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Consumer Attitudes and Purchase Intentions towards Sustainable Foods

DISSERTAÇÃO APRESENTADA À ESCOLA BRASILEIRA DE ADMINISTRAÇÃO PÚBLICA E DE EMPRESAS PARA OBTENÇÃO DO GRAU DE MESTRE

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LEONIE PAULA VELTMANN

"CONSUMER ATTITUDES AND PURCHASE INTENTIONS TOWARDS SUSTAINABLE FOODS".

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Abstract

Purpose: This dissertation examines the effect of sustainability cues on attitudes and ultimately purchase intentions of green products. The study differentiates between extrinsic cues (i.e., recyclable packaging and minimum packaging labels) which are not physically part of the product, and intrinsic cues (i.e., vegan and organic labels) which are integrated into the product.
Methodology: More specifically, the methodology involves assessing the influence of perceived attributes on the willingness to purchase and investigating how different cues relatively affect the perceptions of sustainability, taste and healthiness. Finally, the study explores how cues directly influence the purchase intention. Thus, the mediating role of the perceived attributes in the relationship between product cues and willingness to purchase is being investigated. To account for diverse consumption motivations, the analysis distinguished between vice products and virtue, or in other words, unhealthy and healthy products.
Findings: The results indicate a significant influence of attribute perception on purchase intention and of cues on these attributes, with extrinsic/intrinsic cues, and vice/virtue products, exhibiting different effects. However, contrary to expectations, a direct impact of the cues on purchase intentions were not observed. Consequently, the study suggests that the mediating role of the perceived attributes in this relationship may not be substantial.
Limitations: The findings also indicate limiting factors that could contribute to the absence of these direct effects. Further research is needed to explore these factors and provide a more comprehensive understanding of the complex relationships.

Title: Consumer Attitudes and Purchase Intentions towards Sustainable Foods
Author: Leonie Paula Veltmann
Keywords: sustainability cues, green products, attitudes, purchase intentions, vice products, virtue products.

Resumo

Objetivo: Esta dissertação examina o efeito das pistas de sustentabilidade nas atitudes e, em última análise, nas intenções de compra de produtos ecológicos. O estudo diferencia entre pistas extrínsecas (embalagens recicláveis e rótulos de embalagem mínima) que não fazem parte física do produto, e pistas intrínsecas (rótulos vegans e orgânicos) que estão integrados no produto.

Metodologia: A metodologia envolve a avaliação da influência de atributos percecionados na vontade de comprar e a investigação da forma como diferentes pistas afetam as perceções de sustentabilidade, sabor e salubridade. Finalmente, o estudo explora a forma como as pistas influenciam diretamente a intenção de compra. Assim, está a ser investigado o papel mediador dos atributos percecionados na relação entre as pistas do produto e a vontade de comprar. Para ter em conta as diversas motivações de consumo, a análise distinguiu entre produtos de vício e de virtude, ou, por outras palavras, produtos não saudáveis e saudáveis.

Conclusões: Os resultados indicam uma influência significativa da perceção dos atributos na intenção de compra e das pistas sobre esses atributos, sendo que as pistas extrínsecas/intrínsecas e os produtos vício/virtude apresentam efeitos diferentes. No entanto, ao contrário do esperado, não foi observado um impacto direto das pistas nas intenções de compra. Consequentemente, o estudo sugere que o papel mediador dos atributos percebidos nesta relação pode não ser significativo.

Limitações: Os resultados também indicam fatores limitadores que podem contribuir para a ausência destes efeitos diretos. É necessária mais investigação para explorar estes fatores e fornecer uma compreensão mais abrangente.

Título: Atitudes e Intenções de Compra dos Consumidores em Relação a Alimentos Sustentáveis

Autor: Leonie Paula Veltmann

Palavras-chave: sinais de sustentabilidade, produtos verdes, atitudes, intenções de compra, produtos viciados, produtos virtuosos.

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1. INTRODUCTION

Climate change is a pressing global challenge that is considered one of the greatest issues of our time (United Nations, 2023). Over the past few decades, there has been a significant rise in atmospheric temperature, which has resulted in various natural and asocial consequences. These consequences include rising sea levels, more frequent and severe natural disasters, loss of biodiversity, and changes in precipitation patterns (European Comission, 2023; WHO, 2021). In addition to the environmental impact, climate change also poses significant risks to businesses, including supply chain disruptions, financial losses, and reputational damage (Umwelt Bundesamt, 2022; Climate, 2023; European commission, 2023). Food consumption is at the heart of these problems. According to recent estimates, food production and consumption accounts for 26 to 34% of global anthropogenic global greenhouse gas (GHG) emissions (Crippa et al., 2021). In fact, emissions from this sector are higher than the emissions from all forms of transportation combined (Statista, 2023; Our World in Data, 2020). As a result, the 12th Sustainable Development Goal (SDG) of "responsible consumption and production" underscores the necessity of changing the patterns of food consumption (Ferrari et al., 2020; UN, 2023), which can contribute significantly to the achievement of the United Nations' (UN) goal to reach net zero emissions by 2050 (UN, 2022).

In this context, consumers have become increasingly informed about how their food choices affect the environment. People tend to display positive attitudes towards sustainability and consider it an important goal (Yan, 2020; Marinez et al., 2018; Papista et al., 2018). A growing number of consumers have implemented important changes to their diets due to environmental reasons, with a notable example being the transition to veganism or vegetarianism (Sabaté et al., 2019; Hargreaves et al., 20121; Hodsen, 2021). Due to this recent shift in consumption preferences, companies have begun to focus on enhancing their image as sustainable organizations.

Different cues are used to emphasize the environmental friendliness of products. However, findings about the relative effectiveness of these cues are mixed (Annunziata and Scarpato, 2014; Wang et al., 2022; Petzoldt et al., 2014). While some studies have found a positive relationship between sustainability cues and product attitudes, other studies have documented a null or even a negative effect (e.g., Visschers and Siegrist, 2015; Ellison et al., 2016; Van Loo et al., 2017; Li and Kallas, 2019). This might occur because sustainability cues influence

not only perceptions of eco-friendliness, but also intuitions such as taste (Paakiki et al., 2022; Prada et al., 2017; Anghelec et al., 2020; Kushwah et al., 2019; Lee et al., 2013). More precisely, green products are often perceived as being low in taste (Stoleru et al., 2019; Gurvelo et al., 2017; Schuldt and Hanahan, 2013), a core food attribute in decision making (Bussel et al., 2022; Allès et al., 2017).

In this research, we address this possibility by investigating the role of intrinsic and extrinsic sustainability cues—defined as visual or sensory signals that communicate information about the ecological impact of the product (Chonpracha et al., 2020; Pancer et al., 2017; Larsen et al., 2022)— on attitudes and purchase intentions concerning green products (e.g., Capgemini, 2020; Vermer et al., 2020; Wang et al, 2022; Fagerstrøm et al., 2021). Intrinsic cues are inherent product characteristics that are directly related to the product, such as ingredients and appearance. On the other hand, extrinsic cues refer to aspects that albeit related to the product, do not integrate its composition (e.g., packaging). While intrinsic sustainability cues include the use of organic or vegan ingredients, for example, extrinsic cues usually take the form of product packaging, or country of origin. These cues are often conveyed through labels, which visibly present explicit information to consumers, allowing them to make informed choices based on the sustainability credentials of the product.

This thesis offers several contributions to scholarly research. First, we address the ongoing debate about the relationship between sustainability cues and product attitudes (e.g., Sokolova et al., 2023; Bastounis et al., 2021; Wang et al., 2019). In doing so, we also extend current findings by investigating the relative effectiveness of different sustainability cues (Li and Kallas, 2019; Vermeir et al., 2019; Annunziata and Scarpato, 2014; Bussel et al., 2022). More specifically, we contrast extrinsic and intrinsic sustainability cues to understand whether they play a different role in guiding attitudes and behaviors. By considering these aspects, we also shed light on the importance of relating sustainability perceptions to other core food attributes (e.g., taste and healthiness).

2. PROBLEM STATEMENT

Food consumption is a significant contributor to global greenhouse gas emissions, accounting for more than one fourth of total emissions (Our world in data, 2021). The issue of environmentally friendly food consumption thus has become increasingly important in recent years, as concerns about its impact has risen (Capgemini, 2020; Vermeir et al. 2020; IFIC, 2020). In fact, a growing number of consumers have implemented important changes to their diets due to environmental reasons (Sabaté et al., 2019; Gargreaves et al., 2021; Hodsen, 2021). However, despite the growing interest in sustainable food products, little is known about the specific sustainability cues that have the greatest impact on consumers' perception of a product's greenness and taste/healthiness, or how these perceptions translate into purchase intention.

The consumers' perception of a product is formed on the basis of product attributes. While extrinsic product cues only impact the perception of sustainability, intrinsic cues can additionally change both the perceived taste and healthiness of a green product (e.g., Wijekoon and Sabri, 2021; Visschers and Siegrist, 2015). Although it is often assumed that consumers are willing to pay more for environmentally friendly food products, it is unclear how much is driven by environmental concerns versus perceived taste/healthiness, two widely recognized important product attributes in consumers' decision-making process (Wijekoon and Sabri, 2021; Li and Kallas, 2019; Kovacs and Keresztes (2022).

Considering this, the main objective of this study is to investigate the intricate relationship between sustainability cues, consumers' perception of a product's sustainability, perception of taste/healthiness and ultimately purchase intention. We seek to explore whether the effect of sustainable product cues on purchase intention is exclusively driven by sustainability or if the perception of taste/healthiness also plays a significant role. By providing insights into how these different cues impact consumers' purchase intention, this research can also contribute to the development of marketing and promotional strategy for consumers.

This leads us to the following research question: "*What is the effect of extrinsic and intrinsic sustainability cues on the attitudes and purchase intentions of green products?"*

3. LITERATURE REVIEW

In recent years, sustainability has become a crucial topic for consumers, forcing companies to seek the adoption of several measures to mitigate their environmental impact. Some of the previous studies show that when a product is perceived as being environmentally friendly, it tends to result in a higher purchase intention, or willingness to pay (e.g., Zhuan et al., 2021; Phuah et al., 2018; Li and Kallas, 2021; Bastounis et al, 2021). However, there are several different marketing strategies used by companies to promote their product as being environmentally friendly and the effect of different types of information may differ. Thus, the impact of sustainability cues on consumer behavior is complex, multifaceted, and underinvestigated. Although the relationship between these cues, ensuing perception and purchase intention has been investigated, there has been little research on the differentiation between intrinsic and extrinsic cues. The distinction between intrinsic and extrinsic cues can be important because it might shed light on relevant differences in the effectiveness of green food marketing strategies.

3.1. The Role of Extrinsic Sustainability Cues

As described earlier in the dissertation, extrinsic sustainability cues refer to aspects that albeit related to the product do not integrate its composition. Packaging is one of the main attributes considered by consumers when evaluating a product's environmental impact (e.g. Van Schoubroeck et al., 2023; McKinsey, 2020). The dominant influence of packaging is likely due to its visibility and ease of evaluation. Although packaging cues may include aspects such as shape, color, and material, Lindh et al. (2015) found that consumers rely more heavily on packaging material to derive perceptions of environmental impact. In general, products packaged with plastic are more negatively seen than those packaged with paper (Sokolova et al., 2023).

Although different materials can influence perceptions, even products with similar or identical materials may vary in their degree of sustainability, depending on the information provided to consumers. Along these lines, Norton et al. (2022) show that explicit packaging information helps direct attention and increases the choice of more sustainable packaging options. Sustainable packaging attributes with the strongest impact were recyclability, no excess packaging, and biodegradability. Given that people tend to have positive attitudes toward

sustainability and extrinsic cues are unlikely to influence perceptions of taste and health, we predict that extrinsic sustainability cues will lead to higher sustainability perceptions of the product, which, in turn, will lead to higher purchase intentions relative to a control condition (see Figure 1).

3.2. The Role of Intrinsic Sustainability Cues

Intrinsic sustainability cues are inherent characteristics of a product that cannot be manipulated without altering its nature. In contrast to extrinsic cues, intrinsic cues likely affect perceived taste and health (Bussel et al., 2022; Allès et al., 2017). While the effects of these cues on perceived health are clearly positive, their influence on taste is less clearly understood (Visschers and Siegrist, 2015; Van Loo et al.; 2017; Petrescu and Petrescu-Mag, 2015).

