ha-Brookshire and Norum (2011), the above final model did not find significant evidence that age influences willingness to pay for sustainable products.

Hypothesis 2b - Willingness to Pay with Scores

Progressing to the next hypothesis, recall that it is stated as follows: ‘when presented with sustainability scores, the greater the sustainability of an item, the greater will be respondents’ willingness to pay for it. However, the variation of willingness to pay will be greater in the condition with sustainability descriptions, than with sustainability scores.’ The dependent variable is respondents’ willingness to pay, and the independent variable of interest is the item’s

sustainability score, thereby using of a multiple linear regression with mixed effects. The second part of the hypothesis (i.e., concerning variation) will involve measures of variability (i.e., coefficient of variation, mean absolute deviation, and median absolute deviation) and the Levene's test of homogeneous variance.

Assumption Checks

Once more, one should consider the upcoming models' adherence to their assumptions, in order to consider their conclusions as reliable. Looking at the two possible numeric independent variables that could be used in the following models, 'Appendix 22 – Linear Relationship Checks (Scenario 2)' presents a scatter plot with a line of best fit for each level of product sustainability grade. Through this diagram, and with reference to the r-squared values, there is a very poor linear relationship between sustainability orientation and age, with willingness to pay. However, it should also be noted that there is no notable non-linear relationship in the figure either. Thus, the upcoming analyses can be considered reliable with regards to assuming an underlying linear relationship in the data (or in this case a lack of a non-linear relationship). Once more, multicollinearity is not apparent in this dataset, given the figure presented in 'Appendix 12 – Correlation Matrix for Numeric Variables in the Study'.

Additionally, one should explore the variance of residuals alongside the range of fitted values in the four models to be used in this section (i.e., the minimal, maximal, final, and comparable models). Similar to the previous section, an initial examination of a residual-fitted value plot displayed a funnel-like distribution of residuals, that widened in the range of fitted values. To resolve this, the dependent variable was log-transformed. 'Appendix 23 – Constant Residual Variance Checks (Scenario 2)', displays the residual-fitted value plot across the four models after the log transformation; it is evident that the variance of residuals remains relatively constant across the range of fitted values. Hence, after this log-transformation, the constant variance assumption behind the residuals for the upcoming models has been adhered to. Note that it was necessary to remove one participant from the analysis, as they provided a willingness to pay of zero, which would invalidate this log-transformation.

Moreover, upon examination of the models' residuals and their independence from the two other relevant numeric variables in the dataset (i.e., sustainability orientation and age), there were no notable patterns that emerged. 'Appendix 24 – Independent Residual Checks (Scenario 2)' displays scatter plots, histograms, and correlations between the residuals of all four models, alongside sustainability orientation and age. Upon examination of the scatter plots, there are no

distinct patterns that emerge. It should not be surprising that the vast majority of points lie around zero for residuals, as this is a fundamental assumption upon which the models have been constructed. Supporting this visual inspection, one is able to note that the correlation coefficients between all of the residuals, and sustainability orientation as well as age, were insignificantly different from zero. This indicates a lack of linear relationship that emerges from plotting any model's residuals with these independent variables. Thus, one may state that all of the models' residuals are independent from the numeric variables included in the models.

Lastly, the final assumption to be checked involves the residuals' distribution for all models. The requires that the residuals are normally distributed for the models' output to be considered as reliable. 'Appendix 25 – Normal Distribution of Residuals Checks (Scenario 2)' displays the Q-Q plot for all of the models. Recalling that the red diagonal displays a perfectly normal distribution, it is observed that the vast majority of residuals do not notably deviate from this line. This is especially true with regards to points central in the distribution of residuals. Hence, with regards to these plots, one can state that the residuals of the models that will be discussed are normally distributed, thereby finalizing the necessary assumption checks for this section. Furthermore, no major outliers were identified in the dataset.

Model Analysis

Next, with the dataset conforming to the necessary assumptions of the models to be used in this section, one may proceed to analyzing the data. Table 5 provides the four models that will be discussed in this section: (1) a minimal model with the items' sustainability level, (2) a maximal model with all control variables, (3) a final model with selected control variables, and (4) a comparable model that has the same configuration as that composed for hypothesis 2a. These four models are structured as multiple linear regressions with mixed effects (i.e., participants), with willingness to pay being log-transformed and used as the dependent variable. These four models use data from scenario 2 (i.e., sustainability scores).

Firstly, when looking at the maximal model's control variables, one observes that other than the independent variables of interest, individual sustainability orientation is only significant at the 90% confidence level. Moreover, male reporting participants, participants with a non-reported gender, and part-time employees have coefficients that are statistically significant at or beyond the 95% confidence level. Hence, they should be included in the final model, given their significant influence in predicting participants' log-transformed willingness to pay. On the other hand, most other control variables are insignificant. In consideration of the final model,

sustainability orientation, male-reporting participants, and part-time employees have coefficients that are statistically significant at the 95% confidence level, with values of 0.404, 0.167, and -0.148 respectively. For interpretative purposes, participants moving from a sustainability orientation of zero (i.e., very low) to one (i.e., very high), are related to a 49.78% (i.e., $(e^{0.404} - 1) \times 100$) increase in willingness to pay, controlling for other factors. Compared to female-reporting participants, male-reporting participants have a 18.18% (i.e., $(e^{0.167} - 1) \times 100$) greater willingness to pay for products, with other factors controlled. Lastly, part-time employees have a 13.76% (i.e., $(e^{-0.148} - 1) \times 100$) lower willingness to pay, compared to full time employees, controlling for other factors.

Note that this specific configuration of the final model was chosen due to the significance of some control variables, and as the high predictive power of this model compared to others. ‘Appendix 26 - Predictive Accuracy Histogram for Scenario 2’s WTP’ displays a histogram with the distribution of the predictive power held by all possible models with every combination of control variables. After being tested against a test dataset, the final model had an r-squared value of 0.647, shown by the black dashed line. This model was chosen as the final one since it had the highest predictive power along with the selected significant variables.

Note that a comparable model had also been setup mirroring the structure of the final model used for hypothesis 2a. This will be used for the purpose of comparing control variables to the previous section. Other than the independent variables of interest, it is observed that while a movement from low-to-high in terms of individual sustainability orientation leads to a 67.70% (i.e., $(e^{0.517} - 1) \times 100$) increase in willingness to pay when facing sustainability descriptions, the same movement leads to a 46.81% (i.e., $(e^{0.384} - 1) \times 100$) increase when facing sustainability scores. Compared to females, male-reporting participants have a higher increase in willingness to pay when facing sustainability scores rather than descriptions, with an increase of 20.00% (i.e., $(e^{0.182} - 1) \times 100$) compared to 18.06% (i.e., $(e^{0.166} - 1) \times 100$) respectively. Other control coefficients are not comparable due to their insignificance.

Looking at the independent variables of interest, the item’s sustainability score, one should note that they are all statistically significant beyond the 95% confidence level. Similar to the previous analysis, the coefficients, standard errors, and therefore significance levels are consistent across the models due to the nature of the balanced dataset. This also displays no omitted variable bias that is correlated with the ‘item’ variable. In the models of this section, it is observed that D-graded, C-graded, B-graded, and A-graded items achieve a willingness to

pay which is higher than the baseline E-graded items by 24.483% (i.e., $(e^{0.219} - 1) \times 100$), 46.521% (i.e., $(e^{0.382} - 1) \times 100$), 65.532% (i.e., $(e^{0.504} - 1) \times 100$), and 104.214% (i.e., $(e^{0.714} - 1) \times 100$) respectively. In comparison to scenario 1 that used sustainability descriptions (i.e., D-graded, C-graded, B-graded, and A-graded items with a premium over E-graded items of 24.483%, 48.736%, 52.806%, and 72.461% respectively), it is observed that participants report a remarkably higher willingness to pay premium for A-graded items over E-graded items by 31.753%, *ceteris paribus*. The same is true for B-graded items, with an additional premium of 12.726%. D-graded items experienced approximately the same willingness to pay across the two scenarios, whilst C-graded items faced an additional discount of 2.215% in scenario 2.

Concerning the part of the hypothesis about variability, an examination of the coefficient of variation, mean absolute deviation, median absolute deviation, and a Levene's Test will be carried out. Note that these examinations do not require any major additional assumptions to be upheld. With reference to table 6, one observes the calculated coefficient of variation, mean absolute deviation, and median absolute deviation across all product sustainability levels as well as across scenarios 1 and 2. The coefficient of variation between scenario 1 and 2 across many product sustainability levels is seemingly close to each other, indicating a lack of notable difference in the spread of willingness to pay before and after displaying sustainability scores. Two deviations stand out for sustainability level 'C' and 'D', where scenario 2 has a lower coefficient of variation than scenario 1; the spread of willingness to pay seems to become more consolidated when presented with sustainability scores. Considering the mean absolute deviation and median absolute deviation, 'A' and 'B' graded products do not have any notable deviations between scenarios. For both examinations, 'C', 'D', and 'E' graded products have slightly differing mean and median absolute deviations. Typically, scenario 2 has a lower deviation than scenario 1; one may state that the transparency provided by sustainability scores helps reduce the variability in participants' willingness to pay. However, this effect only seems to appear for middle and low sustainability levels. Lastly, the Levene's test conducted in table 7 aims to examine whether any differences in willingness to pay variance between scenario 1 and 2, for each level of product sustainability, is statistically significant. From the table, it is evident that all levels of product sustainability, except C-graded products, have an insignificant difference in variance between scenario 1 and 2, at the 95% confidence level. With a p-value beyond this level, C-graded products' statistical significance implies that there is a difference in variance between scenarios. Combined with the conclusions of table 6, this displays that C-

graded products in scenario 2 have a statistically significant and narrower distribution of willingness to pay provided by participants.

Overall, with reference to this section's hypothesis, one can reliably state that greater item sustainability is related to a greater willingness to pay provided by participants, when facing sustainability scores. This is reinforced by the significant results found for the item's coefficient in table 5. However, with regards to willingness to pay being less variable with sustainability scores than sustainability descriptions, one cannot reliably state that this is true given the data collected. After the assessments conducted with the coefficient of variation, mean absolute deviation, median absolute deviation, and Levene's test, the notion of sustainability scores leading to less widely dispersed willingness to pay values was only true for C-graded products. Hence, this section's hypothesis can only be considered as partially confirmed.

Similar to the previous section, robustness checks with the above models in table 5 do not provide further clarity as to whether the coefficients, standard errors, and significance can be considered as reliable. This is due to the nature of the dataset being balanced across respondents.

Nonetheless, extending beyond the above models, 'Appendix 27 – Willingness to Pay with Interaction Terms' explores the potential effects of interactions across many variables. Interactions were explored between the type of product that participants faced (i.e., A-graded to E-graded items), and various control variables. A minimal model was developed that interacted only with individual sustainability orientation. The maximal model interacted type of product with every possible control variable. Lastly, the final model focused on interactions with those variables from the maximal model that were statistically significant at or beyond the 95% confidence level. The dependent variable across the models was the log-transformed willingness to pay provided by participants, and the reference level is set at E-graded items from scenario 1. Looking at the final model, sustainability orientation's interaction with the type of product was significant for most products. Comparing across scenario 1 and 2, if an A-graded item was under consideration, participants that moved from a low to high sustainability orientation (i.e., a 0 to 1) would provide an additional 151.935% (i.e., $(e^{0.924} - 1) \times 100$) and 137.500% (i.e., $(e^{0.865} - 1) \times 100$) to their willingness to pay, respectively. Similarly, across scenario 1 and 2 for B-graded items, this additional willingness to pay was 73.499% (i.e., $(e^{0.551} - 1) \times 100$) and 118.803% (i.e., $(e^{0.783} - 1) \times 100$) respectively. Other values were not comparable due to their insignificance in scenario 2. Furthermore, in comparison to female participants, male participants provide an additional willingness to pay for C-graded items of

17.939% (i.e., $(e^{0.165} - 1) \times 100$) in scenario 1 and 16.766% (i.e., $(e^{0.155} - 1) \times 100$) in scenario 2. Similarly, for D-graded items, male participants provide an additional willingness to pay of 19.842% (i.e., $(e^{0.181} - 1) \times 100$) for scenario 1 and 20.202% (i.e., $(e^{0.184} - 1) \times 100$) for scenario 2. Male participants, compared to female participants, provide an additional willingness to pay for E-graded items of 21.896% (i.e., $(e^{0.198} - 1) \times 100$) in scenario 1 and 32.711% (i.e., $(e^{0.283} - 1) \times 100$) in scenario 2. Considering part time employees, in comparison to full time employees, A-graded items get a willingness to pay discount of 17.139% (i.e., $(1 - e^{-0.188}) \times 100$) in scenario 1 and 20.148% (i.e., $(1 - e^{-0.783}) \times 100$) in scenario 2. B-graded items similarly get a discount by part time employees, compared to full time employees of 20.626% (i.e., $(1 - e^{-0.231}) \times 100$) in scenario 1 and 18.698% (i.e., $(1 - e^{-0.207}) \times 100$) in scenario 2. From this analysis, it is evident that there are some trends that have been found that do not completely correspond to those uncovered in previous literature. For instance, contrary to the findings by Barber et al. (2014), those willing to pay high amounts for sustainable products were insignificantly found to be female, more educated, and earning more. However, findings that are consistent with that of the authors, include the positive relationship between individual sustainability orientation and willingness to pay (Barber et al., 2014; Farzin et al., 2023).

	Dependent variable:			
	logWTP			
	Minimal (1)	Maximal (2)	Final (3)	Comparable (4)
ItemA	0.714*** (0.026)	0.714*** (0.026)	0.714*** (0.026)	0.714*** (0.026)
ItemB	0.504*** (0.026)	0.504*** (0.026)	0.504*** (0.026)	0.504*** (0.026)
ItemC	0.382*** (0.026)	0.382*** (0.026)	0.382*** (0.026)	0.382*** (0.026)
ItemD	0.219*** (0.026)	0.219*** (0.026)	0.219*** (0.026)	0.219*** (0.026)
Sustainability Orientation		0.376* (0.199)	0.404** (0.193)	0.384** (0.185)
Suspicion.Maybe		-0.038 (0.056)	-0.031 (0.054)	
Suspicion.No		0.075 (0.151)	0.094 (0.145)	
BuysOwnClothes.No		-0.091 (0.153)		-0.107 (0.149)
Age		0.008 (0.012)		
Gender.Male		0.153*** (0.056)	0.167*** (0.055)	0.182*** (0.054)
Gender.Non-binary/third gender		0.366 (0.287)	0.298 (0.279)	0.324 (0.281)
Gender.Prefer not to say		-0.507** (0.259)	-0.483* (0.247)	-0.492** (0.247)
Employment.Part Time		-0.164** (0.079)	-0.148** (0.074)	
Employment.Unemployed and searching		0.198 (0.182)	0.239 (0.171)	
Employment.Unemployed and not searching		0.249 (0.313)	0.253 (0.277)	
AnnualIncomeEUR.25k-49k		0.071 (0.088)	0.097 (0.083)	0.109 (0.083)
AnnualIncomeEUR.50k-99k		0.043 (0.097)	0.051 (0.095)	0.067 (0.095)
AnnualIncomeEUR.100k-199k		-0.003 (0.153)	-0.023 (0.149)	-0.026 (0.149)
AnnualIncomeEUR.200k+		0.236 (0.348)	0.209 (0.340)	0.124 (0.341)
AnnualIncomeEUR.Prefer not to say		-0.014 (0.067)	-0.021 (0.063)	0.006 (0.062)
Residence.Portugal		-0.057 (0.188)		
Residence.Other		-0.010 (0.115)		
HighestEduc.Some secondary		0.179 (0.607)		
HighestEduc.Secondary		-0.075 (0.358)		
HighestEduc.Vocational		-0.011 (0.388)		
HighestEduc.Some university		-0.007 (0.357)		
HighestEduc.Bachelors		-0.106 (0.360)		
HighestEduc.Graduate or professional degree		-0.021 (0.376)		
HighestEduc.Prefer not to say		-0.108 (0.426)		
University.Nova SBE		0.339 (0.242)		
University.WU Vienna		-0.070 (0.168)		
University.Other		-0.026 (0.167)		
Constant	2.509*** (0.031)	2.100*** (0.485)	2.134*** (0.174)	2.112*** (0.161)
Observations	1,705	1,705	1,705	1,705
Log Likelihood	-963.749	-977.381	-963.804	-962.786
Akaike Inf. Crit.	1,941.497	2,024.762	1,969.607	1,959.571
Bayesian Inf. Crit.	1,979.587	2,215.208	2,083.875	2,052.074

Note: * p<0.1; ** p<0.05; *** p<0.01

Table 5 - Multiple linear regression with mixed effects (participants), examining the influence of items' sustainability scores (scenario 2) on willingness to pay, with various control variables. Each column pertains to the (1) minimal model, (2) maximal model, (3) final model, and (4) comparable model.

Table 6 - Variation examinations for willingness to pay across various items' sustainability level, and across scenario 1 and 2.

		Product Sustainability Score and Scenario									
		A		B		C		D		E	
		1	2	1	2	1	2	1	2	1	2
Examinations	Coefficient of Variation (%)	50.064	50.712	51.353	51.483	56.174	51.875	57.376	53.961	65.574	64.572
	Mean Absolute Deviation (€)	10.692	11.389	9.644	9.597	10.230	8.027	8.284	7.295	7.308	6.428
	Median Absolute Deviation (€)	13.343	13.343	11.861	11.861	11.861	8.896	10.378	7.413	7.413	5.930

Table 7 - Levene's test of homogeneous variance across willingness to pay values from scenario 1 and 2, computed across different item sustainability levels.

Note that * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Sustainability Score	F value	Pr(>F)
A	1.264	0.261
B	0.043	0.835
C	8.014	0.005***
D	3.738	0.054*
E	1.677	0.196

Hypothesis 3a – Influencing Responsible Decision-Making

Next, with regards to the final hypothesis to be examined in this study, recall that it was stated above as follows: ‘respondents favor more sustainable options with coupons’. In order to examine this hypothesis, it is necessary to run a one-sided McNemar’s test to examine whether participants did or did not select sustainable products, before and after the intervention (i.e., the provision of coupons in scenario 3).

Assumption Checks

To ensure that the results of this test are reliable, it is important to check the test’s underlying assumptions (Lund Research, 2018). Firstly, it is necessary for the dataset to have a one factored dependent variable with two levels, and one factored independent variable with two related groups. The data that will be processed for this hypothesis adheres to this assumption. The

dependent variable will be whether or not participants chose sustainable products (i.e., the dependent variable would take the value 1 if participants chose an A or B graded product, and a 0 otherwise). The independent variable also has two related groups, as they record when participants make their choice (i.e., participants choose in scenario 2 without coupons, and in scenario 3 with coupons). Hence, this dataset adheres to the first assumption of this test, by having a matched pairs survey design.

Secondly, the McNemar's test requires that the dependent variable's groups be mutually exclusive. Given that the previously mentioned dependent variable can only take a 1 or 0 if participants do or do not select a sustainable product (i.e., A and B graded products, or C, D, and E graded products), the choices are also mutually exclusive. Hence, one can state that the major assumptions behind the McNemar's test have been adhered to, and thus it may be used to examine this section's hypothesis.

Model Analysis

Table 8 - Crosstabulation of participants that chose sustainable (A or B) or unsustainable (C, D, or E) products in scenario 2 and 3.

		Scenario 3	
		Sustainable	Unsustainable
Scenario 2	Sustainable	164	44
	Unsustainable	63	71

Table 8 represents the distribution of participants across scenario 2 and 3 with their combination of chosen sustainable (i.e., A or B-graded products) or unsustainable T-shirt (i.e., C, D, or E-graded products). With 342 total participants, 164 chose sustainable products in both scenarios, and 71 chose unsustainable products in both scenarios. Relevant for this section's analysis, 63 participants chose unsustainable products in scenario 2 and moved to sustainable ones in scenario 3. Of particular importance, are also the 44 remaining participants that chose sustainable products in scenario 2 but downgraded to unsustainable ones in scenario 3. Though one observes that about 69% of participants remained consistent with their choice across the scenarios, this section's test focuses on the remaining 31%.

After compiling the information in the above table, two McNemar's tests were performed with a one-sided p-value computation (due to the hypothesis being directional): McNemar's test with continuity correction and without continuity correction. With a McNemar's chi-squared of

3.028 and 3.3738, both tests have a significant one-sided p-value of 0.04092 and 0.03312 respectively. Hence, both values are significant beyond the 95% confidence level. This indicates that there is a statistically significant positive effect of moving participants who chose unsustainable products to more sustainable alternatives, from scenario 2 (i.e., no coupons) to scenario 3 (i.e., with sustainability-focused coupons). Note that this change took place with participants facing the same final price in both scenarios. With this in mind, one may consider that this section's hypothesis has been supported by the McNemar's test.