In previous studies, organic labels have been found to be one of the most effective attributes for the perception that the product is environmentally friendly (e.g., Bastounis et al., 2021; Li and Kallas, 2019; Annunziata and Scarpato, 2014; Bussel et al., 2022; Van Loo et al., 2015). Whereas research consistently indicates that organic food is perceived as healthier than conventional food and that health and environmental benefits are the key purchase motives of organic food (e.g., Van Loo, 2017; Wang et al., 2019; Kushwah et al., 2019; Rana and Paul, 2020), studies comparing taste perception between organic and conventional food show inconsistent results that do not suggest an overall taste advantage for organic food. Some studies found that organic foods are perceived as more healthy but less tasty than conventional foods (e.g., Schuldt and Hanahan, 2013; Gurvelo et al., 2017), others found a null effect (e.g., Ellison et al., 2016; Loebnitz & Aschemann-Witzel, 2016), or even a positive effect of organic labels on taste perceptions (Kushwah et al., 2019).

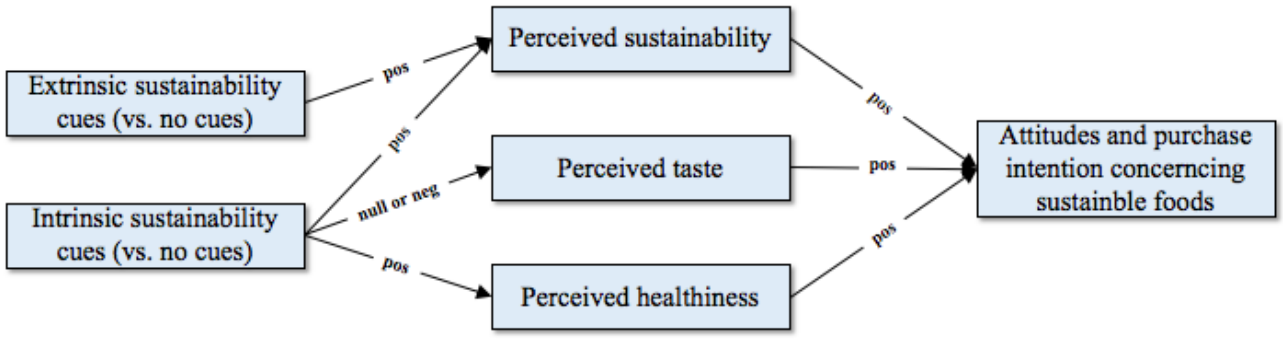
Another potential intrinsic sustainability cue that has received less attention in scholarly research refers to vegan labels. This is surprising due to the increasing importance of the label for both sustainability and diet purposes. In fact, the demand for vegan-labeled products is rising, especially in Western countries (EMR, 2021; Euromonitor, 2021). This is not only due to people following a vegan diet, but due to the increasing popularity of vegan products among the broader meat-eating population (Statista, 2021; Destais, 2021; gfi, 2021; NielsenIQ, 2019). As a result, food companies are increasingly using the label “vegan” on their products (e.g., Bakaloudi et al., 2021; Stremmel et al., 2022).

When it comes to the influence of such cues on perceptions, Bullock et al. (2020) showed that consumers tend to perceive vegan foods as healthier than regular options. In another study, Besson et al., (2020) found that plant-based burgers are viewed as having fewer calories compared to meat burgers, but no significant effect on purchase intention has been found. These findings are in line with the reasoning that vegan labels have a beneficial impact on healthiness perceptions but might have detrimental effects on taste expectations. As a result, consumers may be hesitant to purchase vegan products due to a perceived impact on taste. Along these lines, several studies examined barriers towards buying plant-based products and pointed out that taste is one of the main challenges (e.g., Hielkema and Lund, 2021; Nogurerol et al., 2021; Pohjolainen et al., 2015; Cliceri et al., 2018). Thus, despite the potential health benefits, individuals often do not want to give up on taste (Dinu et al., 2017).

Thus, in sum, consumers seem to believe that intrinsic sustainability cues lead to more positive healthiness perceptions but, despite the existence of some inconsistencies in previous findings, the majority of studies pointed to a null or negative effect on taste perceptions. Along these lines, studies have shown that this is a common belief, with people thinking that unhealthy foods are tastier than healthy ones, which is often reinforced by marketing and advertising that emphasizes the taste and indulgence of unhealthy food (e.g., "healthy = not tasty" intuition; Raghunathan et al., 2006; Paakki et al., 2022).

Based on these findings, a fair assessment of previous research could predict either a positive or a negative effect of intrinsic cues on attitudes and purchase intentions of green products. In this research, we examine this effect in a more inductive approach—that is, without explicitly stating explicit hypotheses. In doing so, we investigate the relative effect of intrinsic cues on perceptions of sustainability, taste, and healthiness and the effect of these perceptions on purchase intentions. Such comparisons will be made between intrinsic cues and the control condition. Figure 1 summarizes our conceptual framework.

Figure 1 Conceptual Framework (source: own elaboration)



In the Figure, “pos” refers to an expected positive impact that sustainability cues have on the perception of the attributes, when compared to the absence of such cues (e.g., Norton et al., 2022; Bullock et al., 2020). Conversely, “neg” implies negative impact certain cues may have (e.g., Hielkema and Lund, 2022; Paakki et al., 2022). Meanwhile, “pos/null” signifies that particular cues are expected to have either a positive or no impact on the perception of the attributes (e.g., Lee et al., 2013; Rana and Paul, 2020). Likewise, in the right part of the Figure, “pos” denotes the positive effect that the favorable perception of these attributes can have on the purchase intention (e.g. Zhuan et al., 2021; Phuah et al., 2018).

4. METHODOLOGY

Our study seeks to extend current findings by investigating the relative effectiveness of different sustainability cues and understanding whether intrinsic and extrinsic cues play distinct roles in guiding product perceptions and attitudes. As stated before, previous literature suggests that taste and health perceptions are primarily influenced by intrinsic cues, while the ultimate impact of these cues on attitudes and behaviors varies. However, the specific direction of these effects remains inconclusive.

Considering this, the primary objective of our study is to determine whether the presence of sustainability labels on the products influenced participants' willingness to purchase and in which direction these changes occurred. By capturing perceptions of attributes, namely taste, health, and sustainability, we aimed to identify potential drivers behind shifts. In the subsequent sections, we will provide a comprehensive overview of our research design, sampling strategy,

data collection methods and data analysis techniques, which collectively form the foundation of our study.

4.1. Participants

A total of 182 individuals were recruited online and responded to the survey upon providing their informed consent. Participants who answered an attention check incorrectly were removed from the sample, which led to a final sample size of 165 individuals. Among these, 26.25% are male. When it comes to nationality, 97.50% are from Germany and the remaining 2.50% are from Brazil. The participants' ages ranged from 18 to 61 years, with a mean age of 23 years. Participants were recruited online via a convenience sampling strategy.

4.2. Design and Procedure

The current experiment consisted of a 3 (sustainability cue: control [no cue], intrinsic sustainability cue [vegan or organic label], extrinsic sustainability cue [recyclable or minimum packaging label]; between-subjects) x 2 (product type: vice [chocolate bar] or virtue [nut bar]; within subjects) mixed design to investigate the impact of different extrinsic and intrinsic sustainability cues on consumer perceptions and willingness to purchase food products. We examined both vice (i.e., a food that is considered indulgent or less healthy and is often associated with pleasure and enjoyment but may have a negative effect on health) and virtue products (i.e., a food that is commonly recognized for its nutritional value and is consumed to promote long-term positive health outcomes) because previous research has shown that the effectiveness of sustainability cues in guiding perceptions and choice may vary depending on the type of food under consideration (Yang et al., 2021; Anghelec et al., 2020; Lee et al., 2013).

Participants were randomly assigned to one of the five sustainability cue conditions. Participants were presented with images of both the vice product (chocolate bar) and the virtue product (nut bar) in counterbalanced order along with the sustainability cues they were assigned to. Each experimental condition displayed either a specific sustainability cue (i.e., vegan, organic, recyclable packaging, or minimum packaging label) or did not feature any sustainability cue (control group, no label whatsoever). The control group provided a baseline for comparison, allowing us to assess the effect of the sustainability cues in the experimental groups. The inclusion of different sustainability cues (vegan, organic, recyclable packaging, minimum packaging) allowed us to examine their relative effectiveness in influencing consumer attitudes and behaviors. By presenting multiple variations of each product, in a

between-subjects design, we sought to understand the specific influence of each sustainability cue on participants' perceptions and willingness to purchase. The food products used in the control group are displayed in Figures 2 and 3, the stimuli used in each condition, placed on both products, are displayed in Figure 4 (see Appendix A for food items with labels).

Figure 2 Vice product (chocolate bar) in the control condition (source: adapted from halba.ch)

Figure 3 Virtue product (fruit and nut bar) in the control condition (source: adapted from rawbite.com)

Figure 4 Labels used in each condition (source: own elaboration)

Upon being exposed to the food item and sustainability cue, participants were asked to indicate their willingness to purchase each product variation (vice and virtue) on a Likert-type scale ranging from 1 (not at all willing to purchase) to 7 (extremely willing to purchase). This measurement served as a proxy for their behavioral intentions regarding the products. Participants were also asked to rate their perceptions of taste, healthiness, and sustainability for each product variation on Likert-type scales ranging from 1 (extremely low) to 7 (extremely

high). These measures were previously used in relevant studies (e.g., Schoubroeck et al., 2023; Baur et al., 2022; Stoleru et al., 2019).

Upon completing these measures, participants were asked to provide sociodemographic details such as age, gender, education level, and cultural background in the end. These variables were collected to control for potential confounding factors and to enable subgroup analysis.

To ensure data reliability, an attention check was implemented by presenting a set of five word options and instructing participants to select only the “availability” option. Attention check questions aimed to verify participants' attentiveness to the survey content, while random response checks helped identify participants who responded in a careless or random manner. Participants who responded to the attention check incorrectly were removed from the analyses. Importantly, participants' anonymity and confidentiality were ensured by collecting data without personally identifiable information. The study adhered to ethical guidelines and regulations regarding data protection and participant privacy.

5. DATA ANALYSIS

The objective of our study was to examine the relative effectiveness of different intrinsic and extrinsic sustainability cues in shaping product perceptions and attitudes. We began by examining the effect of intrinsic cues (namely the vegan and organic label) and extrinsic cues (the minimum packaging and recyclability label) on the perception of the products’ sustainability, taste and healthiness, distinguishing between a vice (chocolate bar) and a virtue product (fruit and nut bar). Next, we examined the effect of perceived sustainability, taste and healthiness on the willingness to purchase the vice and virtue product separately. Finally, we scrutinized whether intrinsic and extrinsic sustainability cues directly influenced the products’ willingness to purchase.

With these analyses, we sought to determine whether intrinsic or extrinsic cues have an impact on the willingness to purchase and whether this can be attributed to shifts in participants’ perception of product attributes, an area where existing literature provides inconsistent results. In other words, we aimed determine whether the changes observed in participants’ perceptions

serve as an intermediary mechanism influencing the impact of sustainability cues on the willingness to purchase, while differentiating between vice and virtue products.

We utilize the software Stata to perform statistical analyses.

6. RESULTS

6.1. Descriptive results of the main variables across conditions

Prior to conducting the statistical analysis, the data was descriptively examined to gain an initial understanding of the main variables across experimental conditions. This exploratory analysis provided a preliminary overview of the data means and standard deviations (SD) of willingness to purchase and perceptions of product attributes across each label condition, for both the vice and virtue products. Thus, we could identify any notable patterns or trends that may inform the subsequent statistical analyses. For example, the vice product was generally perceived to have a superior taste, whereas the virtue product was considered healthier. Furthermore, there was a greater inclination to buy the chocolate bar compared to the fruit and nut bar, across conditions. An overview of the descriptive findings is shown in table 1.

Table 1 Descriptive results of the main variables across conditions (source: own Stata analysis)

		Sustainability		Health		Taste		Willingness to Purchase	
Label Condition	Product Type	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Control	Vice	3,06	1,46	2,18	0,95	4,88	1,62	4,23	1,66
	Virtue	3,06	1,46	3,52	1,86	3,73	1,44	2,85	1,82
Recyclable Packaging	Vice	3,97	1,49	2,29	1,36	4,97	1,47	3,62	1,71
	Virtue	3,97	1,73	3,65	1,52	3,21	1,37	2,85	1,78
Minimum Packaging	Vice	3,68	1,38	2,19	1,19	4,42	1,36	3,42	1,73
	Virtue	3,58	1,52	3,74	1,69	3,42	1,52	2,94	1,84
Vegan	Vice	3,88	1,65	2,91	1,71	4,12	1,61	3,29	2,10
	Virtue	4,32	1,65	4,35	1,65	3,79	1,45	3,18	1,73
Organic	Vice	3,97	1,69	2,85	1,44	4,45	1,62	3,67	1,69
	Virtue	3,76	1,73	3,76	1,70	3,70	1,31	3,06	1,78

6.2. The impact of intrinsic and extrinsic cues (compared to no cues) on the perceptions of sustainability, taste and health.

To explore the specific influence of the four labels on the perceptions of sustainability, taste and healthiness, we conducted a series of independent-samples t-tests. We examined the effect of each cue by comparing the control condition with the two intrinsic cues (i.e., vegan and

organic label) as well as the two extrinsic cues (i.e., minimum packaging and recyclability label).

6.2.1. Extrinsic cues

The first set of findings revealed that compared to the control group, both extrinsic cues combined had a positive influence on the perceived sustainability of the fruit and nut bar (M control = 3.06 SE control = .25, M extrinsic = 3.78 SE extrinsic = .20, p = 0.03). When analyzed separately, the recyclability label exerted a positive and statistically significant impact on sustainability perceptions of the virtue product (M control = 3.06, SE control = 0.25, M recyclability = 3.97, SE recyclability = 0.30, p = 0.02) while the minimum packaging label (mean control = 3.06, SE control = 0.25, mean minimum packaging = 3.58, SE minimum packaging = 0.27, p = 0.17) had no statistically significant effect on such perceptions.

A similar effect was found for the vice product. Compared to the control group, extrinsic cues combined had a statistically significant influence on the perceived sustainability of the chocolate bar (M control = 3.06, SE control = 0.25, M extrinsic = 3.83, SE extrinsic = 0.18, p = 0.01) with the recyclability label alone standing exerting a greater positive impact (M control = 3.06, SE control = 0.25, M recyclability = 3.97, SE recyclability = 0.26, p = 0.01) than the minimum packaging label (M control = 3.06, SE control = 0.25, M minimum packaging = 3.68, SE minimum packaging = 0.25, p = 0.09), which only had a marginal effect.

In contrast, no significant impact of extrinsic cues on the perception of taste have been found, neither for the virtue (M control = 3.73, SE control = 0.25, M extrinsic = 3.31, SE extrinsic = 0.18, p = 0.18; M recyclability = 3.21, SE recyclability = 0.23, p = 0.13; M minimum packaging = 3.42, SE minimum packaging = 0.27, p = 0.41) , nor for the vice product (M control = 4.88, SE control = 0.28, M extrinsic = 4.71, SE extrinsic = 0.18, p = 0.60; M recyclability = 4.97, SE recyclability = 0.25, p = 0.81; M minimum packaging = 4.42, SE minimum packaging = 0.24, p = 0.23). Similarly, no effect of extrinsic cues on the perception of healthiness have been found for the virtue (M control = 3.52, SE control = 0.32, M extrinsic = 3.70, SE extrinsic = 0.20, p = 0.62; M recyclability = 3.65, SE recyclability = 0.26, p = 0.75; M minimum packaging = 3.74, SE minimum packaging = 0.30, p = 0.61), and the vice product (M control = 2.18, SE control = 0.17, M extrinsic = 2.25, SE extrinsic = 0.16, p = 0.80; M recyclability = 2.94, SE

recyclability = 0.29, p = 0.70; M minimum packaging = 2.19, SE minimum packaging = 0.22, p = 0.97).

In summary, as expected, we found that extrinsic cues, particularly recyclability labels, had a positive impact on the perception of sustainability of both the vice and the virtue product but did not significantly influence the perceptions of healthiness or taste.

6.2.2. Intrinsic cues

Relative to the control group, intrinsic cues had a positive influence on the perceived sustainability of the fruit and nut bar (M control = 3.06, SE control = 0.25, M intrinsic = 4.05, SE intrinsic = 2.21, p=0.005). When analyzed separately, the vegan label exerted a greater positive impact (M control = 3.06, SE control = 0.25, M vegan = 4.32, SE vegan = 0.28, p=0.001) compared to the organic label, which only had a marginally positive impact (M control = 3.06, SE control = 0.25, M organic = 3.76, SE organic = 0.30, p=0.08) on sustainability perceptions of the virtue product.

Similar results could be found for the vice product. Compared to the control group, both intrinsic cues combined had a positive influence on the perceived sustainability of the chocolate bar (M control = 3.06, SE control = 0.25, M intrinsic = 3.93, SE intrinsic = 0.20, p = 0.01) with the vegan label exerting a similar positive and significant impact (M control = 3.06, SE control = 0.25, M vegan = 3.88, SE vegan = 0.28, p=0.03) as the organic label (M control = 3.06, SE control = 0.25, M organic = 3.97, SE organic = 0.29, p=0.02).

The analysis further reveals that for the virtue product, both intrinsic cues combined did not have an effect on the perceived healthiness (M control = 3.52, SE control = 0.32, M intrinsic = 4.06, SE intrinsic = 0.21, p = 0.15), whereas the vegan label alone standing had a statistically significant positive impact on the perception of health, compared to the control group (M control = 3.52, SE control = 0.32, M vegan = 4.35, SE vegan = 0.28, p=0.05). However, the organic label did not exhibit an effect on the virtue product's perceived health (M control = 3.52, SE control = 0.32, M organic = 3.76, SE organic = 0.30, p = 0.58).

Conversely, for the vice product, both intrinsic cues had a statistically significant positive impact on the perceived healthiness (M control = 2.18, SE control = 0.17, M intrinsic = 2.88, SE intrinsic = 0.20, p = 0.02) with the vegan label (M control = 2.18, SE control = 0.17, M

vegan = 2.91, SE vegan = 0.29, p = 0.04) exerting a similar influence than the organic label (M control = 2.18, SE control = 0.17, M organic = 2.85, SE organic = 0.25, p= 0.03).

Notably, no effect was found for either intrinsic cue on the perception of taste of the virtue product (M control = 3.73, SE control = 0.25, M intrinsic 3.75, SE intrinsic = 0.17, p = 0.95; M vegan = 3.79, SE vegan = 0.25, p = 0.85; M organic = 3.70, SE organic = 0.23, p = 0.93). However, for the vice product, intrinsic cues had a marginally negative effect on the perception of taste (M control = 4.88, SE control = 0.28, M intrinsic = 4.28, SE intrinsic = 0.20, p = 0.09) with the vegan label alone having a negative impact (M control = 4.88, SE control = 0.28, M vegan = 4.12, SE vegan = 0.28, p=0.05), whereas there was a negative tendency that failed to reach significance for the organic label alone (M control = 4.88, SE control = 0.28, M organic = 4.46, SE organic = 0.28, p=0.29).

This suggests that consumers may associate the vegan label with a potential compromise in taste for vice products, but not necessarily for virtue products.

6.3. The effect of perceived sustainability, taste and health perceptions on willingness to purchase

To examine the general impact of perceived sustainability, taste, and healthiness on the willingness to purchase a virtue and vice product, we conducted six linear regression models. Each regression considered either the perception of sustainability, taste or healthiness as the independent variable, and the willingness to purchase as the dependent variable. These analyses were performed separately for the chocolate bar (vice product) and the nut bar (virtue product).

In our study, we found a statistically significant impact where the perception of sustainability had a positive effect on both types of food, but the influence was stronger for the willingness to purchase the nut bar (ß = 0.55, p < 0.001) compared to the chocolate bar (ß = 0.29, p < 0.001).

Similarly, the findings indicated that the perception of healthiness exerted a positive and statistically significant impact on the willingness to purchase both the vice product (ß = 0.35, p < 0.001) and the virtue product (ß = 0.65, < 0.001), with a stronger effect observed for the latter.

When it comes to the examination of the impact of taste perception on willingness to purchase, we found a statistically significant positive effect of the perception of taste on the willingness to purchase the chocolate bar (ß = 0.70, $p < 0.001$) as well as the fruit and nut bar (ß = 0.72, $p < 0.001$).

In summary, perceptions of taste, healthiness, and sustainability had an overall positive effect on intention to purchase. As importantly, our study reveals that the perception of taste had an equally strong impact on the willingness to purchase both vice and virtue products. However, when examining the impact of perceived sustainability, it becomes evident that this factor had a significantly greater effect on the willingness to purchase virtue products, being higher compared to vice products. Similarly, in terms of healthiness perception, there was a noticeable effect on both type of products, yet the effect was higher for virtue products.

6.4. The impact of the intrinsic and extrinsic cues (vs. no cues) on willingness to purchase

Finally, to investigate the direct influence of the intrinsic and extrinsic cues on willingness to purchase the products, we conducted several independent-samples t-tests. Instead of examining perceptions of sustainability, taste and healthiness, we focused on the willingness to purchase as the dependent variable. The objective of these t-tests was to assess whether the presence of the labels had a direct and significant impact on the participants' willingness to purchase when compared to the control group.

As described in the previous analysis, perceived taste played a crucial role in driving the willingness to purchase both vice and virtue products. Furthermore, perceived sustainability and healthiness had a positive impact on the purchase intention for both type of products, with a significantly stronger effect observed for virtue products. These findings indicate that individual cues directly influence directly influence the willingness to purchase by shaping consumers' perceptions, acting as mediating factors whose strength may differ depending on the specific product category. It is important to note that the effects mentioned above, can exhibit varying strengths across different product labels, as highlighted in our subsequent analysis. Since some of the effects present opposing influences on purchase intention, we computed an analysis of the overall effect of sustainability cues on consumer behavior.

The results revealed that the direct effects of all intrinsic and extrinsic cues on the willingness to purchase were not significant, neither for the virtue, nor for the vice product. More specifically, compared to the control group, the minimum packaging label did not exhibit an effect on the willingness to purchase either the vice (M control = 3.24, SE control = 0.29, M minimum packaging = 3.42, SE minimum packaging = 0.31, p = 0.67) or virtue product (M control = 2.85, SE control = 0.32, M minimum packaging = 2.94, SE minimum packaging = 0.33, p = 0.85). Similarly, no significant effects were observed for the recyclable packaging logo in terms of its impact on the willingness to purchase both the vice (M control = 3.24, SE control = 0.29, M recyclability = 3.62, SE recyclability = 0.29, p = 0.37) and the virtue product (M control = 2.85, SE control = 3.17, M recyclability = 2.85, SE recyclability = 0.31, p = 0.99).

The same observations held true for the intrinsic labels, as no effects were found. The vegan label did not exhibit an impact on the willingness to purchase neither the vice (M control = 3.24, SE control = 0.29, M vegan = 3.30, SE vegan = 0.36, p = 0.91) nor the virtue product (M control = 2.85, SE control = 0.32, M vegan = 3.18, SE vegan = 0.30, p = 0.45). The same was true for the organic labels: no effects were observed neither for the vice (M control = 3.24, SE control = 0.29, M organic = 3.67, SE organic = 0.29, p = 0.31) nor the virtue product (M control = 2.85, SE control = 0.32, M organic = 3.06, SE organic = 0.31, p = 0.63).

As displayed in Figures 5 and 6, our results seem to support the proposed conceptual Framework. However, given the absence of significant main effects of extrinsic and intrinsic cues on the overall purchase intention, it seems that there are other mechanisms that have not been taken into account in this study that might be playing a countervailing force in guiding decisions. We will resume to this point in the general discussion.