Robustness Checks

In consideration of the test's robustness, 'Appendix 28 – Iterative McNemar's Test with Random Sampling' was developed, with the upper plot using continuity correction and the lower plot not using continuity correction. These plots were generated as follows: (1) set 'n' equal to 1, (2) begin with the complete dataset, (3) randomly remove 'n' participant(s) from the dataset, (4) develop the crosstabulation and run the McNemar's test, (5) save information regarding which participant was removed, how many participants were removed, and the one-sided p-value, (6) loop back 99 times to step 2, (7) increase 'n' by 1 and loop back 99 times to step (2). In this manner, between 1 and 100 participants that were randomly chosen 100 times were excluded from the dataset, and the McNemar's test was run on the remaining data. In the diagrams, the x-axis displays the number of omitted participants, and the y-axis displays the one-sided p-value. The blue lines represents a linear relationship between the two variables, the red lines displays the 0.05 cutoff used in this study for the 95% confidence level, and the green lines display the actual p-values obtained (i.e., 0.0409 with continuity correction and 0.0331 without continuity correction). Darker points display greater concentration of outcomes than lighter points. From both the diagrams in appendix 28, it is evident that as the number of omitted participants increases, the one-sided p-value increases; this should be expected. However, one should strongly note that across most numbers of omitted participants, a majority of points lie under the one-sided p-value of 0.05. This is especially true at lower numbers of omitted participants. Overall, 49.000% of points with continuity correction and 59.600% of points without continuity correction lie under the p-value of 0.05. Alongside the fact that the green line in both figures lie within the main distribution of points, one can state that the results from this section can be considered as strongly reliable.

Discussion

Recalling the initial environmental, social, and governance related factors that underpinned the significance of this study, one should reiterate the research questions that were initially established:

Research Question 1: *To what extent do sustainability scores influence consumers' propensity to favor sustainable clothing options?*

Research Question 2: *To what extent do sustainability scores influence consumers' willingness to pay for clothing items?*

Research Question 3: *To what extent can consumers' preference for sustainability be influenced by sustainability-focused promotions, when purchasing clothes?*

Building upon each of these research questions, the following five hypotheses have been developed and examined:

Hypothesis 1a: *A higher preference for sustainability is positively related to sustainable purchasing decisions, in situations with sustainability descriptions as well as sustainability scores.*

Hypothesis 1b: *Respondents have a greater probability of selecting more sustainable options when presented with sustainability scores, compared to only sustainability descriptions.*

Hypothesis 2a: *When presented with sustainability descriptions, the greater the sustainability of an item, the greater will be respondents' willingness to pay for it.*

Hypothesis 2b: *When presented with sustainability scores, the greater the sustainability of an item, the greater will be respondents' willingness to pay for it. However, the variation of willingness to pay will be greater in the condition with sustainability descriptions, than with sustainability scores.*

Hypothesis 3a: *Respondents favor more sustainable options with coupons.*

Table 9 presents a summary of the results where four hypotheses were supported by their respective test, and the remaining hypothesis 2b was only partially supported. Altogether, all the models listed in table 9 helped examine the data regarding each of the relevant hypotheses related to the three research questions.

Table 9 - Summary of results including model, outcome, and relevant comments.

Hypothesis ID	Model Applied	Outcome	Comments
Hypothesis 1a	Ordered logistic regression	Supported	-
Hypothesis 1b	Ordered logistic regression without and with mixed effects	Supported	-
Hypothesis 2a	Multiple linear regression with mixed effects	Supported	-
Hypothesis 2b	Multiple linear regression with mixed effects, and Levene's test	Partially supported	Greater sustainability scores have greater willingness to pay. Variation trends are not supported.
Hypothesis 3a	McNemar's test	Supported	-

Real-World Applications

Given the importance of sustainability in the fashion industry, as stated in the introductory section of this study, the conclusions drawn from this paper have significant real-world applications.

Sustainability Initiatives in the European Union

With the fortifying pressures for lifestyles to be more sustainable, for all of the environmental, social, and governance related factors mentioned earlier, supranational entities need to begin involving themselves in this realm. The European Union has already made several strides toward a more sustainable single market (European Commission, 2021b, 2022a, b, d, e), however advances in terms of more advanced labeling schemes have not yet been undertaken. Beyond the introductory information that found standard labelling (e.g., fair trade or Euro-leaf) to be ineffective at influencing propensity to purchase or willingness to pay (Anastasiou et al., 2017; Rees et al., 2019), this paper's conclusions allude to a more effective alternative with significant results.

From the breadth of sustainability-focused research conducted, only one was found to investigate the potential applications of graded sustainability labels in the European Union. After exploring positive, negative, and graded labels, Jacques et al. (2021) found that graded ones "are the most effective to steer consumer toward more sustainable purchase decisions". Though their research primarily focused on small personal and household appliances, their

conclusions are aligned with those of this study. The authors found that graded labels, such as those used in this study, significantly increased the selection share of sustainable products by 15.8%, compared to positive labels (e.g., organic, responsible sourcing, long lifespan) that only increased the share by 11.1%. Note that negative labels (e.g., synthetic labelling) did not have any significant difference from the control scenario (Jacques et al., 2021). Oppositely, considering the selection share of less sustainable products, graded labels were once more the most effective, decreasing the proportion by 17.4%, compared to positive (-2.4%) and negative labelling (-13.8%) (Jacques et al., 2021). The authors also found that on average, participants facing graded labels chose more sustainable products overall, compared to both positive and negative labels. In terms of socioeconomic features, Jacques et al. (2021) found that all of the abovementioned trends emerged irrespective of “occupation”, “income”, and “country”. Overall, the conclusions drawn by the authors mirror those of this study, as similar trends were also found when comparing between scenario 1 (i.e., sustainability descriptions, as the control) and scenario 2 (i.e., sustainability scores), alongside the lack of significance of employment, annual income, and country of residence.

Alongside the conclusions drawn by Jacques et al. (2021), this paper also supports the potential for the real world application of graded scales in various products, most especially clothing items. The European Union’s pursuit of its “Green Deal” demonstrates an ideal context within which such sustainability grades can be applied; this proposal aims to make the European Union a zero net emission, resource independent, and sustainability-focused single market (European Commission, 2019). Formal proposals involving a “digital product passport”, that mirrors the fundamentals of a sustainability score, have already been developed (European Commission, 2022c). They highlight the importance of product transparency as well as traceability, and are intended to help consumers make more informed decisions. This study’s findings strongly support the policy implementations of such sustainability grading efforts, given their significant influence on shifting consumers to more sustainable products. If implemented, sustainability scores have the potential to help advance the European Union to achieve its sustainability goals whilst simultaneously allowing consumers to undertake more responsible consumption habits.

Business Case for Sustainability

In consideration of product manufacturers, this study reiterates the significant existence of a business case for sustainability. It has been demonstrated not only in this study, but also in numerous papers within the above literature review, that myriad consumer segments are willing to pay greater price premiums for sustainable products (Farzin et al., 2023; Ha-Brookshire &

Norum, 2011; Majer et al., 2022; Sammer & Wüstenhagen, 2006; van Osch et al., 2017). Once consumers face standardized metrics that can be used to compare the sustainability of one product to another, firms may be able to price such products at a premium. This premium may be fed back into the production cycle to improve its sustainability, or be directly captured as greater profit.

Similarly, the significant influence of sustainability-oriented promotions demonstrated in this study (e.g., coupons for highly sustainable products), provide another business case for corporations. Firms already operating efficient and responsible production lines can now use sustainability scores alongside coupons to incentivize and direct consumers to highly graded products. This not only has implications for profitability, but also for customer satisfaction and retention (Namin, 2017; Reimers & Xie, 2019).

Conversely, one may state that developing extensive auditing mechanisms to formulate such sustainability scores is an unrealistic goal that implies immense product tracing activities and costs. However, despite these hindrances, a method to achieve such transparency has already been planned out, considering points such as necessity, policy implementations, corporate benefits, and challenges (University of Cambridge & Wuppertal Institute, 2022). The University of Cambridge and Wuppertal Institute (2022) find that the already published “EU Batteries Directive” of 2020, with its “Battery Passport”, acts as a blueprint to help roll out the “Digital Product Passport”. With information including manufacturing details, sustainability-related information, post-use product management, and product compliance, it should be clear that the initially experienced complexity of developing sustainability audits does not seem as unreachable as previously considered. Thus, with an increasingly more evident business case for sustainability, and a decreasing perceived challenge of developing sustainability scores or product passports, corporations should consider making large strides in these domains (University of Cambridge & Wuppertal Institute, 2022). Doing so would allow the firm to gain greater levels of profit and market-related benefits mentioned above, whilst simultaneously preempting European Union regulations that may well be launched in the coming years.

Importance of Sustainability-Focused Educations

The conclusions regarding hypothesis 1a find that greater sustainability orientations are positively related to more sustainable purchasing behavior. This result has significant implications in terms of sustainability-related educations. Individuals that gain a greater understanding of what responsible behavior entails, may well act on such behavior, as seen in

this study. Being informed in this manner also works in the opposing direction, for instance, by recognizing how damaging irresponsible actions are. It should thus be evident that being informed about sustainability is a necessary step for individuals to increasingly consider the wider implications of their actions. This is fundamental in order for sustainability-focused goals to be reached (e.g., the European Union's Green Deal).

Redman and Larson (2011) reiterate this notion succinctly: “changing individual behaviors and motivating collective action is essential to achieving a sustainable future and is therefore a central motivation of sustainability education”. They go on to state that an educational curriculum that focuses more on sustainability, is fundamental for ensuring that these students' future choices consider the wider-world impacts of their actions. They convey the notion that “schools and teachers” have a profoundly strong potential to change how “students interact with society and the environment” (Redman & Larson, 2011).

Apart from formal education systems, other studies have similarly reiterated the importance of knowledge in developing a greater sustainability orientation. In their research regarding the seafood industry, van Osch et al. (2017) highlight that “environmental awareness campaigns” need to be significantly amplified in order to match the “expressed demand for information on seafood sustainability”. They also find that their “rating labelling approach” (i.e., one similar to that of this study's sustainability score) is significantly helpful in “communicating information” regarding the product's sustainability to consumers (van Osch et al., 2017). Hao et al. (2019) reiterate a similar notion, additionally stating that such efforts to increase the general public's knowledge about sustainability should also come from the “government”, “journals”, “social media”, “the internet”, and “lectures”.

Overall, one should be able to observe that being informed about sustainability is of paramount importance in order for governmental and supranational entities to successfully achieve long-term sustainability-focused goals. This study's conclusions regarding the positive significant relationship between sustainability orientation and propensity to purchase responsibly strongly reiterates this notion.

Limitations

Despite the various conclusions that were derived from this study, alongside the strong robustness checks that were performed, this paper still contains limitations that hinder the extent to which its findings may be relied upon.

Sample-Related Limitations

The study primarily involved university students as the sample that was examined. This poses a multitude of limitations to the conclusions of this paper, most importantly being that the results cannot be extrapolated to other populations (e.g., full-time employees that are not students). It would be of paramount importance to recognize this limitation, given that other demographics may or may not respond similarly to students.

In addition, the sample involves participants that were interested enough to respond to the survey in the first place. This alludes to the possibility of a selection bias in the sample of participants used. For instance, a potential participant that is already interested in sustainability-related topics sees the surveys invitation (example in ‘Appendix 5 – Survey Distribution Email’), and completes the survey as it involves a topic that interests them. Alternatively, a potential participant that is not already interested in sustainability would see the invitation and have a greater potential for not participating in the survey, as it is a topic that may not interest them. Thus, some of the results of this survey (e.g., propensity to choose sustainably, and willingness to pay for sustainable products), although controlling for sustainability orientation, may be higher than the real values amongst the wider population.

Furthermore, with reference to table 1, one should note that 47.07% of participants responded ‘yes’ when asked if they feel they know what the researchers were examining, with another 49.12% replying ‘maybe’. These results may undermine the reliability of the conclusions drawn from the study, as participants may have responded in a manner that was aligned with the objectives of the study. Future studies that investigate this domain could explore methods to integrate sustainability scores in a more discrete manner, such that participant suspicion is minimized.

Lastly, considering participant biases, due to the complex nature of comparing T-shirts across multiple dissimilar characteristics, it may be that some participants selected mid-level options to simply satisfice across all possible factors. Hence, even though sustainability scores were intended to make the decision-making process more transparent, some participants that may not have recognized this, may have been additionally overwhelmed with the information provided. Note that it was the intention of this study to involve different characteristics across many sustainability descriptions, to more accurately reflect shopping in reality.

Study-Related Limitations

With regards to the structure of the study itself, the main limitation to be considered involves the fact that all participants were exposed to all three scenarios. This was done due to resource and time constraints, without which randomized controlled trials would be employed. All participants viewed situations without sustainability scores (i.e., control scenario), with sustainability scores (i.e., the first test scenario), and with sustainability scores as well as coupons (i.e., the second test scenario). Since respondents saw all three scenarios in the above order, their responses may not have been independent of each context. For instance, once participants view that sustainability scores were added in the first test scenario, they may realize that the survey was studying the effect of this metric on their choices and willingness to pay. In a similar manner, when viewing sustainability-focused coupons, participants may choose the products with coupons to align with the presumed intentions of the researcher. One must also note that the choice of using ‘A’ and ‘B’ graded products as the definition of sustainable products worthy of promotions was arbitrary. The choice could also have been restricted to just ‘A’ graded products.

Next, while structuring the survey, though the randomization of the willingness to pay and choice options, sustainability orientation questions, T-shirt images, and sustainability descriptions were undertaken, the randomization of the text within each description was not done. For example, in ‘Appendix 3 – Sustainability Descriptions’, description 1A was always structured in the same way, without changing the order of sentences in the description. This randomization process was not performed due to the complexity of coding such a procedure in the survey platform. Alternatively, whilst hard-coding the sustainability descriptions, the order of lines were randomized once, to ensure that the location of sustainability-related and filler lines were not systematic within the description. Resulting from this lack of randomization for each participant, and despite the initial one-time randomization that took place, it may be that some descriptions were structured in a way that primed participants’ responses. For instance, the first few lines were sustainability-related, leading participants to conclude that the study was investigating this domain. Future attempts should endeavor to employ such a randomization process to mitigate any potential systematic descriptions that may occur.

Similarly, with regards to the sustainability descriptions, the sentences used to differentiate products across sustainability levels was arbitrary. Though a systematic approach was used in terms of the number of sustainability-related lines in the description (i.e., ranging from 0 sustainability-related lines for E-graded products to 4 lines for A-graded products), the content

of the lines were not developed in an equally systematic manner. This may have led to some products seeming more or less sustainable than they were truly intended to be.

Moreover, one must note this study's use of hypothetically chosen product and hypothetical willingness to pay may not lead to as reliable results, in comparison to a study that involves choosing and paying for the product in reality. Other studies that similarly employ hypothetical interactions with products with regards to sustainability, such as that of O'Rourke and Ringer (2016), highlight similar complications. The interactions between various elements in real world purchasing activities (e.g., promotions, brand stickiness, importance of sustainability in the product's category) attenuate the reliability of studies involving hypotheticals.

In consideration of the T-shirt images used in the study, though controlling for grey items (rather than controlling for all 15 items) was found to be somewhat statistically significant when participants selected the T-shirt they preferred (see 'Appendix 11.2 - Influence of T-shirts on Willingness to Pay & Choice') this control was not added in the final models used in the study. This was not done out of choice, but rather due to the computational complexity of doing so. Despite attempts aimed at resolving this problem and including T-shirt color as a control variable, it was not possible to execute these models. Future studies could attempt to include this variable in the maximal models to observe whether they remain significant, and if so, add them to the final models.

Furthermore, the Likert-scale questions used to evaluate participants' sustainability orientation may not have the same degree of "internal consistency reliability", "validity", and "item loadings" compared to the original study by Shepherd et al. (2009). This is because the statements were made more concise for the purpose of decreasing the survey's duration, whilst also removing questions that were not directly related to the content of this study (e.g., "all parents have the right to expect that they and their children will be raised free from hunger", and "all people have the absolute right to live their lives free from the fear of any violence") (Shepherd et al., 2009). Future studies that do not encounter resource and time constraints should consider employing the full range of questions originally developed by Shepherd et al. (2009) to maintain a high degree of reliability on the sustainability orientation metric.

Concerning the study's use of hypothetical willingness to pay, one should note that the study used a bounded 0 to 100 Euros sliding scale. Though 'Appendix 6 – Summary Statistics of Willingness to Pay' shows that no respondents chose the scale's maximum of 100 Euros, the scale itself may have primed participants to specify a value within that range. Note that given

this study's use of relative comparisons between various levels of product sustainability, this limitation is not as significant as the ones mentioned above.

One may also consider the reason why T-shirts were used as the primary clothing item for this study. Though justifications related to being non-gender specific, usable without patterns and with simple colors, as well as available across retailers, this study's results may change when using different clothing items. Such variation could be examined in the future, and their conclusions could highlight product categories where sustainability plays a more or less significant role in the purchasing process.

Lastly, though it is evident throughout this paper's analyses that participants understood that there was a sustainability-related difference between products with different sustainability scores, this notion may not have been observed by some respondents. Note that explaining the sustainability score methodology to participants (e.g., telling participants what an 'A' graded product entails compared to an 'E' graded product, in terms of sustainability) would be an ineffective means of tackling this limitation, as it would strongly prime participants on the topic of sustainability. Instead, future studies could employ vivid colors ranging from green to red, for 'A' to 'E' graded products respectively. This employs the traffic light evaluative method, with green elements being the best and red ones being the worst, allowing participants to understand sustainability scores quicker whilst limiting any priming effects. Note that some demographics may not understand this traffic light color coding.

Future Research Opportunities

Considering the conclusions that have been derived from this study, a multitude of future research opportunities have arisen.

Future Research into Explored Domains

Firstly, it would be paramount that future research into sustainability scores involves a research methodology that conceals the underlying purpose of the study. As previously mentioned, a large portion of participants felt that they had a basic understanding of what the study was examining. Future research could explore real-world implementations, such as using a supermarket, to execute the study. For instance, this would entail collecting control data on the purchase and pricing levels of basic unbranded T-shirts, then at a later date changing product labels to include sustainability scores whilst similarly collecting the same data, and finally using sustainability-specific coupons and recording purchase data. This alternative study methodology would alleviate multiple issues. For instance, it would increase the realism of this

study's willingness to pay and choice, as consumers actually pay with their own money (note the researchers could reimburse participants for their purchase, as they already provide valuable data for the study). This method also attenuates the limitation of differences between what people say and do in terms of consumer purchasing behavior. Additionally, this approach attempts to further conceal the underlying purpose of the study, limiting the potential for participants to respond in a way that is aligned with the researchers' intentions. Hence, it is clear that myriad benefits arise from this alternative approach that future researchers may use, though it may be one which is more costly, time consuming, and challenging to organize.

Secondly, it is equally important for future researchers to use randomized controlled trials, such that participants have an equal probability of being placed in the control scenario (i.e., sustainability descriptions) or test scenarios (i.e., sustainability scores or sustainability scores with coupons). This could further add to the study's reliability, as no participant is exposed to all scenarios, and thus they may have a limited understanding of the factors that researchers are examining.

Next, future researchers could consider deploying this paper's methodology, or one of its alternatives, on a sample of non-students (e.g., older individuals who have been working for many years). This would help expand the overall sphere of research surrounding sustainability as it covers demographics that are more challenging to study, compared to students. One should note that similar control variables used in this study should be applied to this alternative sample.

Furthermore, future research could explore the potential that sustainability scores either contribute to or limit the extent of informational overload on consumers during the purchasing process. Generally, the aim of sustainability scores is to consolidate fragmented information, make the product's lifetime sustainability features transparent, and increase the comparability of products with each other. However, given that it does still add another piece of information to be considered in the purchasing process, it may be that the improvement in information processing is not as beneficial as previously expected. If so, alternative means of structuring such a sustainability score would be necessary, or the placement of supplemental information (e.g., sustainability descriptions) should be less salient. For example, this is the case with the European Union's Energy Label, using an energy score for the product and only providing detailed information in the specifications area of the product (European Commission, 2021a).