Figure 5 Effects between variables of the chocolate bar (source: own elaboration)

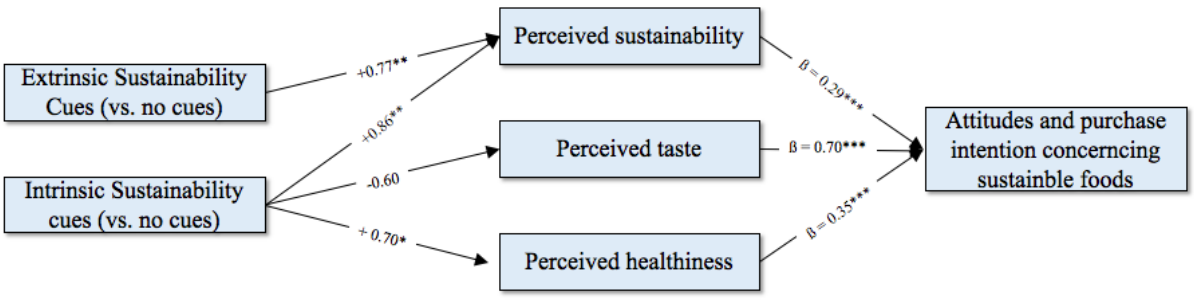
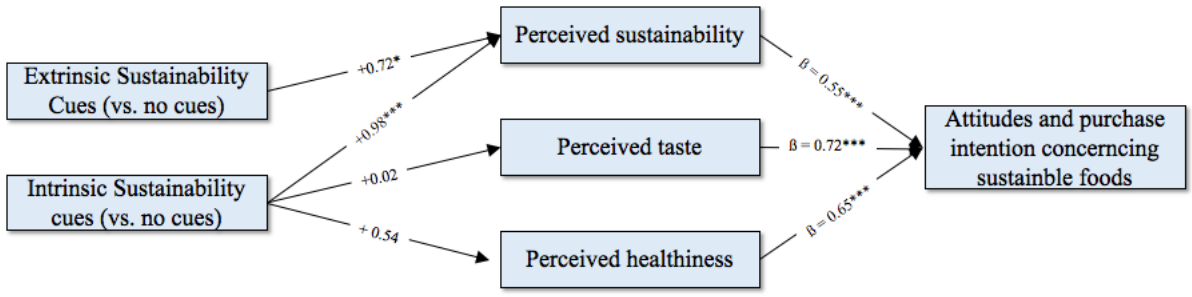


Figure 6 Effects between variables of the fruit and nut bar (source: own elaboration)



The left part of Figures 5 and 6 indicates the difference in mean between sustainability cues and the control condition for the perception of attributes. These numbers represent the growth or reduction that occurs due to the cue. On the right side, the ß (beta coefficient) displays the relationship between the perception of attributes and willingness to purchase the food item. In this context, * represents a p-value less than 0.05, ** represents a p-value less than 0.01, and *** indicates a p-value less than 0.001, in other words, the number of asterisks represent the level of statistically significance.

7. DISCUSSION

7.1. Theoretical Contributions

Our thesis aimed to investigate the effect of extrinsic and intrinsic sustainability cues on the perception of products' attributes and their subsequent impact on attitudes and purchase intentions of green products. The findings revealed that the relationships involved are complex and multifaceted, with variations observed across different types of labels and products.

In summary, while our analysis revealed that both intrinsic and extrinsic sustainability cues positively enhance sustainability perceptions irrespective of the product type, a notable differentiation arose in the effects of the cues on taste and health, as these were not influenced by extrinsic cues. Diving deeper into the differentiation between both product types, intrinsic cues had a positive impact on the perceived healthiness of both product types, while a negative impact on the taste perception was observed for the vice but not the virtue product.

These findings align with the earlier discussion highlighting that extrinsic cues primarily influence attributes that are not physically related to the product itself, particularly its environmental impact (Chonpracha et al., 2020; Wijekoon and Sabri, 2021; Sokolova et al., 2020). Moreover, they contribute to the existing body of research, which has yielded inconsistent results regarding the impact of organic and vegan labels on taste perceptions. Most studies have reported a negative impact of the vegan label (Hielkema and Lund, 2021; Nogurerol et al., 2021; Cliceri et al., 2018), while results were inconsistent for the organic label (Ellison et al., 2016; Gurvelo et al., 2017; Stoleru et al., 2019).

Based on our results, we assume that one possible explanation for these inconsistent findings could be the non-differentiation between vice and virtue products in previous studies. As previously mentioned, vice products, which are predominantly sought after for their pleasurable qualities, may exhibit greater sensitivity to the influence of labels on taste perception compared to virtue products, where other attributes such as healthiness or sustainability carry more significance. These observations align with the findings presented in section 6.2: our study demonstrates that both extrinsic cues combined (i.e., the minimum packaging and recyclability label) have a positive influence on the perception of sustainability for the vice and virtue product. Previous literature stated that packaging is one of the main attributes considered by consumers which is likely due to its visibility and ease of evaluation (e.g., Sokolova et al., 2023; Van Schoubroeck et al., 2023; McKinsey, 2020).

However, es expected, these cues do not significantly impact the perception of taste or healthiness for either product category, as extrinsic cues do not alter the product's nature (e.g., Chonpracha et al., 2020, Allès et al., 2017).

In contrast, both intrinsic cues positively affect the perception of sustainability for both the chocolate bar and the fruit and nut bar, with the vegan label having a stronger impact on perceived sustainability than the organic label for the virtue product. In previous studies, organic labels have been found to be one of the most effective attributes for the perception that the product is environmentally friendly (e.g., Bastounis et al., 2021; Li and Kallas, 2019), whereas the impact of the vegan label received less attention in scholarly research.

Additionally, the perception of healthiness is positively influenced by the organic and vegan label for the vice product, while only the vegan label has a significant impact on the perception

of healthiness for the virtue product. The positive impact of the labels aligns with numerous previous research (e.g., Van Loo, 2017; Wang et al., 2019; Kushwah et al., 2019), however the null effect of the organic label on the virtue product does not (e.g., Lee et al., 2013; Rana and Paul, 2020).

In terms of the perception of taste, it is worth noting that the presence of the vegan label has a negative influence on the perception of taste for the vice product, while it does not have a significant impact on the perceived taste of the virtue product. On the other hand, the organic label does not show any notable effect on taste perception for either product. These results are also supported by previous literature, stating inconclusive and mainly not significant results of the organic label on the perception of taste. However, vice products appeared to be less favorable in terms of taste attributes, compared to virtue products (Lee et al., 2013). This can be due to what is known as the "unhealthy = tasty" intuition. As chocolate is not typically perceived as healthy foods, consumers may consider the "healthier" version as being less tasty. Previous studies have shown that this is a common belief, with people thinking that unhealthy foods are tastier than healthy ones, which is often reinforced by marketing and advertising that emphasizes the taste and indulgence of unhealthy food (e.g., Raghunathan et al., 2006; Paakki et al., 2022).

Going further, the results showed that perceived sustainability had a stronger effect on the willingness to purchase the fruit and nut bar compared to the chocolate bar. Similarly, the perception of healthiness had a positive impact on both types of products, but the effect was significantly stronger for the virtue product. It can be assumed that the differences in the strength of effects between the two products types are due to their respective motivating factors of consumption. Vice products exchange small immediate rewards (e.g. taste) for larger delayed costs (e.g. health), while virtue products involve initial sacrifices but lead to greater long-term benefits (NCBI, 2021). It can be assumed that sustainability and healthiness are more influential factors in the purchase of virtue products, while the pursuit of pleasure may be the driving force behind the purchase of vice products (Anghelec et al., 2020).

Finally, our study confirmed the expected significance of taste as a key attribute in food consumption, as it had a positive effect on the willingness to purchase the chocolate bar as well as the fruit and nut bar (aligned with e.g., Allès et al., 2017; Bussel et al., 2022; Wijekoon and Sabri, 2021; Kovacs and Keresztes, 2022).

However, when distinguishing between vice and virtue products, effects have been found, as under the presence of the organic label, the willingness to purchase the vice product was marginally higher than the virtue product; similarly, the presence of the recyclability label led to a significant difference. A possible explanation for this phenomenon is given by Anghelec et al. (2020) in their study analyzing the impact of the organic label on the purchase intention of a product highlighting vice-related attributes vs. a product highlighting virtue-related attribute. According to the authors, the positive effect of the organic label on the vice product is because peoples' perception of new items is changing: The degree of fit or congruity, between new product information and pre-existing assumptions about that sort of product influence the perceptions of new products. Consumers may switch schemas and evaluate the new product based on the new information if attributes included in communication are incongruent with previous beliefs.

7.2. Practical Implications

Based on the findings of this thesis, several recommendations can be made for marketers and businesses aiming to promote green products and influence consumer behavior.

Marketers should recognize whether their product is perceived as a virtue or a vice product and understand the reasons behind consumer purchasing decisions. This distinction is crucial as it impacts the choice and emphasis of sustainability cues. When marketing vice products, special attention should be given to labels that do not negatively impact the perception of taste, such as the vegan label. While intrinsic cues might positively influence the perception of healthiness for vice products, there is a potential downside due to the "healthy equals untasty" phenomenon. Marketers should carefully assess the trade-off between healthiness and taste perception when utilizing intrinsic cues for vice products.
Extrinsic labels, like recyclability and minimum packaging, are effective in positively influencing sustainability perceptions.. Therefore, the focus should primarily be on leveraging extrinsic cues.

In the case of virtue products, all four labels (recyclability, minimum packaging, vegan, organic) can have a positive impact as consumers are motivated by health and sustainability considerations. Marketers should utilize and emphasize these labels to enhance the perception of these attributes and drive purchase intentions. Marketers have the opportunity to combine

different cues to strengthen their effects. For vice products, a combination of recyclable packaging and minimum packaging cues may be effective. Similarly, for virtue products, utilizing all four labels simultaneously can create a more compelling message and reinforce the positive associations with health and sustainability.

It is important to note that while the direct impact of labels on willingness to purchase might not be evident, their influence on how products are perceived by consumers is significant. By strategically selecting and combining cues based on the type of product and target audience, marketers can effectively shape consumer perceptions and positively impact purchase intentions. Further research should explore the effectiveness of different cue combinations and their specific effects on consumer behavior in diverse contexts.

This thesis provides valuable insights into the complex interplay between intrinsic and extrinsic sustainability cues, product attributes, and consumer perceptions, offering practical recommendations for marketers to navigate the realm of sustainable consumer behavior and promote environmentally conscious consumption.

7.3. Limitations and Future Research

Our thesis also has several limitations that should be acknowledged to provide a comprehensive understanding of its scope and potential implications. These restrictions consist of:

Sample Composition: The Millennial and Generation Z age groups made up the majority of the study's participants. The results might not fully generalize to other demographic groups as a result. The participants' modest financial resources, which are typical of younger generations, may also have had an impact on their propensity to buy and their consideration of price as a crucial aspect of their decision-making process.

Limited Labels and Product Types: The selection of labels and products may not fully represent the range of sustainability indicators or product categories that are available in the market. The results might not be indicative of the effects of other labels or products.

Exclusion of Price Perception Analysis: Although price plays a significant role in consumer decision-making, this study did not specifically assess this factor. The lack of price analysis

restricts knowledge of how it influences consumer behavior in conjunction with sustainability cues given the possible impact of price on purchase intentions.

Generalizability Across Countries: The cultural and contextual nuances unique to Germany, where the majority of participants have their origin, may have an impact on the study's results. The generalizability may be impacted by regional differences in consumer behavior, views and environmental awareness. As a result, care should be taken when extending the outcome to other nations or cultural contexts.

Limited Investigation of Additional Influences and Product Attributes: This study focused primarily on the effects of intrinsic and extrinsic sustainability cues on three distinct product attributes (sustainability, taste, and health). Other potential influences, such as brand reputation, social influence, or product aesthetics, were not conducted. Similarly, other product attributes relevant to consumer decision-making, such as price, convenience, or quality, were left out of the analysis.

Experimental Design Limitations: The study employed an experimental design to investigate the effects of sustainability cues. While experiments provide valuable insights into causal relationships, they may lack ecological validity. Real-world consumption settings and longitudinal studies could complement the experimental findings to enhance the understanding of sustainability cues' long-term effects on consumer behavior.

By acknowledging these limitations, future researchers can build upon these findings and address these gaps to advance the knowledge on sustainable consumer behavior and provide a more nuanced understanding of the complex factors influencing green purchase intentions.

Several suggestions for future research can be made based on the findings and limitations of our thesis to improve our understanding of how sustainability cues affect consumer behavior further. These include:

Investigating additional sustainability cues: There are numerous other cues that may be looked into. Future research might take into account the impact of cues such as fair trade, carbon footprint, cruelty-free, and others. This broader exploration would provide a more thorough

understanding of how various cues affect consumer perceptions and purchase intentions. Furthermore, the combination of different extrinsic and intrinsic cues should be analyzed.

Exploring different products: By examining a broader range of products, the findings can be generalized to a broader spectrum of consumer goods. Different products have varying characteristics, attributes, and underlying consumer preferences.

Examining cultural and contextual factors: Consumer behavior is influenced by cultural and contextual factors. Future research could consider conducting cross-cultural studies to investigate how sustainability cues are perceived and how their effects differ across various cultural contexts. Additionally, exploring the impact of contextual factors, such as supermarket surroundings, could provide a deeper understanding of how these factors interact with sustainability cues.