In addition, future researchers could examine the effect of varying the degree of trust with the sustainability scores. For instance, researchers could explore whether changes in the party that

audited and developed the sustainability scores impacts trust, propensity to purchase, and willingness to pay. Variables in this auditing party could include a control situation (i.e., no mention of auditing party), the product's producer, a non-governmental organization, a government, or a supranational entity (i.e., the European Union). Including this information in the sustainability score could add enhanced authenticity to the product's grade, thereby further attracting those that would like to act in a more sustainable manner.

Lastly, future researchers could implement a randomization of the order of text within sustainability descriptions, so that the aforementioned priming effects are minimized when performing a comprehensive analysis. These researchers could also undertake a similar study as one done in this paper, or its alternatives (e.g., using a real supermarket), while implementing a different clothing item.

Future Research into Unexplored Domains

Moving on into novel areas where future research could examine sustainability scores, researchers could investigate the potential for moral licensing or the rebound effect that may result due to the use of sustainability scores. For instance, participants that purchase sustainably in one domain may choose not to do so in others (i.e., moral licensing). This would be immensely damaging to global sustainability if low-impact domains were chosen areas to act sustainably, whilst individuals maintained their unsustainable choices in high-impact domains. The rebound effect may also prevent sustainability scores from helping consumers remain responsible. For instance, individuals may not feel that their actions of overconsumption would be irresponsible if they focused on 'A' graded clothing. Future studies could examine the extent to which a sustainability score is net beneficial to society in terms of the realized sustainability achieved.

Future researchers, especially those involved with environmental sciences, should examine the cost-benefit of developing a sustainability score. Since this process involves steps, such as undertaking a production and post-use sustainability audit, as well as printing and distributing the rating, this activity should only be undertaken if the net sustainability-related benefits of doing so outweigh its costs. Though it was previously mentioned that from an operational perspective, such an audit is possible, a similar examination should be performed from a sustainability point of view.

Lastly, should a sustainability score be a viable and beneficial feature to include in consumers' purchasing process, a plethora of research is still necessary to define what constitutes an 'A',

‘B’, ‘C’, ‘D’, and ‘E’ graded product. Note that the purpose of this thesis was to examine the influence of sustainability scores on propensity to favor sustainable options, individuals’ willingness to pay for various products, and whether sustainability-directed promotions attract consumers. The scope of this study did not include an evaluation of elements that would improve or degrade a product’s sustainability. Nonetheless, this area remains key in the future research undertaken by those in the environmental sciences, supply chain analysts, and regulatory bodies.

Conclusion

This study began by performing an overview of the current status quo of the fashion industry with respect to sustainability. Having recognized its generally bleak outlook, transparency was identified as a possible factor that could strongly shift consumers' purchasing to more sustainable fashion items. The use of product sustainability scores, which incorporated facets of transparency, comparability, and comprehensiveness, was examined. This involved its influence on participants' propensity to purchase sustainable products, willingness to pay, and the appeal of sustainability-focused coupons.

Resulting analyses found that (1a) participants with a greater preference for sustainability purchased more sustainable products with both sustainability descriptions and scores, (1b) sustainability scores increased the likelihood of selecting sustainable products compared to sustainability descriptions, (2a) participants had a greater willingness to pay for both sustainability descriptions and (2b) sustainability scores (though scores did not decrease variability in willingness to pay), and that (3a) coupons were significantly impactful in shifting consumers from unsustainable to sustainable products.

With real world applications spanning across policy implementations in the European Union, displaying a business case for sustainability, and highlighting the importance of sustainability-focused educations, the conclusions of this thesis are significant for the pursuit of global sustainability. However, one should note that this study involves sample-related and study-related limitations that should caution readers on the usability of its conclusions.

Overall, this paper hopes to clarify relationships between an alternative method of conveying sustainability information that has yet to be profoundly researched, and its influence on consumer decision-making. Building upon this paper, a myriad of future research opportunities exist that can suppress the limitations faced in this study, examine adjacent research areas, and transpose this paper's learning into more applied scenarios. This approach to sustainable consumer behavior hopes to motivate a shift in purchasing toward more responsible options, by incentivizing both sellers and buyers to strongly consider the long-term impacts of their actions.

Appendices

Appendix 1 – Sustainability Orientation Questions

	1	2	3	4	5	6	7	
Those experiencing fewer issues from global change do not need to support those experiencing many issues.								Those experiencing many issues from global change should be supported by those experiencing fewer issues.
Some resources need to be given up for key developments.								Every precaution is necessary to protect resources while we develop.
Current production methods need only small changes to protect the environment.								Current production methods need enormous changes to protect the environment.
People need to make only minor changes to their consumption to protect the environment.								People need to make enormous changes to their consumption to protect the environment.
The natural environment will take care of itself to support future generations.								The natural environment needs to be protected by society to support future generations.

Appendix 2 – T-Shirt Images



Appendix 3 – Sustainability Descriptions

Description 1A - Soft material feel, with comfortable inner lining. Zero toxic chemical use during production. Made of 100% organically produced cotton. Produced using water-efficient practices. Uses minimal packaging.

Description 2A - A portion of revenues goes to developing countries' education programs. Completely produced using fully renewable energy. Highly breathable fabric with sweat removal technology. 'Fair Labor Association' certified. Made only with recycled linen.

Description 3A - Produced with ethical labor practices and certifications. Fully carbon-neutral production process. Iron with low heat after washing. Lifetime repair warranty. Low-impact transportation used.

Description 1B - Ethically sourced and produced linen. Uses only plant-based dyes. Smooth hand-woven texture throughout. Comfortable and non-constricting fit. Produced with certified vegan materials.

Description 2B - Crew-cut neckline with a soft collar. Responsibly sourced materials. Transported with biodegradable and eco-friendly packaging. Machine washable, with durable fabric technology. 'EZ-Donate' policy to donate used clothes to those in need.

Description 3B - Short sleeves with a regular fit. Artisan hand-made T-shirt. Do not bleach the product, nor wash with other colored items. Partial carbon offset policy used in the company. Trade-in policy available, to support responsible purchasing.

Description 1C - Soft-touch inner lining throughout. Responsible production processes used. Comfortable fit for the shoulder and chest. Woven neck and arm seam for gentle skin contact. Made with recycled materials.

Description 2C - Carbon-neutral delivery options are available. Stretchable fabric, great for all situations. Durable fabric composition for long-term use. Thin fabric, good for layering with other clothes. Non-toxic coloring used in the production process.

Description 3C - Wash inside out with similar colors, up to 30°C. Handmade process used throughout. Moisture-wicking material, great for active lifestyles. Deep coloring process used, reducing color loss over time. Reduced water consumption during the production process.

Description 1D - Standard delivery is available to home or pick-up point. Loose-fit with comfortable shoulder styling. Optional donation to environmental conservation practices available. Made of a cotton and polyester blend. Iron with medium heat after washing.

Description 2D - Produced with some recycled materials. Durable color with patented synthetic dyes. Machine washable, up to 60°C. High-tech sweat-wicking technology. Smoothly stitched neck and arm hemline.

Description 3D - Medium-length sleeves and comfortable stitched collar. Uses a carbon offset program to balance some manufacturing emissions. Breathable fabric with synthetic sweat-wicking technology. Hot-dyeing method used, to durably maintain the T-shirt's color. Standard delivery available to home.

Description 1E - Available in multiple colors. Made of polyester for significant durability. Standard or express delivery available to your home. Few items remaining from this season's products. Economic production methods used.

Description 2E - Can be purchased with a variety of other patterns. Relaxed fit with wide shoulders and long sleeves. Newest product from the current season. Free return policy available. Crew-cut neckline with a dyed collar.

Description 3E - Many sizes and fits are available across colors. Made of nylon and polyester. Available in gift-ready packaging. Minimal design, great for styling with other products. Almost sold out, few pieces and sizes remaining.

Appendix 4 – Survey Questions

Imagine that you are shopping for some new t-shirts. Consider the points that you would typically keep in mind when shopping.

You now enter into the shop and find the following T-shirts.

Welcome to the research study!

We are interested in understanding consumer behavior when presented with multiple items. You will be presented with information, and be asked to answer some questions. Your responses will be kept completely confidential. The study should take you around 5-8 minutes to complete.

At the end, you have the option to provide your email address to enter into a raffle with 2 chances to win EUR50 for your participation. Note that email addresses will only be used for this purpose, after which they will be deleted.

By consenting, you acknowledge that your participation is voluntary, you are more than 18 years old, and that you may stop participating at any time.

Please note that this survey is best displayed on a laptop or desktop.

- ☐ I consent, begin the study
- ☐ I do not consent, I do not wish to participate

Consider the same 5 T-shirts below, this time with prices. Select the option that you would realistically purchase.

Final price: 40 Euros



☐

Available in multiple colors.
Made of polyester for significant durability.
Standard or express delivery available to your home.
Few items remaining from this season's products.
Economic production methods used.

Final price: 57 Euros



☐

Crew-cut neckline with a soft collar.
Responsibly sourced materials.
Transported with biodegradable and eco-friendly packaging.
Machine washable, with durable fabric technology.
'EZ-Donate' policy to donate used clothes to those in need.

Final price: 51 Euros



☐

Standard delivery is available to home or pick-up point.
Loose-fit with comfortable shoulder styling.
Optional donation to environmental conservation practices available.
Made of a cotton and polyester blend.
Iron with medium heat after washing.

Final price: 27 Euros



☐

A portion of revenues goes to developing countries' education programs.
Completely produced using fully renewable energy.
Highly breathable fabric with sweat removal technology.
'Fair Labor Association' certified.
Made only with recycled linen.

Final price: 32 Euros



☐

Wash inside out with similar colors, up to 30°C.
Handmade process used throughout.
Moisture-wicking material, great for active lifestyles.
Deep coloring process used, reducing color loss over time.
Reduced water consumption during the production process.

Consider the following 5 T-shirts. Please indicate your **willingness to pay** for each with the sliding scale, in **Euros**. This number should realistically show the amount you would pay for each T-shirt.

Euros	0	10	20	30	40	50	60	70	80	90	100
 Produced with ethical labor practices and certifications. Fully carbon-neutral production process. Lifetime repair warranty. Low-impact transportation used. Sustainability, Level A											
 Can be purchased with a variety of other patterns. Relaxed fit with wide shoulders and long sleeves. Free return policy available. Crew-cut neckline with a dyed collar. Sustainability, Level E											
 Ethically sourced and produced item. Uses only plant-based dyes. Soft and durable fabric. Comfortable and non-constricting fit. Produced with certified vegan materials. Sustainability, Level B											
 Medium-length sleeves and comfortable stitched collar. Uses eco-friendly production process. Breathable fabric, with biologic sweat-wicking technology. Hot-dyeing method used, to durably maintain the T-shirt's color. Standard delivery available to home. Sustainability, Level D											
 Soft-touch inner lining throughout. Uses responsibly sourced materials. Comfortable fit for the shoulder and chest. Woven neck and arm seam for gentle skin contact. Made with recycled materials. Sustainability, Level C											

Still shopping for new T-shirts, you enter a different store. The T-shirts available here are generally similar to those in the previous store. Consider the points that you would typically keep in mind when shopping.

You now enter into the shop and find the following T-shirts.

Consider the following 5 T-shirts. Please indicate your **willingness to pay** for each with the sliding scale, in **Euros**. This number should realistically show the amount you would pay for each T-shirt.

Euros	0	10	20	30	40	50	60	70	80	90	100
 Standard delivery is available to home or pick-up point. Responsible production process. Optional donation to environmental conservation practices available. Made of a cotton and polyester blend. Iron with medium heat after washing.											
 A portion of revenues goes to developing countries' education programs. Highly breathable fabric with sweat removal technology. Fair Labor Association certified. Made only with recycled linen.											
 Available in multiple colors. Made of polyester for significant durability. Responsible production process. Few items remaining from this season's products. Economic production methods used.											
 Wash inside out with similar colors, up to 30°C. Handmade process used throughout. Responsible production process. Deep coloring process used, reducing color loss over time. Reduced water consumption during the production process.											
 Crew-cut neckline with a soft collar. Responsibly sourced materials. Responsible production process. Machine washable with durable fabric technology. EZ-Donate policy to donate used clothes to those in need.											

Consider the same 5 T-shirts below. Select the option that you would realistically purchase.

☐

Final price: 35 Euros

Carbon-neutral delivery options are available.
Stretchable fabric, great for all situations.
Durable fabric composition for long-term use.
Thin fabric, good for layering with other clothes.
Non-toxic coloring used in the production process.
Sustainability Level C

☐

Final price: 58 55 Euros

Short sleeves with a regular fit.
Artisan hand-made T-shirt.
Do not bleach the product, nor wash with other colored items.
Partial carbon offset policy used in the company.
Trade-in policy available to support responsible purchasing.
Sustainability Level B

☐

Final price: 16 Euros

Produced with some recycled materials.
Durable color with patented synthetic dyes.
Machine washable, up to 60 °C.
High-tech sweat-wicking technology.
Smoothly stitched neck and arm hemline.
Sustainability Level D

☐

Final price: 69 62 Euros

Soft material feel, with comfortable inner lining.
Zero toxic chemical use during production.
Made of 100% organically produced cotton.
Produced using water-efficient practices.
Uses minimal packaging.
Sustainability Level A

☐

Final price: 6 Euros

Many sizes and fits are available across colors.
Made of nylon and polyester.
Available in off-peak packaging.
Minimal design, great for styling with other products.
Almost sold out, few pieces and sizes remaining.
Sustainability Level E

You are now entering into the final store. Again, the T-shirts here are similar to those in previous stores. Consider the points that you would typically keep in mind when shopping.

You now enter into the shop and find the following T-shirts.

Consider the same 5 T-shirts below, this time with prices. Select the option that you would realistically purchase.

☐

Final price: 6 Euros

Can be purchased with a variety of other patterns.
Relaxed fit with wide shoulders and long sleeves.
Newest product from the current season.
Free return policy available.
Crew-cut neckline with a dyed collar.
Sustainability Level E

☐

Final price: 35 Euros

Soft-touch inner lining throughout.
Responsible production processes used.
Comfortable fit for the shoulder and chest.
Woven neck and arm seam for gentle skin contact.
Made with recycled materials.
Sustainability Level C

☐

Final price: 16 Euros

Medium-length sleeves and comfortable stitched collar.
Uses a carbon offset program to balance some manufacturing emissions.
Breathable fabric with synthetic sweat-wicking technology.
Hot-dyeing method used, to durably maintain the T-shirt's color.
Standard delivery available to home.
Sustainability Level D

☐

Final price: 55 Euros

Ethically sourced and produced linen.
Uses only plant-based dyes.
Smooth hand-woven texture throughout.
Comfortable and non-constricting fit.
Produced with certified vegan materials.
Sustainability Level B

☐

Final price: 62 Euros

Produced with ethical labor practices and certifications.
Fully carbon-neutral production process.
Iron with low heat after washing.
Lifetime repair warranty.
Low-impact transportation used.
Sustainability Level A

Do you shop for your own clothing items?

☐ No

☐ Yes

How old are you?

How would you describe yourself?

☐ Male

☐ Female

☐ Non-binary / third gender

☐ Prefer not to say

What best describes your employment status over the last 3 months?

☐ Employed full time

☐ Employed part time

☐ Unemployed looking for work

☐ Unemployed not looking for work

☐ Retired

☐ Student

What was your total household income before taxes during the past 12 months in Euros?

☐ Less than 25000 Euros per year

☐ 25000 - 49999 Euros per year

☐ 50000 - 99999 Euros per year

☐ 100000 - 199999 Euros per Year

☐ More than 200000 Euros per year

☐ Prefer not to say

☐ Not applicable

In which country do you currently reside?

What is the highest level of education you have completed?

☐ Less than Primary

☐ Primary

☐ Some Secondary

☐ Secondary

☐ Vocational or Similar

☐ Some University but no degree

☐ University - Bachelors Degree

☐ Graduate or professional degree (MA, MS, MBA, PhD, Law Degree, Medical Degree etc)

☐ Prefer not to say

If you attended university (Bachelors, Graduate, or Professional degree), what was the name of the university?

☐ Católica Lisbon School of Business & Economics

☐ Vienna University of Economics and Business

☐ Nova School of Business and Economics

☐ Other

At this point, do you feel like you know what the researchers are studying?

☐ No

☐ Maybe

☐ Yes

If you would like to add any further information related to to the above question, feel free to use the below text box.

In this section, respond to the statements below based on how much you agree with them.

If you agree with the statement on the left completely, select the left-most option.

If you agree with the statement on the right completely, select the right-most option.

If you agree with both statements to variable extents, select the options in between.

Current production methods need only small changes to protect the environment.	☐☐☐☐☐☐☐	Current production methods need enormous changes to protect the environment.
The natural environment will take care of itself to support future generations.	☐☐☐☐☐☐☐	The natural environment needs to be protected by society to support future generations.
Some resources need to be given up for key developments.	☐☐☐☐☐☐☐	Every precaution is necessary to protect resources while we develop.
People need to make only minor changes to their consumption to protect the environment.	☐☐☐☐☐☐☐	People need to make enormous changes to their consumption to protect the environment.
Those experiencing fewer issues from global change do not need to support those experiencing many issues.	☐☐☐☐☐☐☐	Those experiencing many issues from global change should be supported by those experiencing fewer issues.
Please select the left-most option for this item.	☐☐☐☐☐☐☐	Please select the left-most option for this item.

80

Would you like to participate in a raffle for two chances to win EUR 50?

☐ Yes
 ☐ No

If you responded yes to the previous question, please enter your email address. It will be used only for the purpose of the raffle, after which it will be deleted.

→

Appendix 5 – Survey Distribution Email

Dear colleagues,

You have two chances to win €50 in a range of gift cards (e.g., Adidas, Airbnb, Amazon, Zalando, and many more). To give yourself this chance, all you have to do is fill out my survey (https://wumarketing.eu.qualtrics.com/jfe/form/SV_50wnVyciNOGTPr8).

The survey is for my Master Thesis, and examines consumer behavior when presented with multiple options. Your responses will be completely confidential, and the email addresses used for the above raffle will be immediately deleted after selecting the winners.

Thank you very much for your time and attention with my survey.

Best regards,

Marcello Pereira

Appendix 6 – Summary Statistics of Willingness to Pay

	<u>Sustainability Score</u>	<u>Min.</u>	<u>Q1 (25%)</u>	<u>Q2 (50%)</u>	<u>Mean</u>	<u>Q3 (75%)</u>	<u>Max.</u>
Scenario 1	A	1	18	25	27.4	35	90
	B	2	15	22	24.18	30	90
	C	2	15	20	24.08	30	90
	D	0	12	18	19.91	25	85
	E	0	10	15	16.33	20	90
Scenario 2	A	3	19.25	26	28.87	36	84
	B	2	15	20	23.39	30	78
	C	2	14	18	20.54	25	75
	D	1	11	15	17.77	22	76
	E	0	10	12	14.51	19	81

Appendix 7 – Summary Statistics of Sustainability Orientation

Category	Min.	Q1 (25%)	Q2 (50%)	Mean	Q3 (75%)	Max.
Question 1	1	5	6	5.66	7	7
Question 2	1	4	5	4.97	6	7
Question 3	1	5	6	5.75	7	7
Question 4	1	4	5	5.25	6	7
Question 5	1	6	7	6.08	7	7
Sustainability Orientation	0.14	0.71	0.80	0.79	0.89	1

Appendix 8 – Randomization Checks

8.1 - Willingness to Pay Options

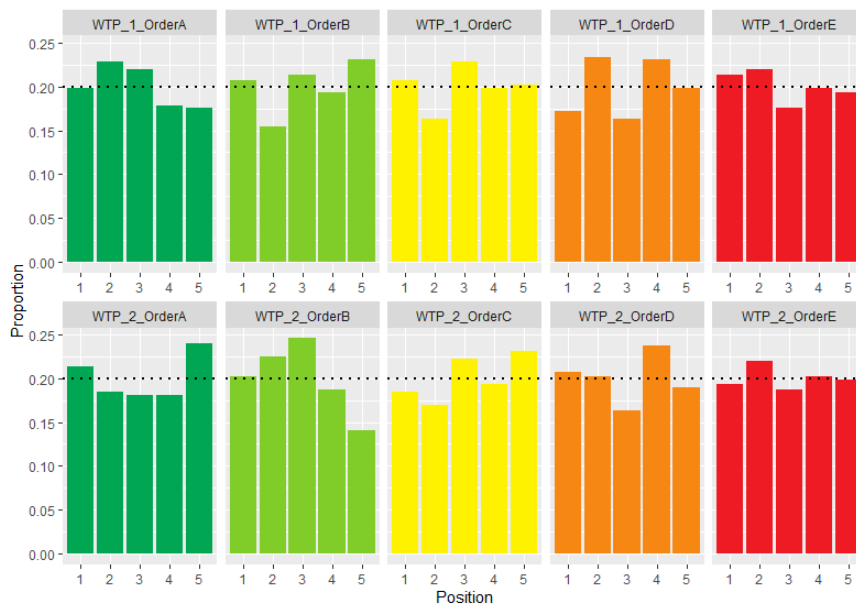


Figure 7 - Distribution of sustainability options in the willingness to pay question for scenario 1 and 2. The first row of figures are for scenario 1, and the second row is for scenario 2. The y-axis represents the proportion of times each order position was used, and the x-axis represents the order position. Each colour represents a specific sustainability level ranging from A to E graded products, from green to red respectively. The black dotted line shows a perfect uniform distribution if all positions were used equally.