Investigating other mediating and moderating factors: To gain a more comprehensive understanding of the mechanisms underlying the relationship between sustainability cues and consumer behavior, future research could explore further mediating and moderating factors. For example, variables like product knowledge or involvement could be examined as potential mediators or moderators in the relationship between sustainability cues and consumer perceptions and purchase intentions.

8. CONCLUSION

In conclusion, our thesis has delved into the intricate relationship between extrinsic and intrinsic sustainability cues and their impact on consumer perceptions and purchase intentions of green products. By distinguishing between these cues and examining both virtue and vice products, this research has shed light on the complex dynamics at play in sustainable consumer behavior.

The findings underscore the need to consider the specific cues employed and the product types involved when evaluating their effects. It is evident that sustainability cues can significantly influence consumer perceptions of attributes such as taste, healthiness, and sustainability itself, but these effects are not uniform across cues or product categories. This highlights the

importance of tailoring marketing strategies and communication efforts to account for these nuanced differences.

Overall, our thesis makes significant contributions to the field of sustainable consumer behavior. It addresses gaps in existing literature by distinguishing between intrinsic and extrinsic cues, and by examining the effects on both virtue and vice products. The findings highlight the importance of considering these distinctions, as the impacts vary significantly. Additionally, the thesis uncovers inconsistencies in the effects of sustainability cues on specific product attributes, such as taste, healthiness, and sustainability itself. These insights provide a more nuanced understanding of consumer behavior and how to incorporate different labels on sustainable food products.

In a bigger picture, the knowledge generated by our thesis can contribute to driving SDG12 (responsible consumption and production) forward. Thus, it adds to the collective efforts aimed at achieving the overarching goal of reaching net zero emissions by 2050, thereby advancing global sustainability initiatives.

Appendix A: Survey Questionnaire

Consent Form

Hey,

In this survey, you will be asked to fill in some questions about consumer behavior and food choices. The survey will take about 3 to 5 minutes to complete. Your participation in the study is completely voluntary. You can choose not to participate, or you can withdraw your consent at any time without consequences. What you can expect from participation in this study is an opportunity to contribute to scientific research. There is no major risk regarding your involvement in this study. The questions require only deliberative effort.
The information that you will provide about yourself will be completely anonymous and confidential. Only general averages and patterns between variables will be shown in publications. Below you can find the contact information of the researcher involved in this project:
Leonie Veltmann - e-mail: leonieveltmann@icloud.com
By clicking on the arrow below, you confirm that you understand the objectives, risks and benefits of your participation in this research, and that you agree to participate.

Introduction

Introduction In the next sections you are asked to rate different products. Please have a look at the pictures carefully, we will ask you some questions about your perceptions on them.

Control Group

Image: Vice Product without label (control)

Q1: How willing would you be to purchase this product?

- Not at all willing to purchase 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- Extremely willing to purchase 7 (7)

Q2: How would you rate this product on the following attributes?

	Extremely low1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Extremely high 7 (7)
Sustainability (1)	○	○	○	○	○	○	○
Taste (2)	○	○	○	○	○	○	○
Healthiness (3)	○	○	○	○	○	○	○

Image: Virtue Product without label (control)

Q3: How willing would you be to purchase this product?

- ○ Not at all willing to purchase 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Extremely willing to purchase 7 (7)

Q4: How would you rate this product on the following attributes?

	Extremely low1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Extremely high7 (7)
Sustainability (1)	○	○	○	○	○	○	○
Taste (2)	○	○	○	○	○	○	○
Healthiness (3)	○	○	○	○	○	○	○

Note: The same questions (Q1 – Q12) are asked for all groups, assigned to the following product pictures:

Group 1: Minimum Packaging Label condition

Image: Vice Product with Minimum Packaging Label

Image: Virtue Product with Minimum Packaging Label

Group 2: Recyclable Packaging Label condition

Image: Vice Product with Recyclable Packaging Label

Image: Virtue Product with Recyclable Packaging Label

Group 3: Vegan Label condition

Image: Vice Product with Vegan Label

Image: Virtue Product with Vegan Label

Group 4: Organic Label condition

Image: Vice Product with Organic Label

Image: Virtue Product with Organic Label

Diet Preferences

Q5: What kind of diet do you mainly follow?

- ○ non-vegetarian (I have no restrictions on meat) (1)
- ○ vegetarian (I don't eat meat or fish/seafood, but I do consumer other animal products) (2)
- ○ vegan (I don't eat any animal products) (3)
- ○ pescatarian (I don't eat meat, but I eat fish/seafood) (4)
- ○ flexitarian (I eat meat occasionally) (5)
- ○ other, please specify: (6) _____

Q6: When buying food products, what are the factors that most determine your consumption choice? You can select up to three.

- ○ I don't know (1)
- ○ Health (2)
- ○ Taste (3)
- ○ Environmental impact (4)
- ○ Ethical considerations (5)
- ○ Ingredients (6)
- ○ Packaging (7)
- ○ Price (8)
- ○ If others, please specify: (9)

Attention Check

Q7: To demonstrate that you are answering this questionnaire carefully, please select only the "Availability" option from the options below.

- ○ Price (1)
- ○ Quality (2)
- ○ Brand (3)
- ○ Availability (4)
- ○ Convenience (5)

Demographics

Q8: What gender to you identify with?

- ○ Male (1)
- ○ Female (2)
- ○ Other, please specify: (3) _____
- ○ Prefer not to say (4)

Q9: How old are you?

Q10: What is your monthly household income before taxes and deductions?

▼ €0 (no income) (1) ... I prefer not to say (14)

Q11: What is the highest level of education you completed?

- ○ High School (1)
- ○ Professional training (2)
- ○ Bachelor's Degree (3)
- ○ Master's Degree (4)
- ○ PHD Program (5)
- ○ Other, please specify: (6) _____

Q12: Please indicate the importance of the following values in your life:

	Not at all important1 (1)	3 (2)	Neutral4 (3)	5 (4)	6 (5)	Extremely important7 (6)
Mitigation of climate change (1)	○	○	○	○	○	○
Reduction of waste (2)	○	○	○	○	○	○
Promotion of sustainable living (3)	○	○	○	○	○	○
Conservation of natural resources (4)	○	○	○	○	○	○

Appendix B: Questionnaire Results

Table B-1: Willingness to Purchase the vice product without label (control condition)

#	Answer	%	Count
1	Not at all willing to purchase 1	18.18%	6
2	2	24.24%	8
3	3	12.12%	4
4	4	12.12%	4
5	5	27.27%	9
6	6	6.06%	2
7	Extremely willing to purchase 7	0.00%	0
	Total	100%	33

Figure B-1: Perceived product attributes vice product without label (control condition)

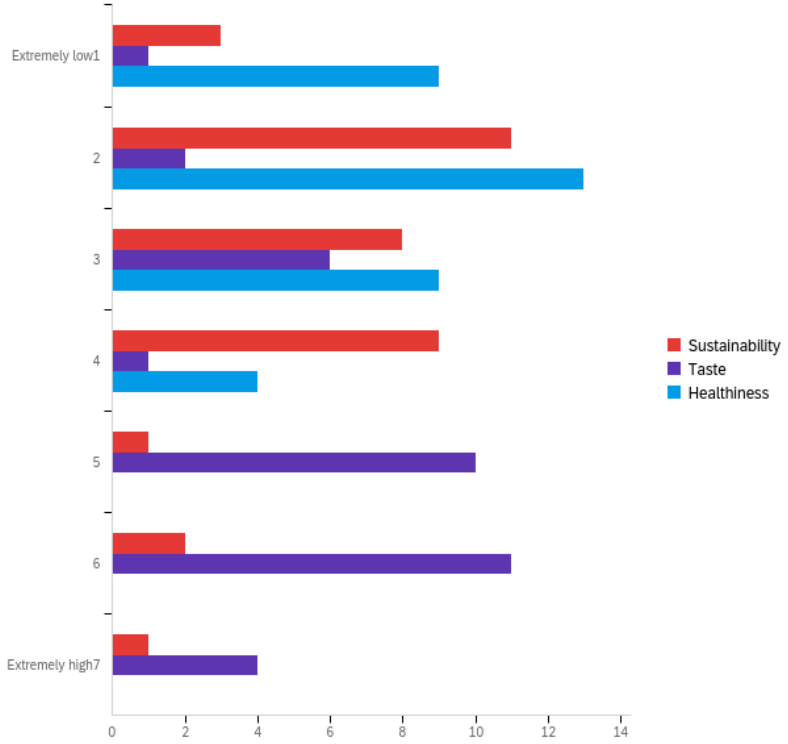


Table B-2: Willingness to Purchase the virtue product without label (control condition)

#	Answer	%	Count
1	Not at all willing to purchase 1	30.30%	10
2	2	24.24%	8
3	3	12.12%	4
4	4	12.12%	4
5	5	9.09%	3
6	6	9.09%	3
7	Extremely willing to purchase 7	3.03%	1
	Total	100%	33

Figure B-2: Perceived product attributes virtue product without label (control condition)

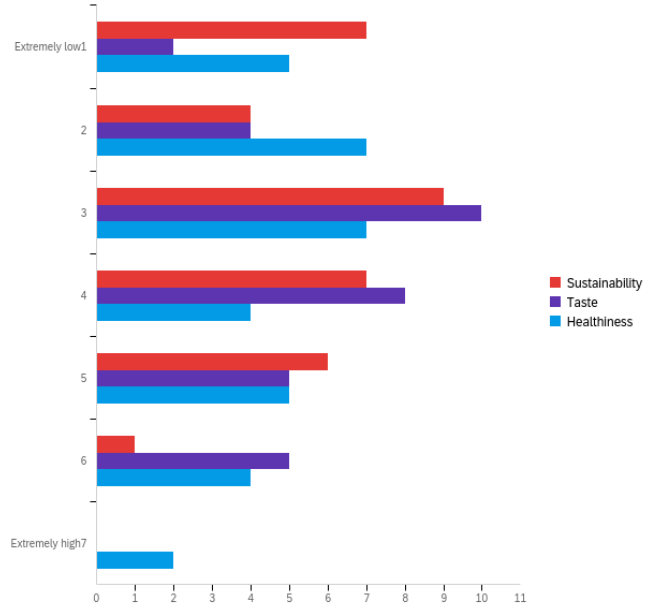


Table B-3: Willingness to Purchase the vice product with vegan label

#	Answer	%	Count
1	Not at all willing to purchase 1	29.41%	10
2	2	14.71%	5
3	3	14.71%	5
4	4	8.82%	3
5	5	11.76%	4
6	6	11.76%	4
7	Extremely willing to purchase 7	8.82%	3
	Total	100%	34

Figure B-3: Perceived product attributes vice product with vegan label

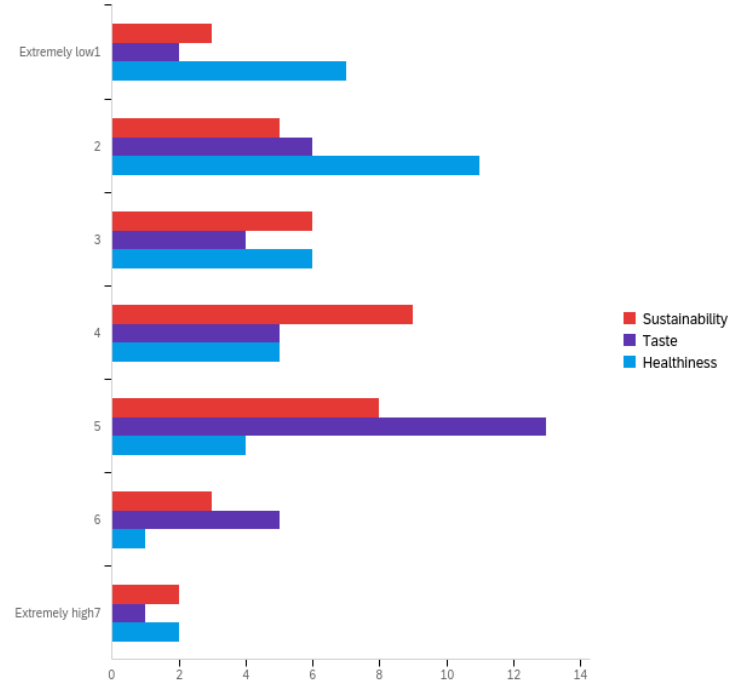


Table B-4: Willingness to Purchase the virtue product with vegan label

#	Answer	%	Count
1	Not at all willing to purchase 1	20.59%	7
2	2	23.53%	8
3	3	11.76%	4
4	4	17.65%	6
5	5	17.65%	6
6	6	5.88%	2
7	Extremely willing to purchase 7	2.94%	1
	Total	100%	34