Scenarios 1 and 2 involved a question where respondents were asked to provide their willingness to pay for various T-shirts and their sustainability descriptions. The order in which the options were presented were randomized for each participant in each question (e.g., scenario 1's willingness to pay question could have sustainability options ordered as B, D, A, E, C). Figure 7 displays the distribution of each sustainability level in each of the 5 positions (smaller position numbers indicate a higher location in the page). Scenario 1 is displayed in the first row of five figures, under which is scenario 2. Ideally, since there were five possible locations where a given option could be placed, a perfectly uniform distribution would have a proportion of 0.2 (i.e., $\frac{1}{5}$) across all positions and options. This is represented by the black dotted line stretching

across all graphs at the level 0.2. As evident in the figure, even after scaling the y-axis down to between 0 and 0.25, the distribution seems to be balanced across all positions, all sustainability levels, and both scenarios. Hence, one finds that the randomization of the order in which various sustainability descriptions were provided, in both scenario 1 and 2, were well performed.

Importantly, it should be noted that the proper randomization of sustainability descriptions' order on a given page is highly important, as if it were not done correctly, participants could provide biased responses. For instance, if the order of options on a page was not randomized properly, and remained in its order from most sustainable to least sustainable, respondents may align their willingness to pay with the decreasing sustainability of each item. Given that the randomization was effectively completed, this issue was mitigated.

8.2 - Choice Options

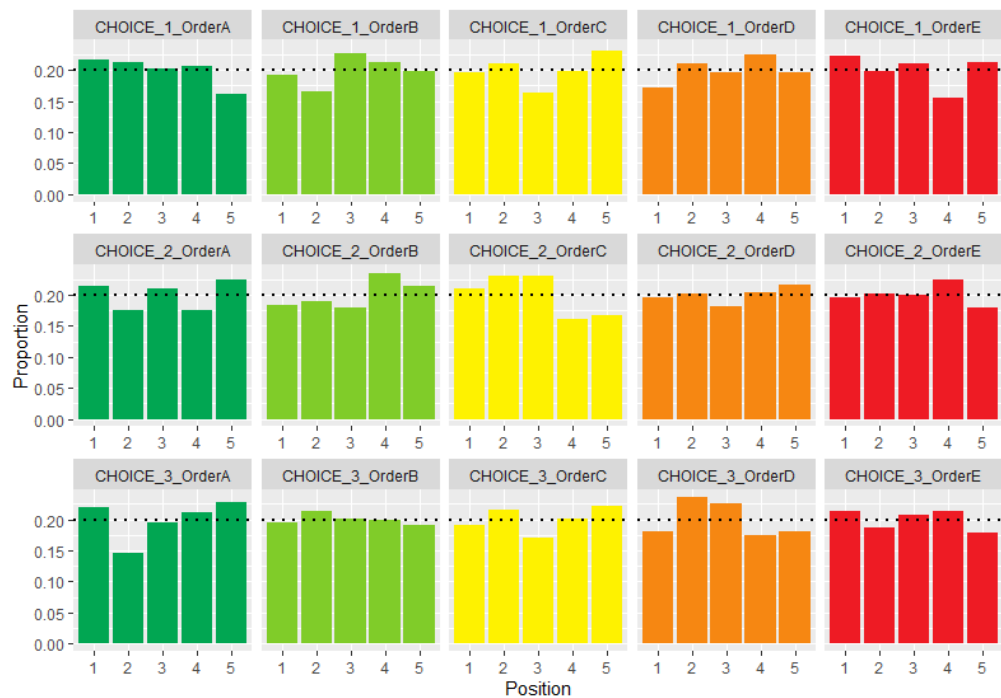


Figure 8 - Distribution of sustainability options in the choices question for all three scenarios. The y-axis represents the proportion of times a particular order position was used. The x-axis represents the position from 1 to 5 inclusive. Each colour represents a specific sustainability level, from A to E, with green to red, respectively. The black dotted line represents what a perfectly uniform distribution would look like.

Looking at choice options, figure 8 was developed to explore the distribution of randomly allocated positions for each sustainability description. Similar to the previous subsection, each row is related to a scenario, and each column is related to a sustainability score. If a particular graph were to match a perfectly uniform distribution, all five positions would have a 0.2 proportion. In this case, there are no anomalous distributions, as most proportions lie slightly above, below, or at the black dotted line marking the 0.2 proportion level. It should be noted

that the scale for these figures is even narrower than the previous figure in order to fit all 15 diagrams in one block. Hence, deviations from the 0.2 line that look large are in reality small divergences from the ideal distribution. Thus, one concludes from this graphic that the randomization of choice options across all three scenarios were well performed.

If the randomization of choice options were not done, participants may align their response with the decreasing or increasing sustainability of items. For instance, if sustainability scores were systematically worsening as participants scrolled lower down the survey page, they may bias their response (e.g., always choosing the top option because it seems to be the most sustainable one). As this section's randomization was effectively done, this issue is not significant.

8.3 - Sustainability Orientation Questions

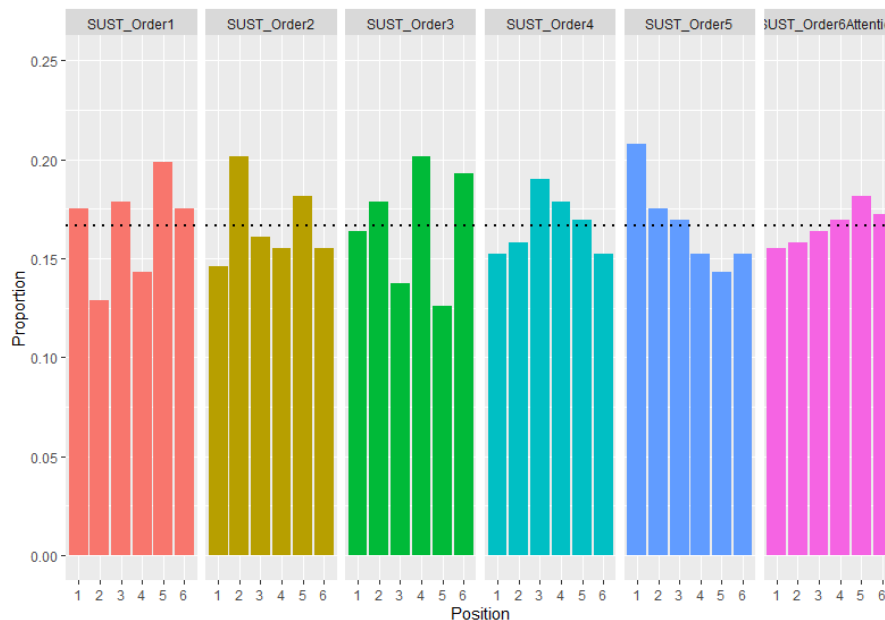


Figure 9 - Distribution of sustainability orientation questions and attention check. The y-axis represents the proportion of times a position was used. The x-axis represents the position. The colours are for visual purposes, and are not related with any sustainability score. The black dotted line represents what a perfectly uniform distribution would look like.

Next, in consideration of the randomization of the sustainability orientation questions, figure 9 displays the proportion of various positions they hold, on a page in the study. Note that there are five sustainability-focused questions, with the sixth being an attention check that all selected participants have passed. Given that there are 6 positions that can be held by a given question for a particular respondent, a perfectly uniform distribution would have a proportion of $0.16 \left(\frac{1}{6}\right)$ across all positions. The black dotted line indicates what this distribution would look like, and positive or negative deviations from this line are visible in the figure. Generally, there are no deviations from this uniform distribution. One should also note that this figure's scale has been

zoomed in. Hence, any fluctuations are much smaller than they seem. Overall, the order of sustainability orientation questions and the attention check were well randomized.

This randomization is key to ensure that the attention check was in a different place for all respondents. For instance, if the attention check was always in the top position of the questions on this page, it may be possible that respondents who were typically inattentive see this question and respond correctly, whilst simultaneously responding to all other questions without deliberation. However, since it can be seen that the attention check had a balanced distribution across all six positions in the survey, this issue is minimized.

8.4 - T-Shirt Images

In this section, we explore whether the 15 T-shirt images were well randomized throughout the survey. Recall that as the study involved five willingness to pay and choice questions across three scenarios, there were 15 unique T-shirt images randomly allocated to each option. Figure 10 displays the distribution of images (i.e., image ID 1 to 15 inclusive, on the x-axis) across all positions in the study. Each row corresponds to one of the three scenarios, and each column relates to a sustainability level. For instance, the first row and column displays the proportion of times when each of the 15 unique T-shirt images were used for the A-graded item in scenario 1. From the figure, the randomization was well performed, given that there is a balanced distribution across all graphs. Notably, since there are 15 potential positions that any one T-shirt image could be at, a perfectly uniform distribution would have a proportion of 0.066 (i.e., $\frac{1}{15}$) throughout all figures. This is represented by the black dotted line across all figures. Since all figures' proportions fall around this boundary level, and considering random chance, this randomization was well performed. One should note that the Y-axis scale has been significantly zoomed in, scaled between 0 and 0.12.

It is important for this randomization to be well performed to minimize any preferential biases that may occur. For instance, if there was a preference for black T-shirts, respondents may have a greater probability of choosing black ones. Since it is clear that the randomization was well performed, this issue is minimized.

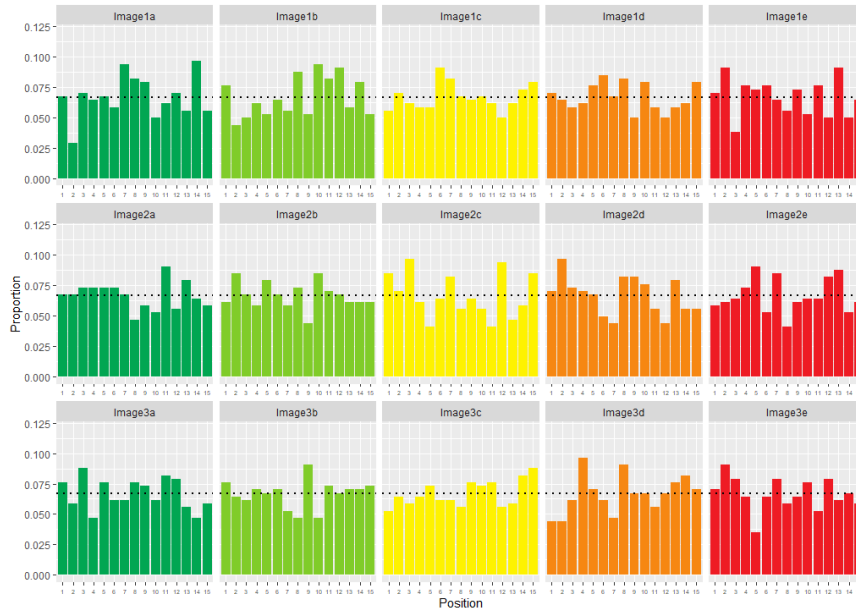


Figure 10 - Distribution of images across all 15 positions throughout the survey. The y-axis presents the proportion of times a particular position was used. The x-axis presents the position. Each colour is related to a specific sustainability level, from A to E, with green to red respectively. Each row of relates to one the scenarios, in order.

8.5 - Sustainability Descriptions

Considering the prepared sustainability descriptions, figure 11 provides insights about whether they were randomly allocated throughout the survey. Similar to previous figures, each row is linked to one of the three scenarios, and each column is linked to one of the five sustainability levels. The x-axis in this case represents the description ID specific to the sustainability level (i.e. there are three descriptions for each sustainability level). The y-axis represents the proportion of times when each description was used in a particular scenario. From the figure, the randomization was well performed, as there is a balanced use of all descriptions for each sustainability level. Furthermore, as there are three possible scenarios for a specific level of description, a perfect distribution would involve an equal proportion of 0.33 (i.e., $\frac{1}{3}$) spread across all three scenarios. This is represented by the dotted black line across all figures. Hence, it is evident that the randomization was well performed.

It is important for this randomization to be performed well, as some descriptions may be more appealing than others, even within the same sustainability level. For instance, if description 1 linked to sustainability level A was less appealing than description 2 for the same level, a lack of randomization would skew results. In this case, the randomization was well performed, and such an issue has been mitigated.

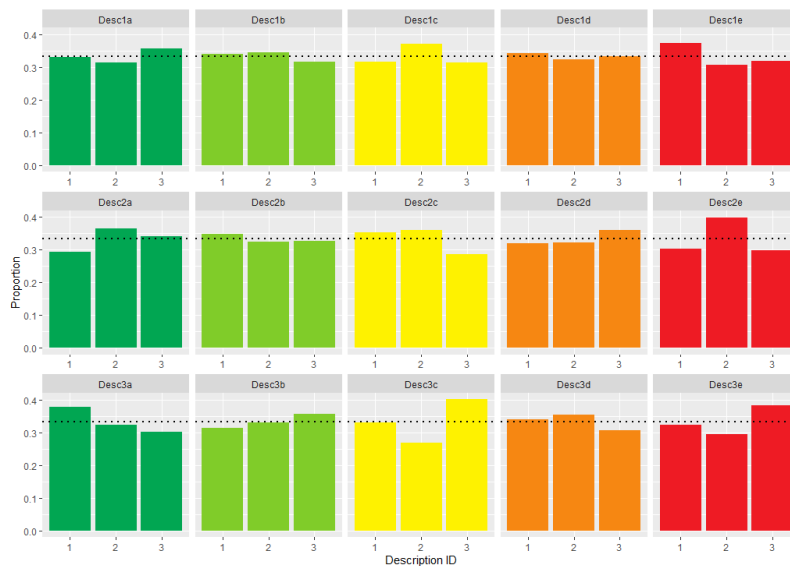


Figure 11 - Distribution of sustainability descriptions throughout the survey. The y-axis represents the portion of times that each description was used. The x-axis presents each description. Each of the colours is related to a sustainability level, from A to E, with green to red, respectively. Each row is connected to a scenario, in order from 1 to 3.

Appendix 9 – Text Responses Regarding Participant Suspicion

- Aligned Statements

- The study of consumer preferences relating to more sustainable clothes
- Analysing the willingness to pay more for more sustainable products.
- Testing consumer behavior around sustainable purchasing and it's pricing
- Sustainability when buying clothes
- effect of discount on purchasing behavior having sustainable awareness of people in mind?
- Study on consumption behavior regarding the prioritization of sustainable production-methods during the purchase decision
- Research on the consumer behavior related to sustainable choices, in particular if there are “sustainable” labels to differentiate the products
- About the connection between sustainable production and the price you pay for ist. Here you want to see, wether people are willing to pay more for more sustainable products
- Looking at the initiatives mayor fashion brands have launched to suggest that their products are “green”/”sustainable”/”produced with the smallest ecological impact possible”/.... my general impression is that these campaigns are mostly greenwashing to give you as customer the impression that they are buying a sustainable product. This is why I am generally sceptical when it comes to the question on how sustainability influences my nvironment to pay in the fashion industry
- Impact of sustainable practices on willingness to pay?

- Possibly the relationship between buying behavior for cloths in relationship to how important we view nvironment protection.
- Willingness to Pay for different forms/phrasings of environmentally friendly/socially responsible certifications/production methods
- To what extent sustainability influences our purchase decision and what importance the sustainability, the price and the characteristics of the product have in relation to the decision.
- How sustainability influences readiness to pay
- I think the researchers are studying whether consumers are willing to pay more for sustainably sources, produced and delivered clothing, given their opinions about climate change and its effects.
- Consumption behaviour and how sustainability can impact our behaviour
- Researchers are studying the willingness to pay for cloth with different environmental standards.
- The extent to which consumers value and will pay for sustainable or environmentally friendly products
- Impact of sistainability in clothing production on buying behavior
- **Vague Statements**
 - Something about sustainability
 - Sustainability/ Marketing
 - Maybe Marketing or something like sustainable economy
 - The Researcher is studying consumption behavior of individuals in the fashion industry
 - Sustainability, shopping practices
 - How people feel about environmental sustainability vs how they act in practice when faced with increased price etc.
- **Incorrect Statements**
 - Clothing items and their effect on sustainability
 - Environmental implications of Production of goods and services
 - Environment, production technics that are environmentally friendly
 - how consumers decisions affect the climate
 - international usage of global resources
 - Perhaps the disconnect between the products the people would buy and their choices on the last set of questions.

- If environmental/societal sustainability is more important to consumers compared to personal comfort (e.g. fit, style, etc.)

Note that the 11 unrelated statements have not been included here as they sometimes included personal information such as emails. This has been removed to protect individual privacy.

Appendix 10 – Willingness to Pay Premium Statistics

	<u>Sustainability Score</u>	<u>Min.</u>	<u>Q1 (25%)</u>	<u>Q2 (50%)</u>	<u>Mean</u>	<u>Q3 (75%)</u>	<u>Max.</u>
Scenario 1	A	-75%	25%	66.67%	100.15%	146.43%	766.67%
	B	-87.18%	0%	50%	77.23%	105%	900%
	C	-71.43%	0%	42.86%	69.87%	100%	700%
	D	-100%	0%	25%	37.51%	59.55%	433.33%
	E	-	-	-	-	-	-
Scenario 2	A	-80%	33.33%	100%	159.70%	184.62%	4900%
	B	-80%	16%	50%	100.86%	133.33%	2050%
	C	-86.67%	5.88%	50%	68.62%	100%	1200%
	D	-80%	0%	20%	37.40%	56.25%	850%
	E	-	-	-	-	-	-

Note that E-graded values are not included here as they are the benchmark used to calculate the premium for all other sustainability levels.

Appendix 11 – Influence of the Survey’s Structure on Outcomes

11.1 - Influence of Order on Willingness to Pay & Choice

Table 10 explores two examinations of the potential influence that the T-shirts’ order have on participants’ willingness to pay. Note that we control for the items’ sustainability level. The two examinations are divided into data from scenario 1 and scenario 2. One observes that in both scenarios, the order of items does not have a significant influence on willingness to pay, at the 95% confidence level. As the variables are factors, the baseline categories are ‘Order1’ (i.e., the first item listed on the survey’s page) and ‘SustA’ (i.e., the most sustainable item in the set presented to participants). Hence, order did not have a significant influence on participants’ willingness to pay for items in scenario 1 and 2. Note that the coefficients derived for ‘SustB’, ‘SustC’, ‘SustD’, and ‘SustE’ should not be interpreted at this stage as the equation does not control for other factors such as demographics; the purpose of these models are to explore the potential influence of order on willingness to pay.

	<i>Dependent variable:</i>	
	WTP	
	Scenario 1 (1)	Scenario 2 (2)
Order2	-0.199 (0.566)	-0.218 (0.530)
Order3	-0.807 (0.565)	0.191 (0.530)
Order4	-0.736 (0.565)	0.681 (0.530)
Order5	-0.565 (0.565)	-0.261 (0.530)
SustB	-3.340*** (0.566)	-5.513*** (0.532)
SustC	-3.432*** (0.565)	-8.355*** (0.530)
SustD	-7.623*** (0.565)	-11.143*** (0.530)
SustE	-11.223*** (0.565)	-14.381*** (0.530)
Constant	27.994*** (0.762)	28.816*** (0.700)
Observations	1,710	1,710
Log Likelihood	-6,234.886	-6,116.353
Akaike Inf. Crit.	12,491.770	12,254.710
Bayesian Inf. Crit.	12,551.660	12,314.590

Note: * p<0.1; ** p<0.05; *** p<0.01

Table 10 - Examining whether the order of options influenced respondents' willingness to pay, controlling for the items' sustainability score.

Model 1 and 2 have been developed on data from scenario 1 and 2 respectively.