Figure B-4: Perceived product attributes virtue product with vegan label

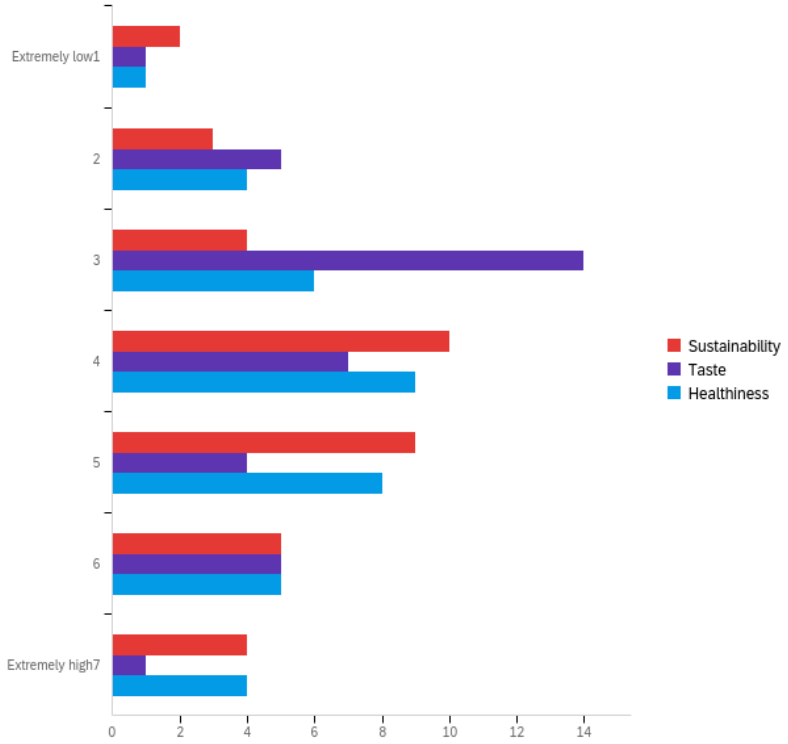


Table B-5: Willingness to Purchase the vice product with organic label

#	Answer	%	Count
1	Not at all willing to purchase 1	12.12%	4
2	2	15.15%	5
3	3	12.12%	4
4	4	39.39%	13
5	5	3.03%	1
6	6	12.12%	4
7	Extremely willing to purchase 7	6.06%	2
	Total	100%	33

Figure B-5: Perceived product attributes vice product with organic label

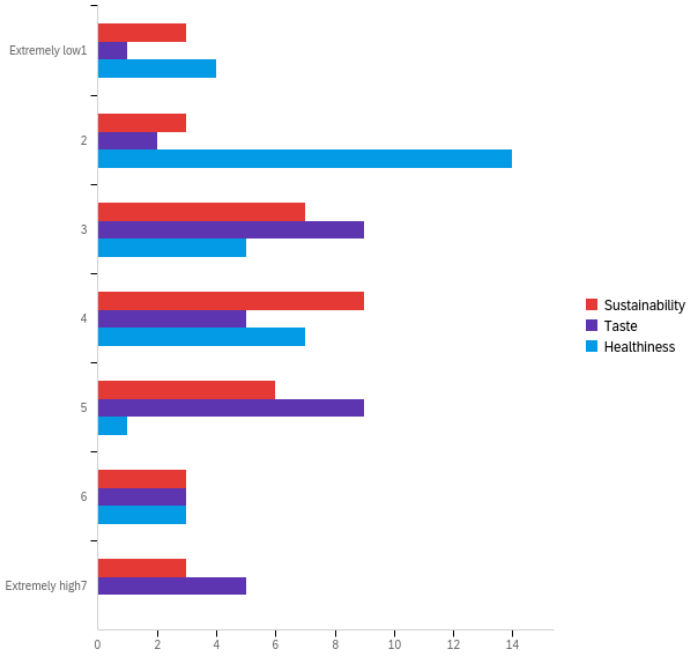


Table B-6: Willingness to Purchase the virtue product with organic label

#	Answer	%	Count
1	Not at all willing to purchase 1	18.18%	6
2	2	36.36%	12
3	3	9.09%	3
4	4	9.09%	3
5	5	15.15%	5
6	6	9.09%	3
7	Extremely willing to purchase 7	3.03%	1
	Total	100%	33

Figure B-6: Perceived product attributes virtue product with organic label

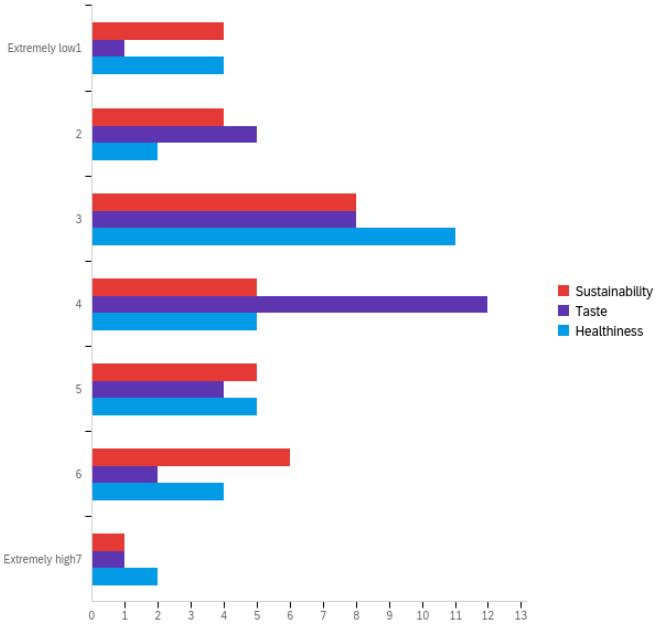


Table B-7: Willingness to Purchase the vice product with minimum packaging label

#	Answer	%	Count
1	Not at all willing to purchase 1	12.90%	4
2	2	25.81%	8
3	3	16.13%	5
4	4	12.90%	4
5	5	19.35%	6
6	6	9.68%	3
7	Extremely willing to purchase 7	3.23%	1
	Total	100%	31

Figure B-7: Perceived product attributes vice product with minimum packaging label

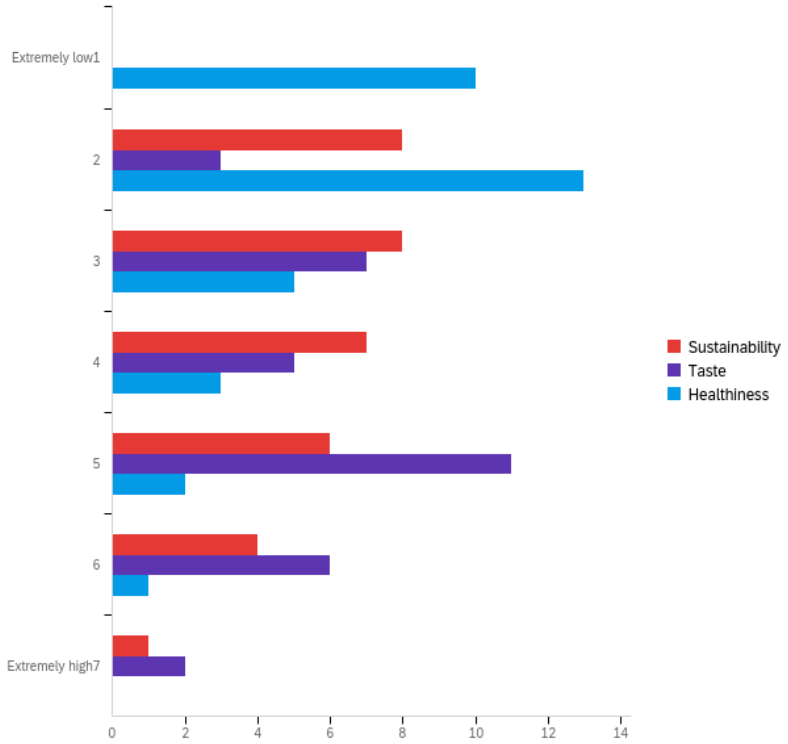


Table B-8: Willingness to Purchase the virtue product with minimum packaging label

#	Answer	%	Count
1	Not at all willing to purchase 1	25.81%	8
2	2	29.03%	9
3	3	9.68%	3
4	4	12.90%	4
5	5	12.90%	4
6	6	3.23%	1
7	Extremely willing to purchase 7	6.45%	2
	Total	100%	31

Figure B-8: Perceived product attributes virtue product with minimum packaging label

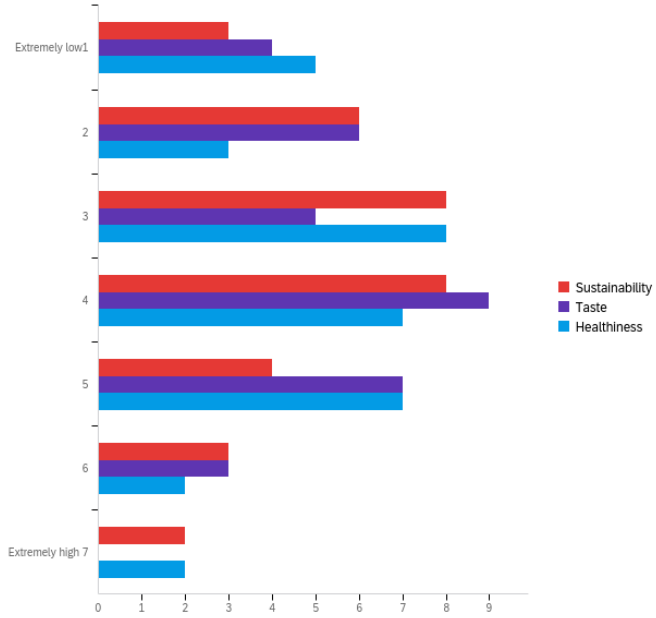


Table B-9: Willingness to Purchase the vice product with recyclable packaging label

#	Answer	%	Count
1	Not at all willing to purchase 1	8.82%	3
2	2	23.53%	8
3	3	20.59%	7
4	4	8.82%	3
5	5	26.47%	9
6	6	5.88%	2
7	Extremely willing to purchase 7	5.88%	2
	Total	100%	34

Figure B-9: Perceived product attributes vice product with recyclable packaging label

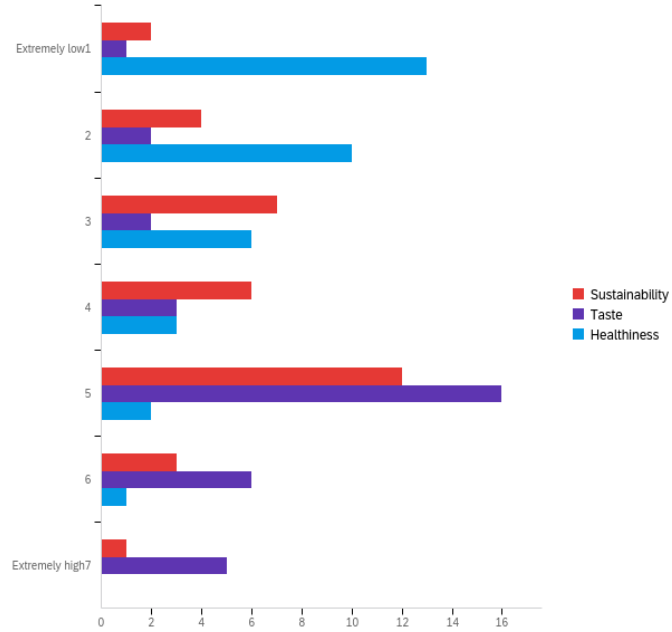


Table B-10: Willingness to Purchase the virtue product with recyclable packaging label

#	Answer	%	Count
1	Not at all willing to purchase 1	26.47%	9
2	2	23.53%	8
3	3	23.53%	8
4	4	8.82%	3
5	5	5.88%	2
6	6	5.88%	2
7	Extremely willing to purchase 7	5.88%	2
	Total	100%	34

Figure B-10: Perceived product attributes virtue product with recyclable packaging label