Next, table 11 looks at whether order had an influence on respondents' chosen product, controlling for the items' sustainability score. This examination involves all three scenarios, with the left set of analyses involving logit regressions, and the right set involving probit regressions. One should observe that analyses are segregated column-wise in terms of scenario. Similar to the previous analysis, the coefficients for an option's ordered position (i.e., 'Order2', 'Order3', 'Order4' and 'Order5') are insignificantly different from zero at the 95% confidence level. Hence, the order of options in the survey did not significantly influence the probability that they were chosen by participants. Reiterating a similar notion from the previous analysis, the coefficients for 'SustB', 'SustC', 'SustD', and 'SustE' should not be deeply examined in this section, as the regression does not yet control for other factors (e.g., demographics).

Table 11 - Examining whether the order of options influenced respondents' choice, controlling for the items' sustainability score.

The left set of models are logit regressions whilst the right are probit regressions. Each column is related to one of the three scenarios. The dependent variable is whether an option was chosen by participants.

	<i>Dependent variable:</i>				<i>Dependent variable:</i>		
	Chosen				Chosen		
	Scenario 1	Scenario 2	Scenario 3		Scenario 1	Scenario 2	Scenario 3
	(1)	(2)	(3)		(1)	(2)	(3)
Order2	-0.004 (0.195)	-0.110 (0.193)	-0.156 (0.206)	Order2	-0.002 (0.111)	-0.053 (0.111)	-0.096 (0.117)
Order3	0.126 (0.192)	-0.187 (0.194)	-0.030 (0.200)	Order3	0.069 (0.110)	-0.104 (0.112)	0.002 (0.114)
Order4	-0.111 (0.198)	-0.250 (0.197)	0.124 (0.196)	Order4	-0.069 (0.112)	-0.144 (0.113)	0.072 (0.112)
Order5	0.149 (0.192)	-0.217 (0.194)	-0.073 (0.199)	Order5	0.076 (0.110)	-0.122 (0.112)	-0.039 (0.114)
SustB	-0.678*** (0.182)	-0.270 (0.167)	-0.646*** (0.166)	SustB	-0.398*** (0.106)	-0.163 (0.101)	-0.393*** (0.100)
SustC	-0.529*** (0.177)	-0.690*** (0.178)	-1.210*** (0.183)	SustC	-0.311*** (0.104)	-0.409*** (0.104)	-0.718*** (0.106)
SustD	-0.813*** (0.187)	-1.272*** (0.201)	-1.800*** (0.212)	SustD	-0.473*** (0.108)	-0.730*** (0.112)	-1.034*** (0.116)
SustE	-1.155*** (0.201)	-1.936*** (0.245)	-2.193*** (0.239)	SustE	-0.659*** (0.112)	-1.066*** (0.126)	-1.231*** (0.124)
Constant	-0.827*** (0.168)	-0.543*** (0.164)	-0.373** (0.165)	Constant	-0.508*** (0.099)	-0.347*** (0.098)	-0.237** (0.098)
Observations	1,710	1,710	1,710	Observations	1,710	1,710	1,710
Log Likelihood	-834.821	-801.394	-777.404	Log Likelihood	-834.865	-801.375	-777.306
Akaike Inf. Crit.	1,687.642	1,620.788	1,572.808	Akaike Inf. Crit.	1,687.730	1,620.750	1,572.613
Note:	* p<0.1; ** p<0.05; *** p<0.01			Note:	* p<0.1; ** p<0.05; *** p<0.01		

11.2 - Influence of T-shirts on Willingness to Pay & Choice

Similar analyses have been conducted on the T-shirt images and their color. Table 12 presents the output of a regression to predict participants' willingness to pay based on the items' image, whilst also controlling for the item's sustainability score. The figure also presents another more concise analysis that focuses on the T-shirt's color (i.e., black or grey). Both analyses show no significant results at the 95% confidence level. Hence, both the T-shirt images and color are insignificant predictors of participants' willingness to pay. Similar to the previous analyses, the sustainability coefficients should not be interpreted here.

Table 13 extends this analysis to participants' choice across all three scenarios. These have been divided column-wise, with the left set of analyses being a logit model and the right set being a probit model. Beyond the points similar to previous analyses, these models seem to have some significant results for some specific images (i.e., images 4, 9, 10, 12). Hence, one may consider including these variables in the upcoming analyses.

Lastly, table 14 simplifies this analysis by considering only item color. As represented in the analysis, and other than in scenario 2, color seems to have a significant influence on participants' probability of choosing an item from the set provided to them, at the 95% confidence level. As a consolidated method of controlling for color, compared to previous models, future analyses may consider including color as a controlled variable. Note that these analyses will include other variables (e.g., demographic information), and hence may influence the size and significance of the coefficient shown below.

<i>Dependent variable:</i>			<i>Dependent variable:</i>		
	WTP			WTP	
	Scenario 1	Scenario 2		Scenario 1	Scenario 2
	(1)	(2)		(1)	(2)
ImageID2	0.801 (1.089)	-1.198 (0.943)	ColorGrey	-0.402 (0.381)	-0.301 (0.359)
ImageID3	-0.866 (1.092)	-0.608 (0.941)	SustB	-3.365*** (0.564)	-5.472*** (0.530)
ImageID4	0.124 (1.050)	-1.759* (0.975)	SustC	-3.441*** (0.564)	-8.314*** (0.530)
ImageID5	0.547 (1.051)	-0.811 (0.965)	SustD	-7.615*** (0.564)	-11.090*** (0.530)
ImageID6	-1.126 (1.008)	-1.922* (0.997)	SustE	-11.216*** (0.564)	-14.380*** (0.530)
ImageID7	0.699 (1.016)	-0.061 (0.976)	Constant	27.725*** (0.695)	29.007*** (0.639)
ImageID8	0.335 (1.011)	-1.097 (1.005)	Observations	1,710	1,710
ImageID9	1.448 (1.054)	-0.646 (0.998)	Log Likelihood	-6,236.716	-6,118.750
ImageID10	0.731 (1.042)	0.475 (0.988)	Akaike Inf. Crit.	12,489.430	12,253.500
ImageID11	-0.321 (1.039)	-0.975 (0.987)	Bayesian Inf. Crit.	12,532.990	12,297.050
ImageID12	1.017 (1.060)	-0.897 (0.971)	Note:	*p<0.1; **p<0.05; ***p<0.01	
ImageID13	-0.786 (1.053)	0.271 (0.959)			
ImageID14	1.018 (1.026)	-0.471 (1.008)			
ImageID15	-0.029 (1.044)	-0.575 (0.991)			
SustB	-3.341*** (0.567)	-5.495*** (0.531)			
SustC	-3.383*** (0.567)	-8.360*** (0.533)			
SustD	-7.547*** (0.567)	-11.129*** (0.532)			
SustE	-11.136*** (0.570)	-14.417*** (0.531)			
Constant	27.251*** (0.978)	29.574*** (0.907)			
Observations	1,710	1,710			
Log Likelihood	-6,219.887	-6,103.137			
Akaike Inf. Crit.	12,481.770	12,248.270			
Bayesian Inf. Crit.	12,596.100	12,362.600			

Table 12 - Examining whether the T-shirt image or colour influenced respondents' willingness to pay, controlling for the items' sustainability score.

Each column is related to either scenario 1 or 2. The left set displays regressions controlling for all t-shirt images, whilst the right set controls only for t-shirt colour. The dependent variable is participants' willingness to pay across scenarios.

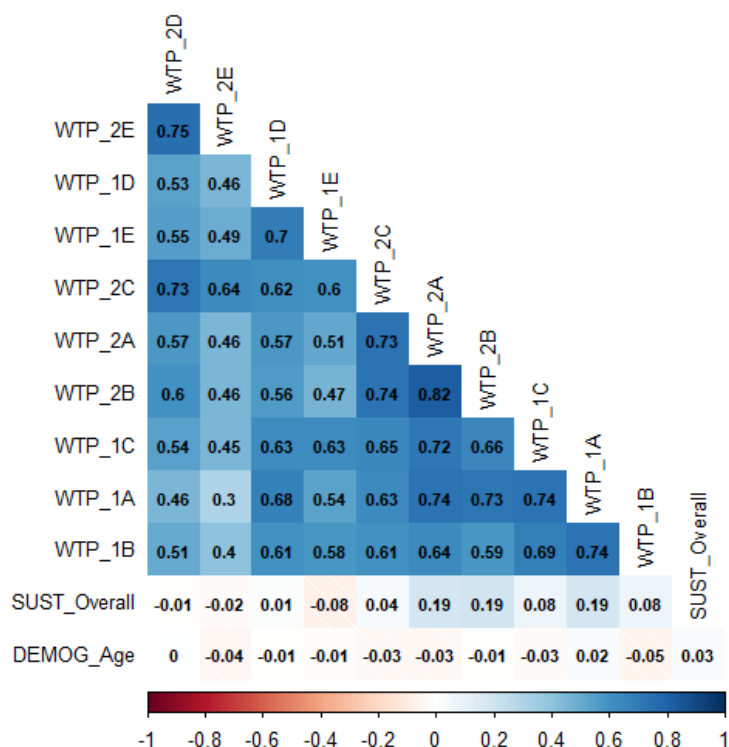
Table 13 - Examining whether the T-shirt images influenced choice, controlling for the items' sustainability score. The left set of models display logit regressions, whilst the right set use probit regressions. The dependent variable is whether participants chose a product. Analyses have been divided across scenarios.

	Dependent variable:				Dependent variable:		
	Chosen				Chosen		
	Scenario 1	Scenario 2	Scenario 3		Scenario 1	Scenario 2	Scenario 3
	(1)	(2)	(3)		(1)	(2)	(3)
ImageID2	0.339 (0.208)	-0.068 (0.189)	0.056 (0.206)	ImageID2	0.624* (0.378)	-0.124 (0.331)	0.078 (0.363)
ImageID3	0.205 (0.212)	-0.214 (0.194)	0.071 (0.200)	ImageID3	0.383 (0.385)	-0.352 (0.343)	0.101 (0.350)
ImageID4	0.488** (0.199)	-0.181 (0.200)	-0.081 (0.209)	ImageID4	0.860** (0.357)	-0.320 (0.354)	-0.134 (0.373)
ImageID5	0.275 (0.203)	-0.157 (0.197)	0.169 (0.200)	ImageID5	0.511 (0.369)	-0.294 (0.350)	0.272 (0.347)
ImageID6	0.257 (0.198)	-0.144 (0.200)	0.121 (0.203)	ImageID6	0.474 (0.362)	-0.238 (0.351)	0.223 (0.354)
ImageID7	0.258 (0.198)	0.076 (0.191)	0.279 (0.203)	ImageID7	0.470 (0.360)	0.113 (0.332)	0.462 (0.353)
ImageID8	0.063 (0.203)	-0.155 (0.204)	-0.170 (0.213)	ImageID8	0.122 (0.376)	-0.258 (0.360)	-0.289 (0.380)
ImageID9	0.735*** (0.195)	-0.140 (0.204)	0.182 (0.194)	ImageID9	1.278*** (0.347)	-0.236 (0.360)	0.288 (0.338)
ImageID10	0.441** (0.197)	0.235 (0.188)	0.339* (0.199)	ImageID10	0.787** (0.356)	0.379 (0.323)	0.570* (0.345)
ImageID11	0.388* (0.199)	0.220 (0.189)	0.260 (0.195)	ImageID11	0.696* (0.359)	0.372 (0.324)	0.448 (0.337)
ImageID12	0.482** (0.200)	-0.017 (0.193)	0.029 (0.202)	ImageID12	0.858** (0.358)	-0.014 (0.336)	0.019 (0.355)
ImageID13	0.183 (0.208)	0.275 (0.186)	0.238 (0.200)	ImageID13	0.316 (0.382)	0.470 (0.319)	0.432 (0.348)
ImageID14	-0.140 (0.213)	-0.039 (0.200)	0.026 (0.204)	ImageID14	-0.242 (0.400)	-0.067 (0.349)	0.041 (0.361)
ImageID15	0.175 (0.206)	0.007 (0.194)	-0.239 (0.213)	ImageID15	0.327 (0.378)	-0.026 (0.340)	-0.498 (0.388)
SustB	-0.405*** (0.107)	-0.167* (0.102)	-0.400*** (0.101)	SustB	-0.697*** (0.185)	-0.277 (0.169)	-0.656*** (0.167)
SustC	-0.323*** (0.106)	-0.389*** (0.105)	-0.726*** (0.107)	SustC	-0.543*** (0.180)	-0.659*** (0.179)	-1.232*** (0.184)
SustD	-0.478*** (0.109)	-0.734*** (0.113)	-1.038*** (0.117)	SustD	-0.823*** (0.190)	-1.273*** (0.203)	-1.809*** (0.214)
SustE	-0.689*** (0.114)	-1.090*** (0.127)	-1.244*** (0.125)	SustE	-1.200*** (0.205)	-1.963*** (0.246)	-2.215*** (0.241)
Constant	-0.770*** (0.162)	-0.421*** (0.149)	-0.336** (0.155)	Constant	-1.301*** (0.296)	-0.674*** (0.256)	-0.538** (0.268)
Observations	1,710	1,710	1,710	Observations	1,710	1,710	1,710
Log Likelihood	-818.044	-792.848	-769.087	Log Likelihood	-818.134	-793.348	-769.008
Akaike Inf. Crit.	1,674.088	1,623.697	1,576.173	Akaike Inf. Crit.	1,674.267	1,624.696	1,576.016
Note:	* p<0.1; ** p<0.05; *** p<0.01			Note:	* p<0.1; ** p<0.05; *** p<0.01		

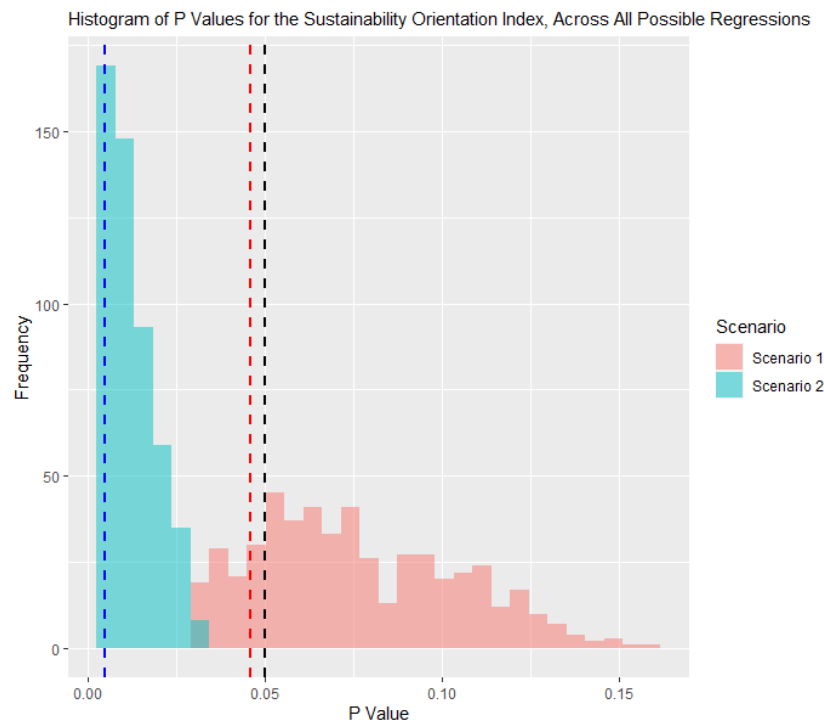
Table 14 - Examining whether T-shirt colours influenced respondents' choice, controlling for the sustainability score. The left set of models involve logistic regressions whilst the right uses probit regressions. The dependent variable is whether participants chose a product. Analyses have been divided column-wide across scenarios.

Dependent variable:				Dependent variable:			
Chosen				Chosen			
	Scenario 1	Scenario 2	Scenario 3		Scenario 1	Scenario 2	Scenario 3
	(1)	(2)	(3)		(1)	(2)	(3)
ColorGrey	-0.492*** (0.126)	-0.235* (0.126)	-0.339*** (0.129)	ColorGrey	-0.282*** (0.071)	-0.137* (0.072)	-0.195*** (0.073)
SustB	-0.678*** (0.182)	-0.272 (0.167)	-0.659*** (0.166)	SustB	-0.398*** (0.106)	-0.165 (0.101)	-0.402*** (0.100)
SustC	-0.509*** (0.178)	-0.669*** (0.177)	-1.226*** (0.183)	SustC	-0.303*** (0.105)	-0.395*** (0.104)	-0.726*** (0.106)
SustD	-0.797*** (0.187)	-1.268*** (0.201)	-1.825*** (0.212)	SustD	-0.463*** (0.108)	-0.729*** (0.112)	-1.048*** (0.116)
SustE	-1.157*** (0.202)	-1.954*** (0.245)	-2.195*** (0.239)	SustE	-0.665*** (0.113)	-1.077*** (0.126)	-1.232*** (0.124)
Constant	-0.586*** (0.129)	-0.590*** (0.127)	-0.236* (0.125)	Constant	-0.371*** (0.078)	-0.370*** (0.077)	-0.155** (0.076)
Observations	1,710	1,710	1,710	Observations	1,710	1,710	1,710
Log Likelihood	-828.198	-800.693	-774.947	Log Likelihood	-828.052	-800.620	-774.879
Akaike Inf. Crit.	1,668.396	1,613.385	1,561.893	Akaike Inf. Crit.	1,668.104	1,613.240	1,561.758
Note:	* p<0.1; ** p<0.05; *** p<0.01			Note:	* p<0.1; ** p<0.05; *** p<0.01		

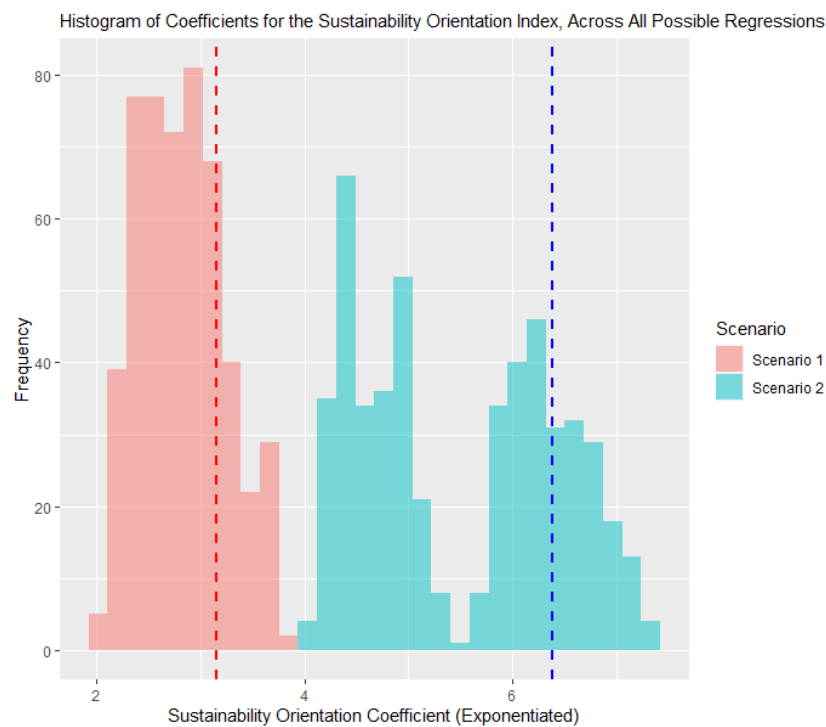
Appendix 12 – Correlation Matrix for Numeric Variables in the Study



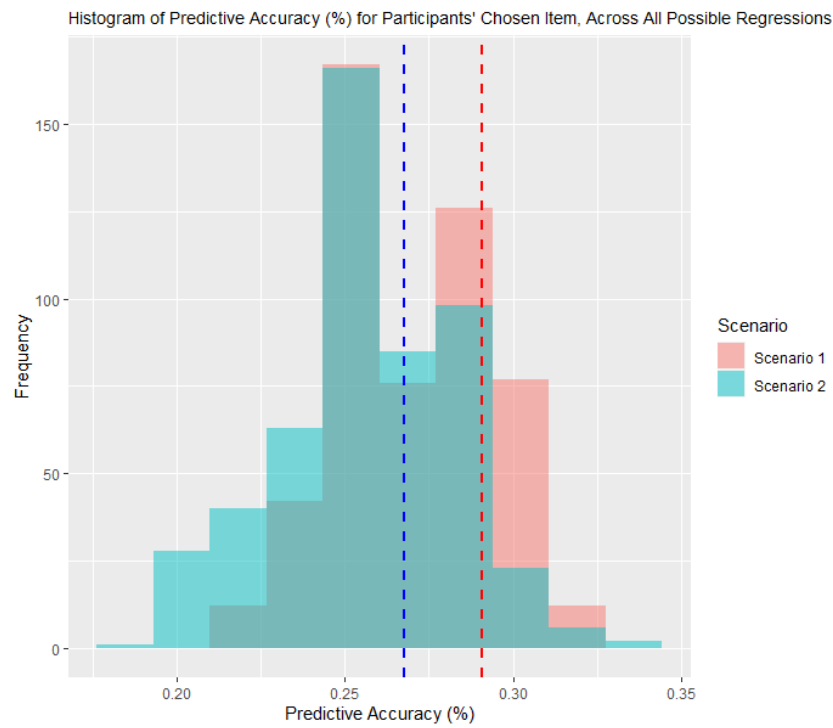
Appendix 13 – P-Value Histogram for Sustainability Orientation



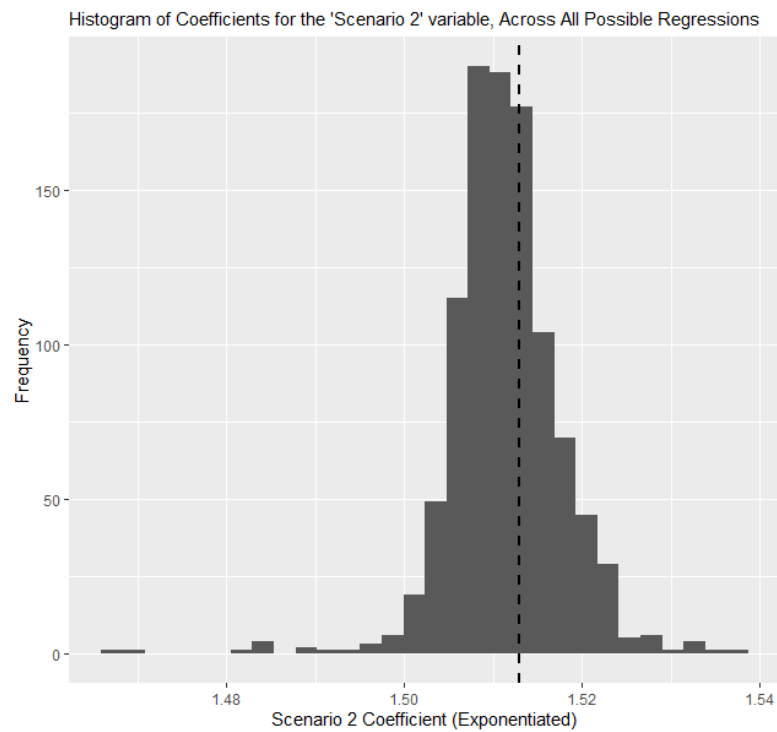
Appendix 14 – Coefficient Histogram for Sustainability Orientation



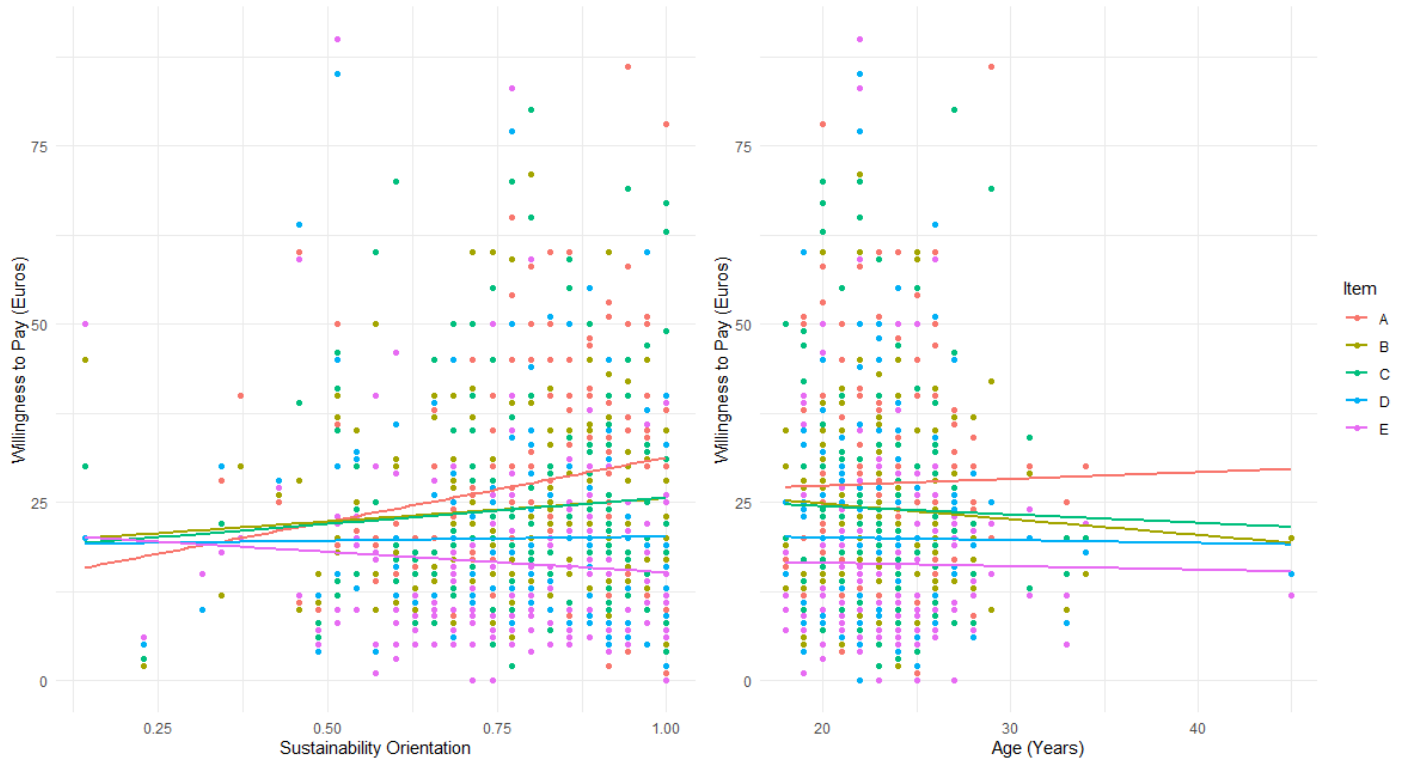
Appendix 15 – Predictive Accuracy Histogram for Chosen Item



Appendix 16 – Coefficient Histogram for Scenario 2

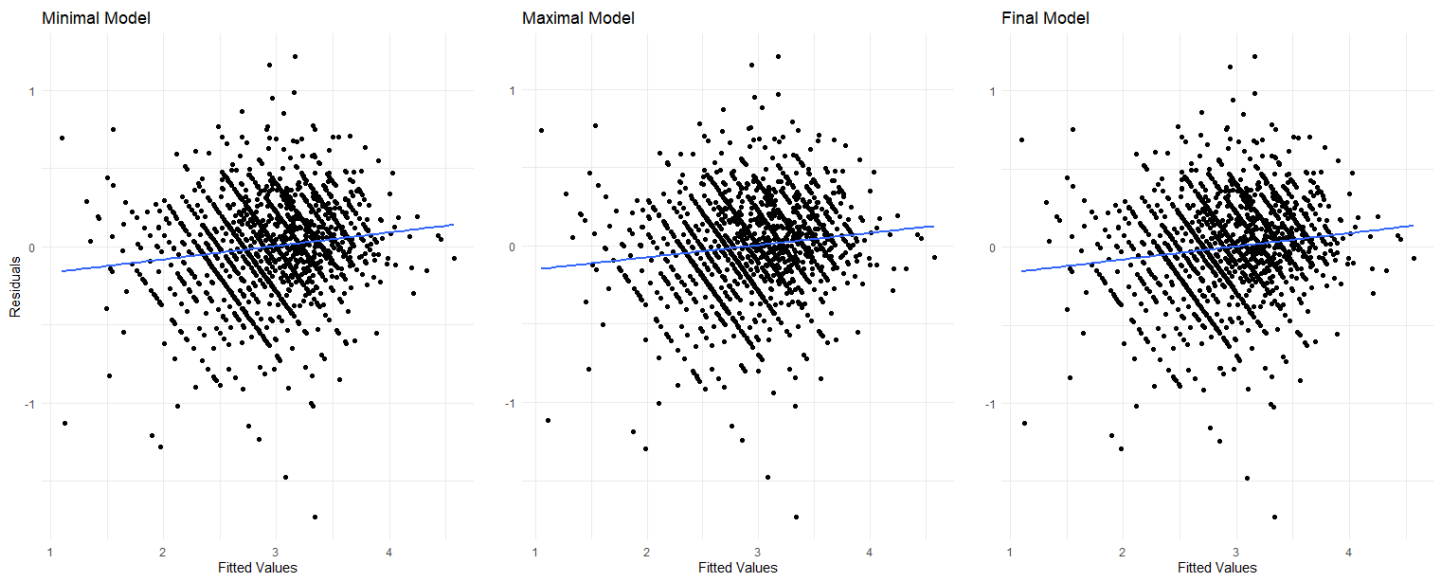


Appendix 17 – Linear Relationship Checks (Scenario 1)

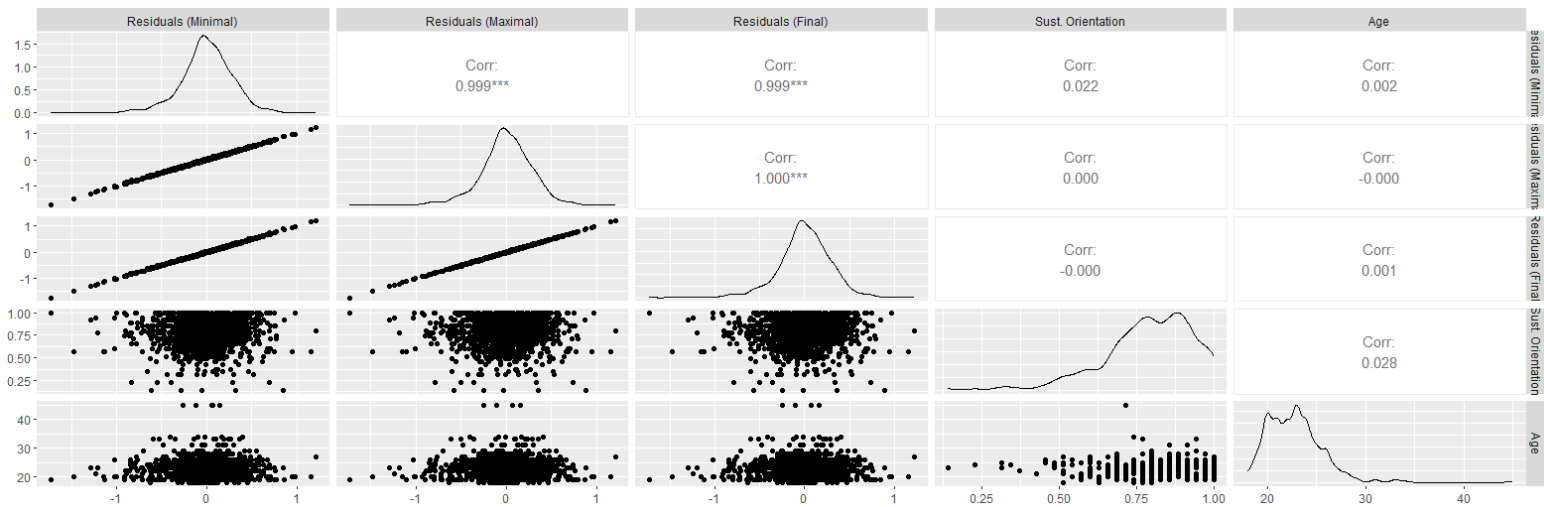


A	$WTP = 18.045 \text{ Sust} + 13.259$	$R^2 = 0.036$	$WTP = 0.095 \text{ Age} + 25.382$	$R^2 = 0.000$
B	$WTP = 6.550 \text{ Sust} + 18.995$	$R^2 = 0.006$	$WTP = -0.220 \text{ Age} + 29.205$	$R^2 = 0.003$
C	$WTP = 7.429 \text{ Sust} + 18.205$	$R^2 = 0.006$	$WTP = -0.116 \text{ Age} + 26.733$	$R^2 = 0.001$
D	$WTP = 1.186 \text{ Sust} + 18.970$	$R^2 = 0.000$	$WTP = -0.039 \text{ Age} + 20.790$	$R^2 = 0.000$
E	$WTP = -5.729 \text{ Sust} + 20.865$	$R^2 = 0.006$	$WTP = -0.048 \text{ Age} + 17.424$	$R^2 = 0.000$

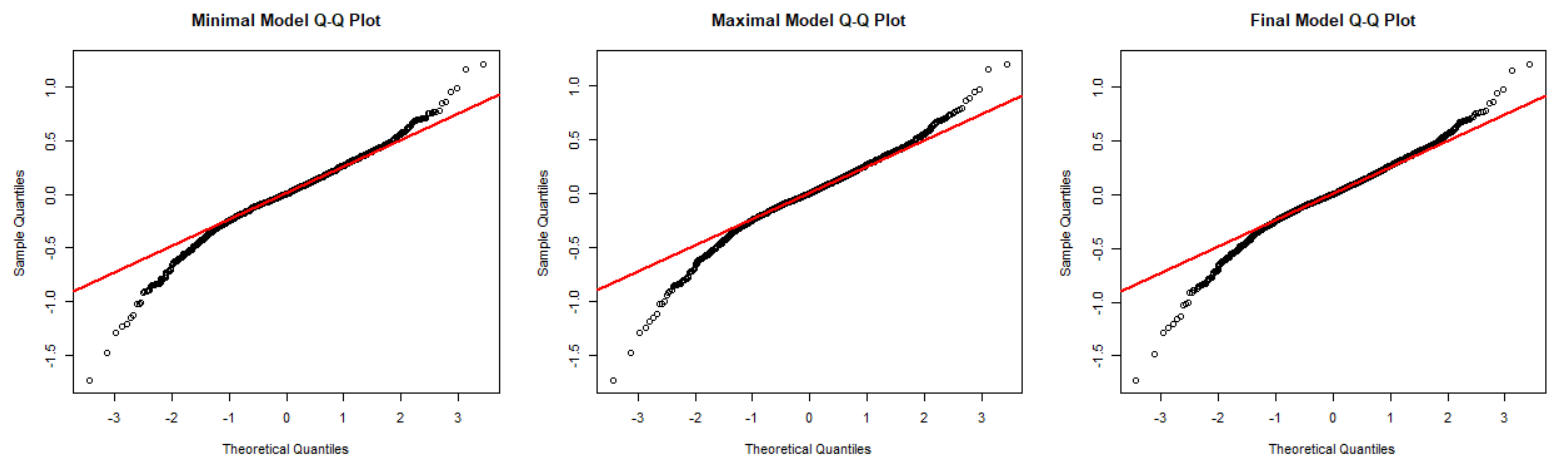
Appendix 18 – Constant Residual Variance Checks (Scenario 1)



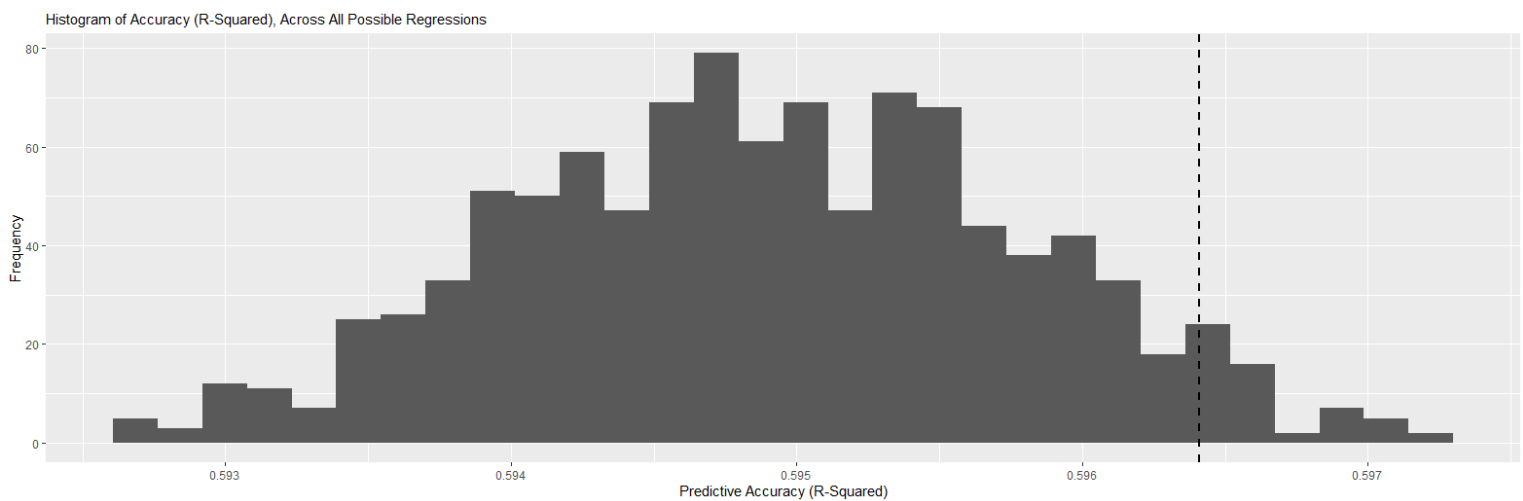
Appendix 19 – Independent Residuals Checks (Scenario 1)



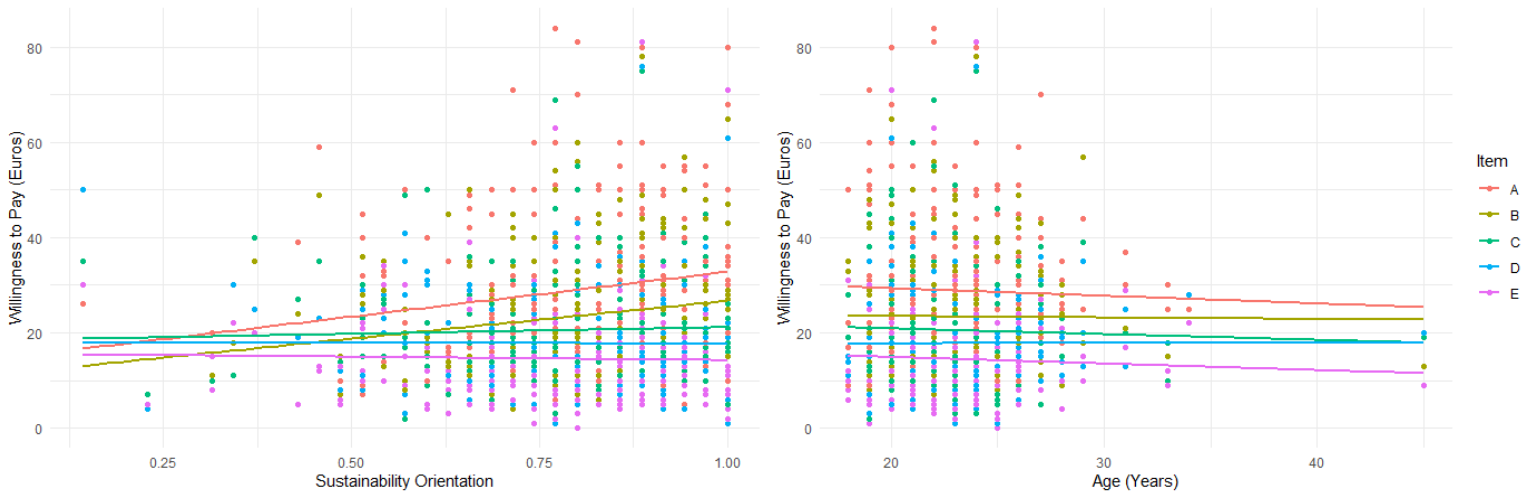
Appendix 20 – Normal Distribution of Residuals Checks (Scenario 1)