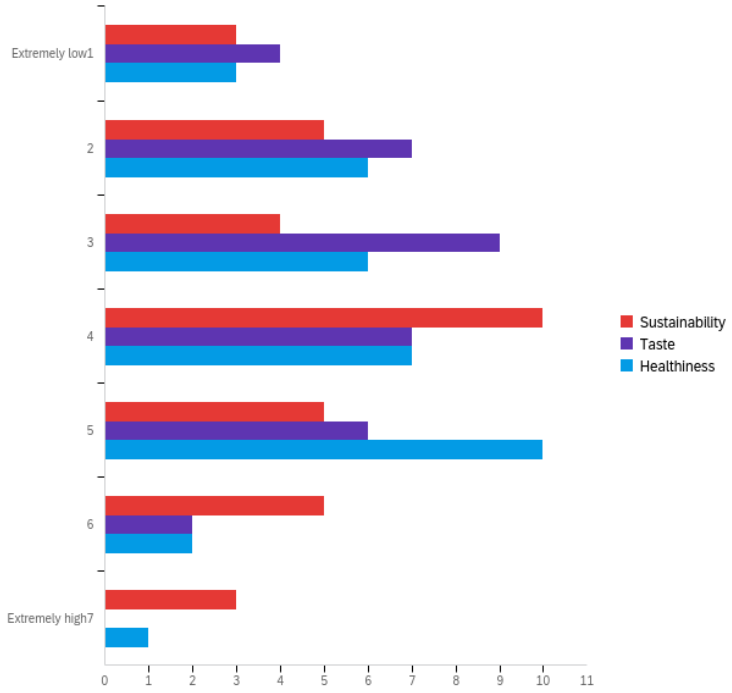


Table B-11: Overview followed diet of the respondents

#	Answer	%	Count
1	non-vegetarian (I have no restrictions on meat)	56.36%	93
2	vegetarian (I don't eat meat or fish/seafood, but I do consumer other animal products)	9.09%	15
3	vegan (I don't eat any animal products)	1.82%	3
4	pescatarian (I don't eat meat, but I eat fish/seafood)	3.64%	6
5	flexitarian (I eat meat occasionally)	27.88%	46
6	other, please specify:	1.21%	2
	Total	100%	165

Table B-12: Gender of the respondents

#	Answer	%	Count
1	Male	26.25%	42
2	Female	73.75%	118
3	Other, please specify:	0.00%	0
4	Prefer not to say	0.00%	0
	Total	100%	160

Table B-13: Determining factors in food consumption choices of the respondents

#	Answer	%	Count
1	I don't know	0.87%	4
2	Health	11.74%	54
3	Taste	28.48%	131
4	Environmental impact	5.22%	24
5	Ethical considerations	3.48%	16
6	Ingredients	10.65%	49
7	Packaging	10.43%	48
8	Price	27.61%	127
9	If others, please specify:	1.52%	7
	Total	100%	460

Table B-14: Age of the respondents

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How old are you?	18.00	61.00	22.84	5.60	31.36	160

Table B-15: Income of the respondents

#	Answer	%	Count
1	€0 (no income)	15.38%	24
2	€1 - €999	40.38%	63
3	€1.000 - €1.999	17.31%	27
4	€2.000 - €2.999	7.69%	12
5	€3.000 - €3.999	5.77%	9
6	€4.000 - €4.999	3.21%	5
7	€5.000 - €5.999	3.85%	6
8	€6.000 - €6.999	1.92%	3
9	€7.000 - €7.999	0.00%	0
10	€8.000 - €8.999	0.00%	0
11	€9.000 - €9.999	0.00%	0
12	€10.000 or more	0.64%	1
14	I prefer not to say	3.85%	6
	Total	100%	156

Table B-16: Highest level of education of the respondents

#	Answer	%	Count
1	High School	22.50%	36
2	Professional training	35.63%	57
3	Bachelor's Degree	20.00%	32
4	Master's Degree	15.00%	24
5	PHD Program	0.00%	0
6	Other, please specify:	6.88%	11
	Total	100%	160

Table B-17: Importance of values in life of the respondents

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Mitigation of climate change	1.00	6.00	4.44	1.06	1.13	160
2	Reduction of waste	1.00	6.00	4.50	0.96	0.91	160
3	Promotion of sustainable living	1.00	6.00	4.04	1.16	1.34	160
4	Conservation of natural resources	1.00	6.00	4.38	1.15	1.32	160

Appendix C: Statistical Analysis

1. The impact of intrinsic and extrinsic cues (compared to no cues) on the perceptions of sustainability, taste and health.

1.1.Sustainability Perception

1.1.1. Vice Product

Table C-1: t-test - comparison of perceived sustainability between both extrinsic labels combined and control group

```
. ttest sust_total_vice if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
extrinsi	65	3.830769	.1775491	1.431446	3.476074	4.185464
combined	98	3.571429	.1493376	1.478366	3.275035	3.867822
diff		-.7701632	.3077578		-1.381058	-.1592687

```
    diff = mean(control) - mean(extrinsi)                     t =  -2.5025
Ho: diff = 0                                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0070         Pr(|T| > |t|) = 0.0140          Pr(T > t) = 0.9930
```

Table C-2: t-test - comparison of perceived sustainability between minimum packaging label and control group

```
. ttest sust_total_vice if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
minimal	31	3.677419	.247078	1.375672	3.172819	4.18202
combined	64	3.359375	.1800672	1.440538	2.999539	3.719211
diff		-.6168133	.3546563		-1.325761	.0921345

```
    diff = mean(control) - mean(minimal)                      t =  -1.7392
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0435         Pr(|T| > |t|) = 0.0870          Pr(T > t) = 0.9565
```

Table C-3: t-test - comparison of perceived sustainability between recyclable packaging label and control group

```
. ttest sust_total_vice if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
recyclab	34	3.970588	.2550219	1.48702	3.451742	4.489434
combined	67	3.522388	.1870505	1.531074	3.14893	3.895846
diff		-.9099822	.3597177		-1.628388	-.1915764

```
    diff = mean(control) - mean(recyclab)                     t =  -2.5297
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0069         Pr(|T| > |t|) = 0.0138          Pr(T > t) = 0.9931
```

Table C-4: t-test - comparison of perceived sustainability between both intrinsic labels combined and control group

```
. ttest sust_total_vice if cue==1 | cue==2, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
intrinsi	67	3.925373	.2021072	1.654319	3.521853	4.328893
combined	100	3.64	.1636207	1.636207	3.315341	3.964659
diff		-.8647671	.3386575		-1.536822	-.1927122

```
    diff = mean(control) - mean(intrinsi)                         t =  -2.5535
Ho: diff = 0                                     degrees of freedom =       98

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0061         Pr(|T| > |t|) = 0.0122          Pr(T > t) = 0.9939
```

Table C-5: t-test - comparison of perceived sustainability between vegan label and control group

```
. ttest sust_total_vice if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
vegan	34	3.882353	.2824792	1.647122	3.307645	4.457061
combined	67	3.477612	.1953302	1.598846	3.087623	3.867601
diff		-.8217469	.3802752		-1.581209	-.0622849

```
    diff = mean(control) - mean(vegan)                            t =  -2.1609
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0172         Pr(|T| > |t|) = 0.0344          Pr(T > t) = 0.9828
```

Table C-6: t-test - comparison of perceived sustainability between organic label and control group

```
. ttest sust_total_vice if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
organic	33	3.969697	.2935056	1.686061	3.371846	4.567548
combined	66	3.515152	.200515	1.628991	3.114695	3.915608
diff		-.9090909	.3878462		-1.683903	-.134279

```
    diff = mean(control) - mean(organic)                          t =  -2.3439
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0111         Pr(|T| > |t|) = 0.0222          Pr(T > t) = 0.9889
```

1.1.2. Virtue Product (fruit and nut bar)

Table C-7: t-test - comparison of perceived sustainability between both extrinsic labels combined and control group

```
. ttest health_total_virtue if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
extrinsi	65	3.692308	.1972443	1.590235	3.298267	4.086349
combined	98	3.632653	.1693962	1.676937	3.296448	3.968858
diff		-.1771562	.3598479		-.8914485	.5371362

```
    diff = mean(control) - mean(extrinsi)                         t =  -0.4923
Ho: diff = 0                                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3118         Pr(|T| > |t|) = 0.6236          Pr(T > t) = 0.6882
```

Table C-8: t-test - comparison of perceived sustainability between minimum packaging label and control group

```
. ttest health_total_virtue if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
minimal	31	3.741935	.3039798	1.692488	3.121126	4.362745
combined	64	3.625	.221041	1.768328	3.183285	4.066715
diff		-.226784	.4449194		-1.116165	.6625973

```
    diff = mean(control) - mean(minimal)                          t =  -0.5097
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3060         Pr(|T| > |t|) = 0.6121          Pr(T > t) = 0.6940
```

Table C-9: t-test - comparison of perceived sustainability between recyclable packaging label and control group

```
. ttest health_total_virtue if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
recyclab	34	3.647059	.2598586	1.515223	3.118373	4.175745
combined	67	3.58209	.2052557	1.680091	3.172283	3.991896
diff		-.1319073	.4133796		-.9574835	.6936689

```
    diff = mean(control) - mean(recyclab)                         t =  -0.3191
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3753         Pr(|T| > |t|) = 0.7507          Pr(T > t) = 0.6247
```

Table C-10: t-test - comparison of perceived sustainability between both intrinsic labels combined and control group

```
. ttest sust_total_vice if cue==1 | cue==2, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
intrinsi	67	3.925373	.2021072	1.654319	3.521853	4.328893
combined	100	3.64	.1636207	1.636207	3.315341	3.964659
diff		-.8647671	.3386575		-1.536822	-.1927122

```
    diff = mean(control) - mean(intrinsi)                         t =  -2.5535
Ho: diff = 0                                     degrees of freedom =       98

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0061         Pr(|T| > |t|) = 0.0122          Pr(T > t) = 0.9939
```

Table C-11: t-test - comparison of perceived sustainability between vegan label and control group

```
. ttest sust_total_vice if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
vegan	34	3.882353	.2824792	1.647122	3.307645	4.457061
combined	67	3.477612	.1953302	1.598846	3.087623	3.867601
diff		-.8217469	.3802752		-1.581209	-.0622849

```
    diff = mean(control) - mean(vegan)                            t =  -2.1609
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0172         Pr(|T| > |t|) = 0.0344          Pr(T > t) = 0.9828
```

Table C-12: t-test - comparison of perceived sustainability between organic label and control group

```
. ttest sust_total_vice if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.060606	.2535333	1.456438	2.544176	3.577037
organic	33	3.969697	.2935056	1.686061	3.371846	4.567548
combined	66	3.515152	.200515	1.628991	3.114695	3.915608
diff		-.9090909	.3878462		-1.683903	-.134279

```
    diff = mean(control) - mean(organic)                          t =  -2.3439
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0111         Pr(|T| > |t|) = 0.0222          Pr(T > t) = 0.9889
```

1.2.Taste Perception

1.2.1. Vice Product (chocolate bar)

Table C-13: t-test - comparison of perceived taste between both extrinsic labels and control group

```
. ttest taste_total_vice if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances

   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 control |      33    4.878788    .2812229    1.615503    4.305956    5.45162
extrinsi |      65    4.707692    .1777572    1.433125    4.352581    5.062803
---------+--------------------------------------------------------------------
combined |      98    4.765306    .1506009    1.490873    4.466405    5.064207
---------+--------------------------------------------------------------------
    diff |            .1710956    .3198482               -.4637981    .8059892
------------------------------------------------------------------------------
    diff = mean(control) - mean(extrinsi)                         t =   0.5349
Ho: diff = 0                                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.7030         Pr(|T| > |t|) = 0.5939          Pr(T > t) = 0.2970
```

Table C-14: t-test - comparison of perceived taste between minimum packaging label and control group

```
. ttest taste_total_vice if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances

   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 control |      33    4.878788    .2812229    1.615503    4.305956    5.45162
 minimal |      31    4.419355    .2443961     1.36074    3.920231    4.918478
---------+--------------------------------------------------------------------
combined |      64     4.65625    .1879541    1.503633    4.280654    5.031846
---------+--------------------------------------------------------------------
    diff |             .459433    .3745959               -.2893734    1.208239
------------------------------------------------------------------------------
    diff = mean(control) - mean(minimal)                          t =   1.2265
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.8877         Pr(|T| > |t|) = 0.2247          Pr(T > t) = 0.1123
```