Appendix 21 – Predictive Accuracy Histogram for Scenario 1's WTP

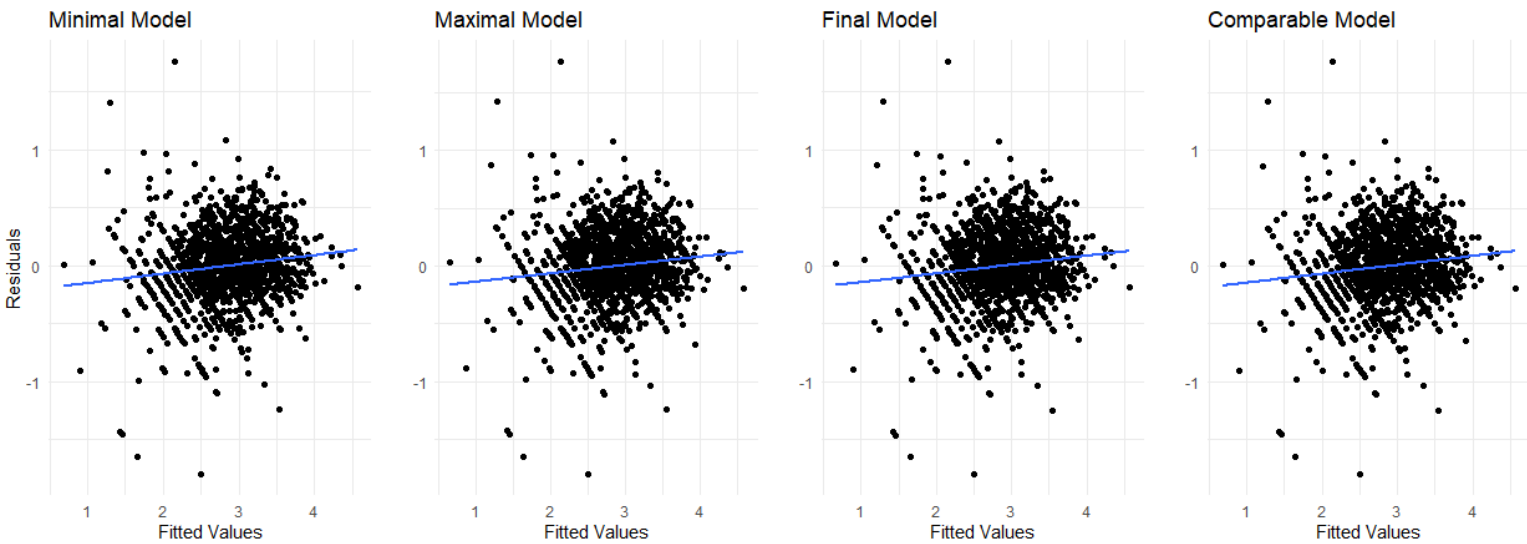


Appendix 22 – Linear Relationship Checks (Scenario 2)

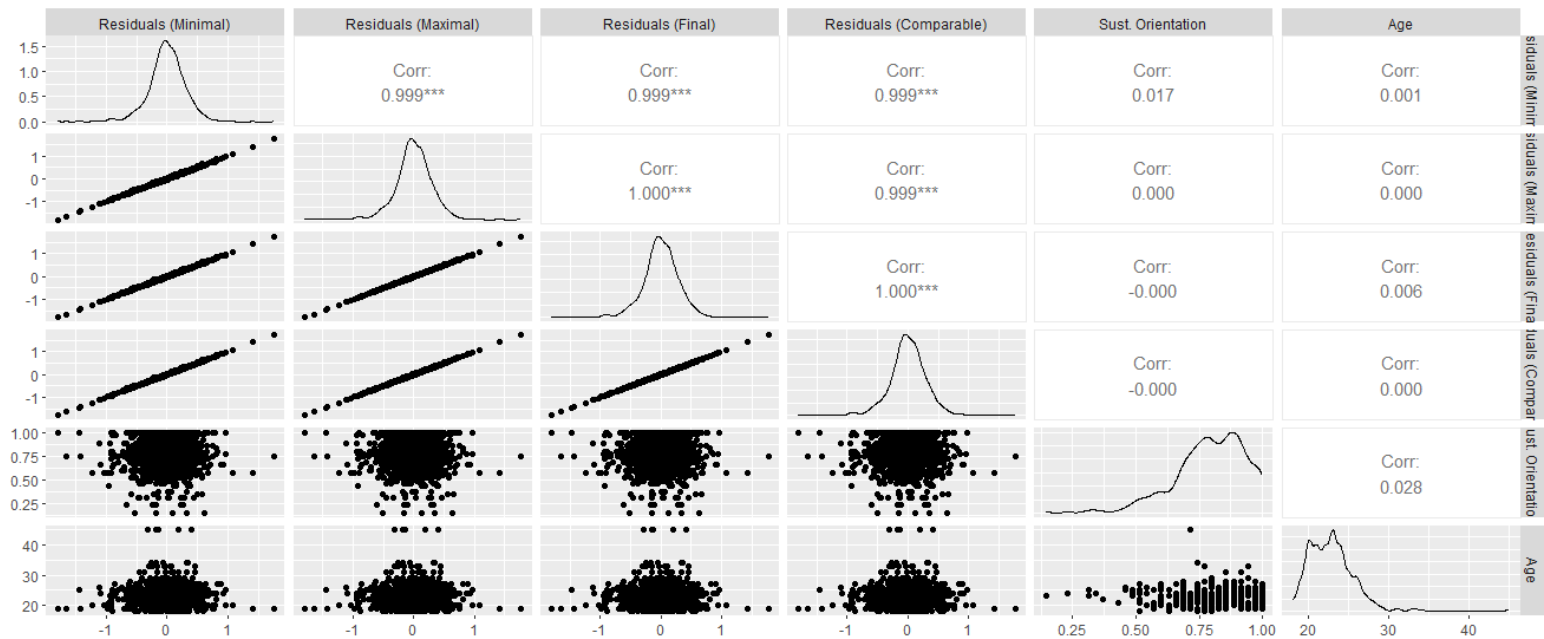


A	$WTP = 18.837 Sust + 13.963$	$R^2 = 0.034$	$WTP = -0.159 Age + 32.5031$	$R^2 = 0.001$
B	$WTP = 15.923 Sust + 10.789$	$R^2 = 0.036$	$WTP = -0.030 Age + 24.095$	$R^2 = 0.000$
C	$WTP = 2.809 Sust + 18.315$	$R^2 = 0.001$	$WTP = -0.120 Age + 23.265$	$R^2 = 0.001$
D	$WTP = -0.3512 Sust + 18.050$	$R^2 = 0.000$	$WTP = 0.008 Age + 17.585$	$R^2 = 0.000$
E	$WTP = -1.409 Sust + 15.624$	$R^2 = 0.000$	$WTP = -0.137 Age + 17.633$	$R^2 = 0.002$

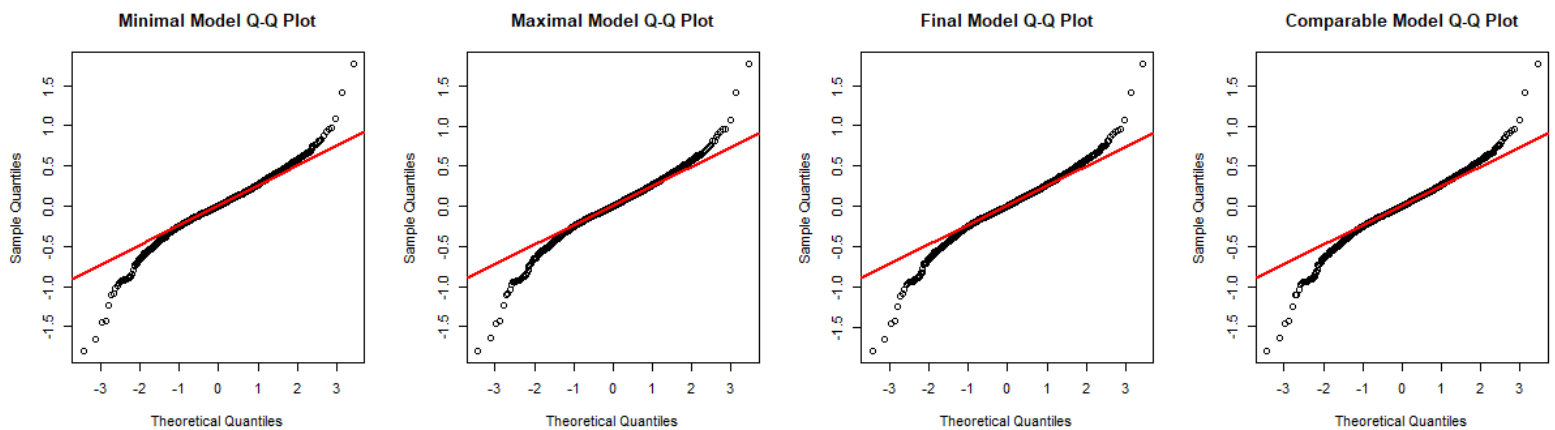
Appendix 23 – Constant Residual Variance Checks (Scenario 2)



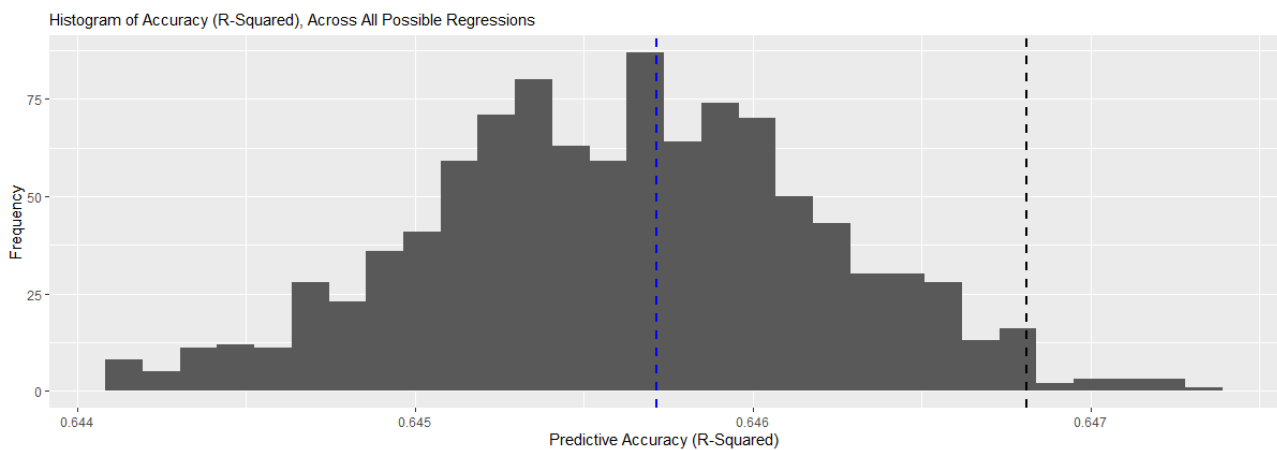
Appendix 24 – Independent Residual Checks (Scenario 2)



Appendix 25 – Normal Distribution of Residuals Checks (Scenario 2)



Appendix 26 - Predictive Accuracy Histogram for Scenario 2's WTP



Appendix 27 – Willingness to Pay with Interaction Terms

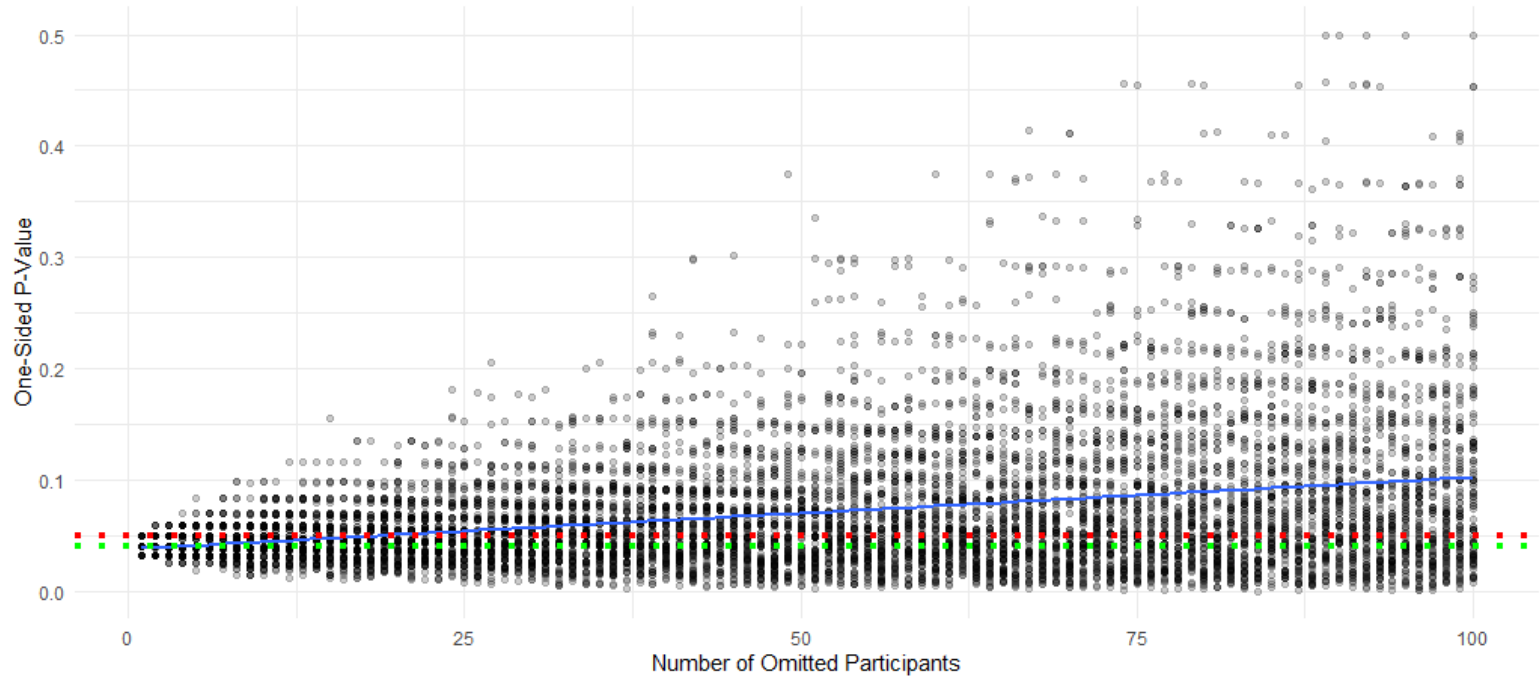
	Dependent variable:				Dependent variable:				Dependent variable:		
	logWTP				logWTP				logWTP		
	Minimal (1)	Maximal (2)	Final (3)		Minimal (1)	Maximal (2)	Final (3)		Minimal (1)	Maximal (2)	Final (3)
Item1A	-0.157 (0.144)	-0.269 (0.483)	-0.091 (0.153)	Item1E:BuysOwnClothes.No	-0.401** (0.178)	-0.380** (0.170)	Item2E:Gender.Non-binary/third gender	0.418 (0.333)	0.415 (0.323)		
Item1B	0.012 (0.144)	-0.198 (0.483)	0.073 (0.153)	Item1A:BuysOwnClothes.No	-0.022 (0.178)	-0.012 (0.170)	Item1E:Gender.Prefer not to say	-0.242 (0.300)	-0.332 (0.282)		
Item1C	-0.048 (0.144)	0.480 (0.483)	-0.057 (0.153)	Item1B:BuysOwnClothes.No	-0.025 (0.178)	-0.055 (0.170)	Item1A:Gender.Prefer not to say	-0.335 (0.300)	-0.172 (0.282)		
Item1D	0.022 (0.144)	0.377 (0.483)	-0.048 (0.153)	Item1C:BuysOwnClothes.No	-0.058 (0.178)	-0.058 (0.170)	Item1B:Gender.Prefer not to say	-0.524* (0.300)	-0.461 (0.282)		
Item2A	-0.116 (0.144)	0.187 (0.483)	-0.006 (0.153)	Item1D:BuysOwnClothes.No	-0.098 (0.178)	-0.055 (0.170)	Item1C:Gender.Prefer not to say	-0.263 (0.300)	-0.194 (0.282)		
Item2B	-0.224 (0.144)	0.305 (0.483)	-0.159 (0.153)	Item2A:BuysOwnClothes.No	0.053 (0.178)	0.018 (0.170)	Item1D:Gender.Prefer not to say	0.101 (0.300)	0.118 (0.282)		
Item2C	0.108 (0.144)	-0.033 (0.483)	0.151 (0.153)	Item2B:BuysOwnClothes.No	-0.091 (0.178)	-0.076 (0.170)	Item2A:Gender.Prefer not to say	-0.824*** (0.300)	-0.765*** (0.282)		
Item2D	0.037 (0.144)	0.008 (0.483)	0.039 (0.153)	Item2C:BuysOwnClothes.No	-0.070 (0.178)	-0.074 (0.170)	Item2B:Gender.Prefer not to say	-0.613** (0.300)	-0.497* (0.282)		
Item2E	-0.017 (0.144)	-0.007 (0.483)	-0.144 (0.153)	Item2D:BuysOwnClothes.No	-0.125 (0.178)	-0.130 (0.170)	Item2C:Gender.Prefer not to say	-0.691** (0.300)	-0.716** (0.282)		
Item1E:Sust.Orientation	0.039 (0.210)	0.102 (0.233)	0.052 (0.213)	Item2E:BuysOwnClothes.No	-0.165 (0.178)	-0.200 (0.170)	Item2D:Gender.Prefer not to say	-0.442 (0.300)	-0.391 (0.282)		
Item1A:Sust.Orientation	0.926*** (0.210)	0.887*** (0.233)	0.924*** (0.213)	Item1E:Age	0.004 (0.014)		Item2E:Gender.Prefer not to say	-0.040 (0.300)	-0.029 (0.282)		
Item1B:Sust.Orientation	0.559*** (0.210)	0.488** (0.233)	0.551*** (0.213)	Item1A:Age	0.012 (0.014)		Item1E:Employment.Part Time	-0.035 (0.092)	-0.020 (0.084)		
Item1C:Sust.Orientation	0.600*** (0.210)	0.583** (0.233)	0.627*** (0.213)	Item1B:Age	0.005 (0.014)		Item1A:Employment.Part Time	-0.222** (0.092)	-0.188** (0.084)		
Item1D:Sust.Orientation	0.288 (0.210)	0.438* (0.233)	0.375* (0.213)	Item1C:Age	-0.004 (0.014)		Item1B:Employment.Part Time	-0.258*** (0.092)	-0.231*** (0.084)		
Item2A:Sust.Orientation	0.932*** (0.210)	0.816*** (0.233)	0.865*** (0.213)	Item1D:Age	-0.002 (0.014)		Item1C:Employment.Part Time	-0.165* (0.092)	-0.147* (0.084)		
Item2B:Sust.Orientation	0.804*** (0.210)	0.793*** (0.233)	0.783*** (0.213)	Item2A:Age	0.016 (0.014)		Item1D:Employment.Part Time	-0.044 (0.092)	-0.046 (0.084)		
Item2C:Sust.Orientation	0.234 (0.210)	0.261 (0.233)	0.200 (0.213)	Item2B:Age	0.011 (0.014)		Item2A:Employment.Part Time	-0.256*** (0.092)	-0.225*** (0.084)		
Item2D:Sust.Orientation	0.124 (0.210)	0.220 (0.233)	0.135 (0.213)	Item2C:Age	0.011 (0.014)		Item2B:Employment.Part Time	-0.225** (0.092)	-0.207** (0.084)		
Item2E:Sust.Orientation	-0.097 (0.210)	0.031 (0.233)	0.018 (0.213)	Item2D:Age	0.020 (0.014)		Item2C:Employment.Part Time	-0.103 (0.092)	-0.087 (0.084)		
Item1E:Suspicion.Maybe		-0.033 (0.065)		Item2E:Age	0.009 (0.014)		Item2D:Employment.Part Time	-0.169* (0.092)	-0.122 (0.084)		
Item1A:Suspicion.Maybe		-0.022 (0.065)		Item1E:Gender.Male	0.200*** (0.066)	0.198*** (0.062)	Item2E:Employment.Part Time	-0.142 (0.092)	-0.109 (0.084)		
Item1B:Suspicion.Maybe		-0.048 (0.065)		Item1A:Gender.Male	0.079 (0.066)	0.066 (0.062)	Item1E:Employment.Unemployed and searching	-0.090 (0.211)	-0.108 (0.197)		
Item1C:Suspicion.Maybe		-0.046 (0.065)		Item1B:Gender.Male	0.129** (0.066)	0.131** (0.062)	Item1A:Employment.Unemployed and searching	0.236 (0.211)	0.219 (0.197)		
Item1D:Suspicion.Maybe		0.039 (0.065)		Item1C:Gender.Male	0.165** (0.066)	0.165*** (0.062)	Item1B:Employment.Unemployed and searching	0.031 (0.211)	-0.052 (0.197)		
Item2A:Suspicion.Maybe		-0.063 (0.065)		Item1D:Gender.Male	0.195*** (0.066)	0.181*** (0.062)	Item1C:Employment.Unemployed and searching	0.375* (0.211)	0.393** (0.197)		
Item2B:Suspicion.Maybe		-0.022 (0.065)		Item2A:Gender.Male	0.083 (0.066)	0.110* (0.062)	Item1D:Employment.Unemployed and searching	-0.00005 (0.211)	-0.018 (0.197)		
Item2C:Suspicion.Maybe		-0.073 (0.065)		Item2B:Gender.Male	0.104 (0.066)	0.115* (0.062)	Item2A:Employment.Unemployed and searching	0.262 (0.211)	0.300 (0.197)		
Item2D:Suspicion.Maybe		-0.063 (0.065)		Item2C:Gender.Male	0.143** (0.066)	0.155** (0.062)	Item2B:Employment.Unemployed and searching	0.225 (0.211)	0.262 (0.197)		
Item2E:Suspicion.Maybe		0.040 (0.065)		Item2D:Gender.Male	0.173*** (0.066)	0.184*** (0.062)	Item2C:Employment.Unemployed and searching	0.237 (0.211)	0.268 (0.197)		
Item1E:Suspicion.No		0.115 (0.175)		Item2E:Gender.Male	0.265*** (0.066)	0.283*** (0.062)	Item2D:Employment.Unemployed and searching	0.132 (0.211)	0.209 (0.197)		
Item1A:Suspicion.No		-0.066 (0.175)		Item1E:Gender.Non-binary/third gender	-0.187 (0.333)	-0.180 (0.323)	Item2E:Employment.Unemployed and searching	0.021 (0.211)	0.047 (0.197)		
Item1B:Suspicion.No		-0.037 (0.175)		Item1A:Gender.Non-binary/third gender	0.350 (0.333)	0.274 (0.323)	Item1E:Employment.Unemployed and not searching	0.001 (0.363)	-0.115 (0.319)		
Item1C:Suspicion.No		-0.066 (0.175)		Item1B:Gender.Non-binary/third gender	0.331 (0.333)	0.298 (0.323)	Item1A:Employment.Unemployed and not searching	0.037 (0.363)	0.066 (0.319)		
Item1D:Suspicion.No		0.138 (0.175)		Item1C:Gender.Non-binary/third gender	0.332 (0.333)	0.242 (0.323)	Item1B:Employment.Unemployed and not searching	-0.056 (0.363)	-0.034 (0.319)		
Item2A:Suspicion.No		-0.109 (0.175)		Item1D:Gender.Non-binary/third gender	0.175 (0.333)	0.171 (0.323)	Item1C:Employment.Unemployed and not searching	0.075 (0.363)	0.192 (0.319)		
Item2B:Suspicion.No		0.124 (0.175)		Item2A:Gender.Non-binary/third gender	0.082 (0.333)	-0.001 (0.323)	Item1D:Employment.Unemployed and not searching	0.032 (0.363)	0.018 (0.319)		
Item2C:Suspicion.No		0.109 (0.175)		Item2B:Gender.Non-binary/third gender	0.470 (0.333)	0.416 (0.323)	Item2A:Employment.Unemployed and not searching	0.256 (0.363)	0.249 (0.319)		
Item2D:Suspicion.No		0.167 (0.175)		Item2C:Gender.Non-binary/third gender	0.554* (0.333)	0.537* (0.323)	Item2B:Employment.Unemployed and not searching	0.150 (0.363)	0.281 (0.319)		
Item2E:Suspicion.No		0.008 (0.175)		Item2D:Gender.Non-binary/third gender	0.248 (0.333)	0.247 (0.323)	Item2C:Employment.Unemployed and not searching	0.173 (0.363)	0.081 (0.319)		

	<i>Dependent variable:</i>				<i>Dependent variable:</i>				<i>Dependent variable:</i>		
	Minimal	logWTP Maximal	Final		Minimal	logWTP Maximal	Final		Minimal	logWTP Maximal	Final
	(1)	(2)	(3)		(1)	(2)	(3)		(1)	(2)	(3)
Item2D:Employment.Unemployed and not searching		0.129 (0.363)	0.080 (0.319)	Item2D:AnnualIncomeEUR.200k+		0.279 (0.404)		Item2D:HighestEduc.Some secondary		-0.018 (0.705)	
Item2E:Employment.Unemployed and not searching		0.667* (0.363)	0.507 (0.319)	Item2E:AnnualIncomeEUR.200k+		0.215 (0.404)		Item2E:HighestEduc.Some secondary		0.357 (0.705)	
Item1E:AnnualIncomeEUR.25k-49k		0.042 (0.102)		Item1E:AnnualIncomeEUR.Prefer not to say		0.013 (0.078)		Item1E:HighestEduc.Secondary		0.280 (0.415)	
Item1A:AnnualIncomeEUR.25k-49k		0.134 (0.102)		Item1A:AnnualIncomeEUR.Prefer not to say		0.010 (0.078)		Item1A:HighestEduc.Secondary		0.145 (0.415)	
Item1B:AnnualIncomeEUR.25k-49k		0.094 (0.102)		Item1B:AnnualIncomeEUR.Prefer not to say		-0.074 (0.078)		Item1B:HighestEduc.Secondary		0.628 (0.415)	
Item1C:AnnualIncomeEUR.25k-49k		0.065 (0.102)		Item1C:AnnualIncomeEUR.Prefer not to say		-0.015 (0.078)		Item1C:HighestEduc.Secondary		-0.110 (0.415)	
Item1D:AnnualIncomeEUR.25k-49k		0.064 (0.102)		Item1D:AnnualIncomeEUR.Prefer not to say		0.044 (0.078)		Item1D:HighestEduc.Secondary		-0.011 (0.415)	
Item2A:AnnualIncomeEUR.25k-49k		0.086 (0.102)		Item2A:AnnualIncomeEUR.Prefer not to say		-0.044 (0.078)		Item2A:HighestEduc.Secondary		-0.104 (0.415)	
Item2B:AnnualIncomeEUR.25k-49k		0.102 (0.102)		Item2B:AnnualIncomeEUR.Prefer not to say		0.007 (0.078)		Item2B:HighestEduc.Secondary		-0.307 (0.415)	
Item2C:AnnualIncomeEUR.25k-49k		0.067 (0.102)		Item2C:AnnualIncomeEUR.Prefer not to say		0.001 (0.078)		Item2C:HighestEduc.Secondary		0.219 (0.415)	
Item2D:AnnualIncomeEUR.25k-49k		0.069 (0.102)		Item2D:AnnualIncomeEUR.Prefer not to say		0.048 (0.078)		Item2D:HighestEduc.Secondary		-0.118 (0.415)	
Item2E:AnnualIncomeEUR.25k-49k		-0.001 (0.102)		Item2E:AnnualIncomeEUR.Prefer not to say		-0.078 (0.078)		Item2E:HighestEduc.Secondary		-0.002 (0.415)	
Item1E:AnnualIncomeEUR.50k-99k		0.022 (0.115)		Item1E:Residence.Portugal		0.045 (0.221)		Item1E:HighestEduc.Vocational		0.269 (0.451)	
Item1A:AnnualIncomeEUR.50k-99k		0.055 (0.115)		Item1A:Residence.Portugal		0.089 (0.221)		Item1A:HighestEduc.Vocational		0.172 (0.451)	
Item1B:AnnualIncomeEUR.50k-99k		0.185 (0.115)		Item1B:Residence.Portugal		-0.118 (0.221)		Item1B:HighestEduc.Vocational		0.643 (0.451)	
Item1C:AnnualIncomeEUR.50k-99k		0.133 (0.115)		Item1C:Residence.Portugal		-0.016 (0.221)		Item1C:HighestEduc.Vocational		0.076 (0.451)	
Item1D:AnnualIncomeEUR.50k-99k		0.051 (0.115)		Item1D:Residence.Portugal		-0.033 (0.221)		Item1D:HighestEduc.Vocational		-0.096 (0.451)	
Item2A:AnnualIncomeEUR.50k-99k		0.021 (0.115)		Item2A:Residence.Portugal		0.097 (0.221)		Item2A:HighestEduc.Vocational		-0.003 (0.451)	
Item2B:AnnualIncomeEUR.50k-99k		0.053 (0.115)		Item2B:Residence.Portugal		-0.081 (0.221)		Item2B:HighestEduc.Vocational		-0.109 (0.451)	
Item2C:AnnualIncomeEUR.50k-99k		0.065 (0.115)		Item2C:Residence.Portugal		0.155 (0.221)		Item2C:HighestEduc.Vocational		0.220 (0.451)	
Item2D:AnnualIncomeEUR.50k-99k		0.078 (0.115)		Item2D:Residence.Portugal		-0.096 (0.221)		Item2D:HighestEduc.Vocational		-0.121 (0.451)	
Item2E:AnnualIncomeEUR.50k-99k		0.072 (0.115)		Item2E:Residence.Portugal		0.065 (0.221)		Item2E:HighestEduc.Vocational		-0.125 (0.451)	
Item1E:AnnualIncomeEUR.100k-199k		-0.216 (0.177)		Item1E:Residence.Other		-0.040 (0.137)		Item1E:HighestEduc.Some university		0.246 (0.415)	
Item1A:AnnualIncomeEUR.100k-199k		-0.055 (0.177)		Item1A:Residence.Other		0.054 (0.137)		Item1A:HighestEduc.Some university		0.294 (0.415)	
Item1B:AnnualIncomeEUR.100k-199k		-0.049 (0.177)		Item1B:Residence.Other		0.022 (0.137)		Item1B:HighestEduc.Some university		0.629 (0.415)	
Item1C:AnnualIncomeEUR.100k-199k		-0.170 (0.177)		Item1C:Residence.Other		-0.013 (0.137)		Item1C:HighestEduc.Some university		0.026 (0.415)	
Item1D:AnnualIncomeEUR.100k-199k		-0.142 (0.177)		Item1D:Residence.Other		-0.006 (0.137)		Item1D:HighestEduc.Some university		-0.013 (0.415)	
Item2A:AnnualIncomeEUR.100k-199k		-0.061 (0.177)		Item2A:Residence.Other		0.085 (0.137)		Item2A:HighestEduc.Some university		-0.057 (0.415)	
Item2B:AnnualIncomeEUR.100k-199k		0.072 (0.177)		Item2B:Residence.Other		0.040 (0.137)		Item2B:HighestEduc.Some university		-0.159 (0.415)	
Item2C:AnnualIncomeEUR.100k-199k		-0.006 (0.177)		Item2C:Residence.Other		0.072 (0.137)		Item2C:HighestEduc.Some university		0.209 (0.415)	
Item2D:AnnualIncomeEUR.100k-199k		-0.065 (0.177)		Item2D:Residence.Other		0.025 (0.137)		Item2D:HighestEduc.Some university		-0.091 (0.415)	
Item2E:AnnualIncomeEUR.100k-199k		0.023 (0.177)		Item2E:Residence.Other		0.175 (0.137)		Item2E:HighestEduc.Some university		-0.026 (0.415)	
Item1E:AnnualIncomeEUR.200k+		0.308 (0.404)		Item1E:HighestEduc.Some secondary		0.366 (0.705)		Item1E:HighestEduc.Bachelors		0.267 (0.418)	
Item1A:AnnualIncomeEUR.200k+		0.187 (0.404)		Item1A:HighestEduc.Some secondary		0.520 (0.705)		Item1A:HighestEduc.Bachelors		0.247 (0.418)	
Item1B:AnnualIncomeEUR.200k+		0.023 (0.404)		Item1B:HighestEduc.Some secondary		1.219* (0.705)		Item1B:HighestEduc.Bachelors		0.625 (0.418)	
Item1C:AnnualIncomeEUR.200k+		0.432 (0.404)		Item1C:HighestEduc.Some secondary		0.373 (0.705)		Item1C:HighestEduc.Bachelors		-0.007 (0.418)	
Item1D:AnnualIncomeEUR.200k+		0.349 (0.404)		Item1D:HighestEduc.Some secondary		-0.196 (0.705)		Item1D:HighestEduc.Bachelors		0.012 (0.418)	
Item2A:AnnualIncomeEUR.200k+		0.477 (0.404)		Item2A:HighestEduc.Some secondary		0.256 (0.705)		Item2A:HighestEduc.Bachelors		-0.140 (0.418)	
Item2B:AnnualIncomeEUR.200k+		0.059 (0.404)		Item2B:HighestEduc.Some secondary		-0.144 (0.705)		Item2B:HighestEduc.Bachelors		-0.283 (0.418)	
Item2C:AnnualIncomeEUR.200k+		0.216 (0.404)		Item2C:HighestEduc.Some secondary		0.502 (0.705)		Item2C:HighestEduc.Bachelors		0.133 (0.418)	

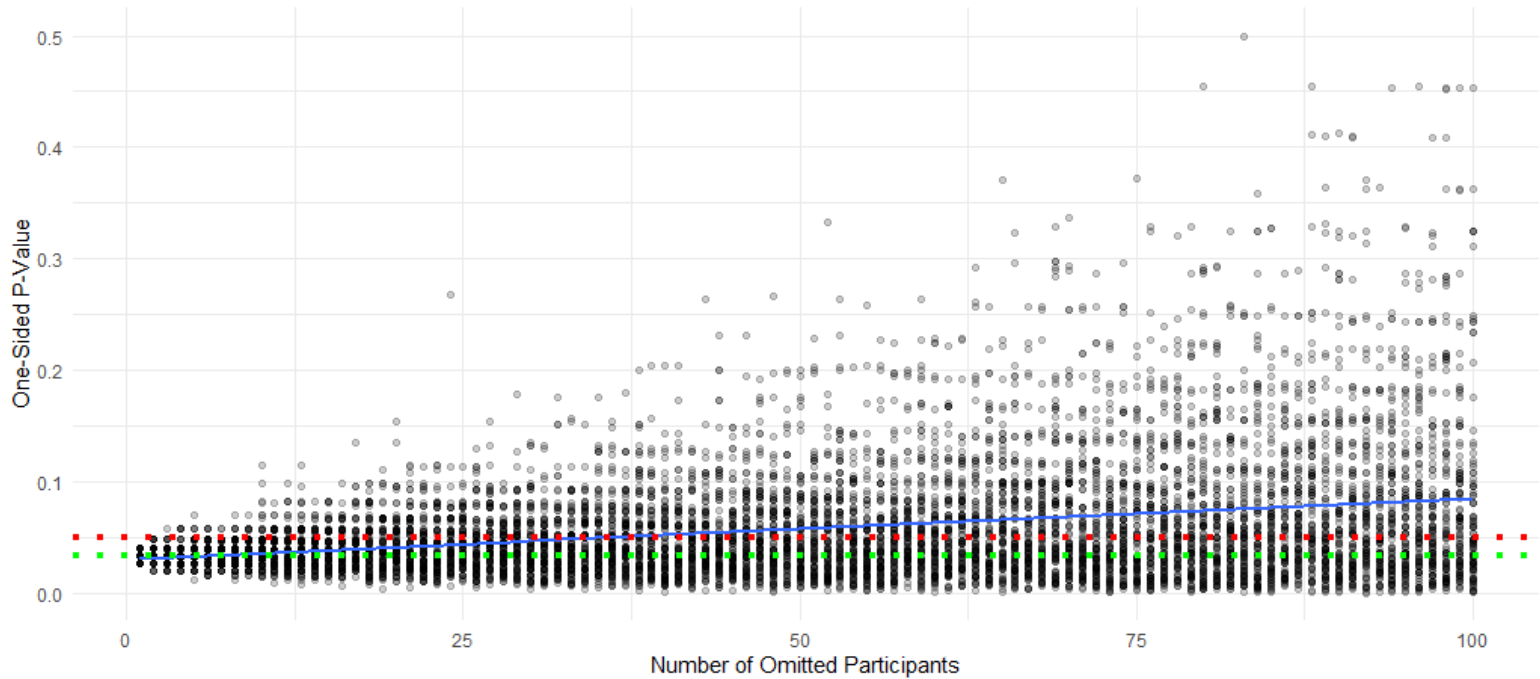
	Dependent variable:				Dependent variable:		
	Minimal (1)	logWTP Maximal (2)	Final (3)		Minimal (1)	logWTP Maximal (2)	Final (3)
Item2D: HighestEduc. Bachelors		-0.198 (0.418)		Item2D: University.WU Vienna		0.037 (0.197)	
Item2E: HighestEduc. Bachelors		-0.088 (0.418)		Item2E: University.WU Vienna		0.079 (0.197)	
Item1E: HighestEduc. Graduate or professional degree		0.278 (0.436)		Item1E: University.Other		0.104 (0.196)	
Item1A: HighestEduc. Graduate or professional degree		0.210 (0.436)		Item1A: University.Other		0.091 (0.196)	
Item1B: HighestEduc. Graduate or professional degree		0.612 (0.436)		Item1B: University.Other		-0.011 (0.196)	
Item1C: HighestEduc. Graduate or professional degree		0.081 (0.436)		Item1C: University.Other		0.095 (0.196)	
Item1D: HighestEduc. Graduate or professional degree		-0.018 (0.436)		Item1D: University.Other		0.034 (0.196)	
Item2A: HighestEduc. Graduate or professional degree		-0.119 (0.436)		Item2A: University.Other		0.019 (0.196)	
Item2B: HighestEduc. Graduate or professional degree		-0.230 (0.436)		Item2B: University.Other		-0.070 (0.196)	
Item2C: HighestEduc. Graduate or professional degree		0.223 (0.436)		Item2C: University.Other		0.139 (0.196)	
Item2D: HighestEduc. Graduate or professional degree		-0.091 (0.436)		Item2D: University.Other		0.076 (0.196)	
Item2E: HighestEduc. Graduate or professional degree		-0.034 (0.436)		Item2E: University.Other		0.021 (0.196)	
Item1E: HighestEduc. Prefer not to say		-0.141 (0.495)		Constant	2.607*** (0.169)	2.143*** (0.568)	2.535*** (0.179)
Item1A: HighestEduc. Prefer not to say		0.475 (0.495)		Observations	3,370	3,370	3,370
Item1B: HighestEduc. Prefer not to say		0.773 (0.495)		Log Likelihood	-1,615.071	-1,843.790	-1,632.417
Item1C: HighestEduc. Prefer not to say		0.074 (0.495)		Akaike Inf. Crit.	3,274.141	4,271.581	3,448.834
Item1D: HighestEduc. Prefer not to say		-0.006 (0.495)		Bayesian Inf. Crit.	3,408.840	6,059.400	4,012.120
Item2A: HighestEduc. Prefer not to say		-0.143 (0.495)		Note:	*p<0.1; **p<0.05; ***p<0.01		
Item2B: HighestEduc. Prefer not to say		-0.037 (0.495)					
Item2C: HighestEduc. Prefer not to say		-0.048 (0.495)					
Item2D: HighestEduc. Prefer not to say		-0.219 (0.495)					
Item2E: HighestEduc. Prefer not to say		-0.149 (0.495)					
Item1E: University.Nova SBE		0.053 (0.281)					
Item1A: University.Nova SBE		0.050 (0.281)					
Item1B: University.Nova SBE		0.212 (0.281)					
Item1C: University.Nova SBE		0.085 (0.281)					
Item1D: University.Nova SBE		-0.135 (0.281)					
Item2A: University.Nova SBE		0.455 (0.281)					
Item2B: University.Nova SBE		0.391 (0.281)					
Item2C: University.Nova SBE		0.251 (0.281)					
Item2D: University.Nova SBE		0.438 (0.281)					
Item2E: University.Nova SBE		0.342 (0.281)					
Item1E: University.WU Vienna		-0.015 (0.197)					
Item1A: University.WU Vienna		0.077 (0.197)					
Item1B: University.WU Vienna		0.007 (0.197)					
Item1C: University.WU Vienna		0.003 (0.197)					
Item1D: University.WU Vienna		-0.113 (0.197)					
Item2A: University.WU Vienna		-0.008 (0.197)					
Item2B: University.WU Vienna		-0.110 (0.197)					
Item2C: University.WU Vienna		0.122 (0.197)					

Appendix 28 – Iterative McNemar’s Test with Random Sampling

Randomly Sampling the Dataset with Incrementally Fewer Participants (McNemar Test with Continuity Correction)



Randomly Sampling the Dataset with Incrementally Fewer Participants (McNemar Test without Continuity Correction)



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