Table C-15: t-test - comparison of perceived taste between recyclable packaging label and control group

```
. ttest taste_total_vice if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances

   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 control |      33    4.878788    .2812229    1.615503    4.305956    5.45162
recyclab |      34    4.970588    .2515028    1.466501    4.458902    5.482274
---------+--------------------------------------------------------------------
combined |      67    4.925373    .1869963    1.530631    4.552023    5.298723
---------+--------------------------------------------------------------------
    diff |           -.0918004    .3767285               -.8441792    .6605784
------------------------------------------------------------------------------
    diff = mean(control) - mean(recyclab)                         t =  -0.2437
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4041         Pr(|T| > |t|) = 0.8082          Pr(T > t) = 0.5959
```

1.2.2. Virtue Product (fruit and nut bar)

Table C-16: t-test - comparison of perceived taste between both extrinsic labels and control group

```
. ttest taste_total_virtue if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.727273	.2510309	1.442063	3.215939	4.238606
extrinsi	65	3.307692	.1780275	1.435304	2.952042	3.663343
combined	98	3.44898	.1458612	1.443953	3.159485	3.738474
diff		.4195804	.3072737		-.1903531	1.029514

```
    diff = mean(control) - mean(extrinsi)                         t =   1.3655
Ho: diff = 0                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9124         Pr(|T| > |t|) = 0.1753          Pr(T > t) = 0.0876
```

Table C-17: t-test - comparison of perceived taste between minimum packaging label and control group

```
. ttest taste_total_virtue if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.727273	.2510309	1.442063	3.215939	4.238606
minimal	31	3.419355	.2734652	1.52259	2.860864	3.977845
combined	64	3.578125	.1847412	1.47793	3.208949	3.947301
diff		.3079179	.3705745		-.43285	1.048686

```
    diff = mean(control) - mean(minimal)                          t =   0.8309
Ho: diff = 0                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.7954         Pr(|T| > |t|) = 0.4092          Pr(T > t) = 0.2046
```

Table C-18: t-test - comparison of perceived taste between recyclable packaging label and control group

```
. ttest taste_total_virtue if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.727273	.2510309	1.442063	3.215939	4.238606
recyclab	34	3.205882	.2342333	1.365803	2.729331	3.682434
combined	67	3.462687	.1732029	1.417727	3.116876	3.808497
diff		.5213904	.3430569		-.1637415	1.206522

```
    diff = mean(control) - mean(recyclab)                         t =   1.5198
Ho: diff = 0                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9333         Pr(|T| > |t|) = 0.1334          Pr(T > t) = 0.0667
```

´Table C-19: t-test - comparison of perceived taste between both intrinsic labels and control group

```
. ttest taste_total_vice if cue==1 | cue==2, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	4.878788	.2812229	1.615503	4.305956	5.45162
intrinsi	67	4.283582	.1969992	1.612508	3.890261	4.676904
combined	100	4.48	.1629773	1.629773	4.156618	4.803382
diff		.5952058	.3431396		-.0857436	1.276155

```
    diff = mean(control) - mean(intrinsi)                         t =   1.7346
Ho: diff = 0                                     degrees of freedom =       98

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9570         Pr(|T| > |t|) = 0.0860          Pr(T > t) = 0.0430
```

Table C-20: t-test - comparison of perceived taste between vegan label and control group

```
. ttest taste_total_vice if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	4.878788	.2812229	1.615503	4.305956	5.45162
vegan	34	4.117647	.2760968	1.609907	3.555924	4.67937
combined	67	4.492537	.2010523	1.645684	4.091123	4.893951
diff		.7611408	.3940805		-.0258922	1.548174

```
    diff = mean(control) - mean(vegan)                            t =   1.9314
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9711         Pr(|T| > |t|) = 0.0578          Pr(T > t) = 0.0289
```

Table C-21: t-test - comparison of perceived taste between organic label and control group

```
. ttest taste_total_vice if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	4.878788	.2812229	1.615503	4.305956	5.45162
organic	33	4.454545	.2823431	1.621938	3.879431	5.02966
combined	66	4.666667	.1994554	1.620383	4.268327	5.065007
diff		.4242424	.3985021		-.3718571	1.220342

```
    diff = mean(control) - mean(organic)                          t =   1.0646
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.8545         Pr(|T| > |t|) = 0.2911          Pr(T > t) = 0.1455
```

1.3.Healthiness Perception

1.3.1. Vice product (chocolate bar)

Table C-22: t-test - comparison of perceived healthiness between both extrinsic labels and control group

```
. ttest health_total_vice if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
extrinsi	65	2.246154	.1581607	1.275132	1.930192	2.562116
combined	98	2.22449	.1183115	1.171224	1.989674	2.459305
diff		-.0643357	.25156		-.5636784	.435007

```
    diff = mean(control) - mean(extrinsi)                         t =  -0.2557
Ho: diff = 0                                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3993         Pr(|T| > |t|) = 0.7987          Pr(T > t) = 0.6007
```

Table C-23: t-test - comparison of perceived healthiness between minimum packaging label and control group

```
. ttest health_total_vice if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
minimal	31	2.193548	.2146232	1.194972	1.755229	2.631867
combined	64	2.1875	.1333984	1.067187	1.920925	2.454075
diff		-.0117302	.2690671		-.5495877	.5261273

```
    diff = mean(control) - mean(minimal)                          t =  -0.0436
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4827         Pr(|T| > |t|) = 0.9654          Pr(T > t) = 0.5173
```

Table C-24: t-test - comparison of perceived healthiness between recyclable packaging label and control group

```
. ttest health_total_vice if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
recyclab	34	2.294118	.2332802	1.360245	1.819506	2.76873
combined	67	2.238806	.1428051	1.16891	1.953686	2.523925
diff		-.1122995	.2874936		-.6864638	.4618648

```
    diff = mean(control) - mean(recyclab)                         t =  -0.3906
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3487         Pr(|T| > |t|) = 0.6974          Pr(T > t) = 0.6513
```

Table C-25: t-test - comparison of perceived healthiness between both intrinsic labels and control group

```
. ttest health_total_vice if cue==1 | cue==2, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
intrinsi	67	2.880597	.1920189	1.571743	2.497219	3.263975
combined	100	2.65	.1431076	1.431076	2.366043	2.933957
diff		-.6987788	.2976398		-1.289435	-.1081223

```
    diff = mean(control) - mean(intrinsi)                         t =  -2.3477
Ho: diff = 0                                     degrees of freedom =       98

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0104         Pr(|T| > |t|) = 0.0209          Pr(T > t) = 0.9896
```

Table C-26: t-test - comparison of perceived healthiness between vegan label and control group

```
. ttest health_total_vice if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
vegan	34	2.911765	.293627	1.712125	2.314376	3.509153
combined	67	2.552239	.1744457	1.427899	2.203947	2.900531
diff		-.7299465	.3397472		-1.408468	-.0514246

```
    diff = mean(control) - mean(vegan)                            t =  -2.1485
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0177         Pr(|T| > |t|) = 0.0354          Pr(T > t) = 0.9823
```

Table C-27: t-test - comparison of perceived healthiness between organic label and control group

```
. ttest health_total_vice if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.181818	.165457	.9504783	1.844793	2.518843
organic	33	2.848485	.2504587	1.438776	2.338317	3.358653
combined	66	2.515152	.1545615	1.255663	2.206471	2.823832
diff		-.6666667	.300176		-1.266337	-.0669963

```
    diff = mean(control) - mean(organic)                          t =  -2.2209
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0150         Pr(|T| > |t|) = 0.0299          Pr(T > t) = 0.9850
```

1.3.2. Virtue product (fruit and nut bar)

Table C-28: t-test - comparison of perceived healthiness between both extrinsic labels and control group

```
. ttest health_total_virtue if cue==1 | cue==3, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
extrinsi	65	3.692308	.1972443	1.590235	3.298267	4.086349
combined	98	3.632653	.1693962	1.676937	3.296448	3.968858
diff		-.1771562	.3598479		-.8914485	.5371362

```
    diff = mean(control) - mean(extrinsi)                         t =  -0.4923
Ho: diff = 0                                     degrees of freedom =       96

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3118         Pr(|T| > |t|) = 0.6236          Pr(T > t) = 0.6882
```

Table C-29: t-test - comparison of perceived healthiness between minimum packaging label and control group

```
. ttest health_total_virtue if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
minimal	31	3.741935	.3039798	1.692488	3.121126	4.362745
combined	64	3.625	.221041	1.768328	3.183285	4.066715
diff		-.226784	.4449194		-1.116165	.6625973

```
    diff = mean(control) - mean(minimal)                          t =  -0.5097
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3060         Pr(|T| > |t|) = 0.6121          Pr(T > t) = 0.6940
```

Table C-30: t-test - comparison of perceived healthiness between recyclable packaging label and control group

```
. ttest health_total_virtue if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
recyclab	34	3.647059	.2598586	1.515223	3.118373	4.175745
combined	67	3.58209	.2052557	1.680091	3.172283	3.991896
diff		-.1319073	.4133796		-.9574835	.6936689

```
    diff = mean(control) - mean(recyclab)                         t =  -0.3191
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3753         Pr(|T| > |t|) = 0.7507          Pr(T > t) = 0.6247
```

Table C-31: t-test - comparison of perceived healthiness between both intrinsic labels and control group

```
. ttest health_total_virtue if cue==1 | cue==2, by (cue)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
intrinsi	67	4.059701	.2060599	1.686673	3.64829	4.471113
combined	100	3.88	.1753957	1.753957	3.531977	4.228023
diff		-.54455	.3708543		-1.280498	.1913984

```
    diff = mean(control) - mean(intrinsi)                         t =  -1.4684
Ho: diff = 0                                     degrees of freedom =       98

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0726         Pr(|T| > |t|) = 0.1452          Pr(T > t) = 0.9274
```

Table C-32: t-test - comparison of perceived healthiness between vegan label and control group

```
. ttest health_total_virtue if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
vegan	34	4.352941	.2828501	1.649285	3.777478	4.928404
combined	67	3.940299	.2188335	1.791229	3.503383	4.377214
diff		-.8377897	.4286542		-1.693871	.0182918

```
    diff = mean(control) - mean(vegan)                            t =  -1.9545
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0275         Pr(|T| > |t|) = 0.0550          Pr(T > t) = 0.9725
```

Table C-33: t-test - comparison of perceived healthiness between organic label and control group

```
. ttest health_total_virtue if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.515152	.3231041	1.856092	2.85701	4.173293
organic	33	3.757576	.2952602	1.696141	3.15615	4.359001
combined	66	3.636364	.2176762	1.76841	3.201634	4.071093
diff		-.2424242	.4376926		-1.116816	.6319673

```
    diff = mean(control) - mean(organic)                          t =  -0.5539
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.2908         Pr(|T| > |t|) = 0.5816          Pr(T > t) = 0.7092
```

2. The effect of perceived sustainability, taste and healthiness on willingness to purchase

2.1. Vice product (chocolate bar)

Table C-34: Regression analysis between perceived sustainability and willingness to purchase

```
. reg will_purch_total_vice sust_total_vice if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	0.58
Model	1.62890963	1	1.62890963	Prob > F	=	0.4504
Residual	86.4316964	31	2.78811924	R-squared	=	0.0185
				Adj R-squared	=	-0.0132
Total	88.0606061	32	2.75189394	Root MSE	=	1.6698

will_purch_t~ce	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sust_total_vice	.1549107	.2026696	0.76	0.450	-.2584367	.568258
_cons	2.768304	.6850186	4.04	0.000	1.371199	4.16540

Table C-35: Regression analysis between perceived taste and willingness to purchase

```
. reg will_purch_total_vice taste_total_vice if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	15.00
Model	28.7137265	1	28.7137265	Prob > F	=	0.0005
Residual	59.3468795	31	1.91441547	R-squared	=	0.3261
				Adj R-squared	=	0.3043
Total	88.0606061	32	2.75189394	Root MSE	=	1.3836

will_purch_to~ce	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
taste_total_vice	.586357	.1514033	3.87	0.001	.2775679	.8951462
_cons	.3817126	.7769416	0.49	0.627	-1.20287	1.966295

Table C-36: Regression analysis between perceived healthiness and willingness to purchase

```
. reg will_purch_total_vice health_total_vice if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	1.42
Model	3.84676958	1	3.84676958	Prob > F	=	0.2431
Residual	84.2138365	31	2.71657537	R-squared	=	0.0437
				Adj R-squared	=	0.0128
Total	88.0606061	32	2.75189394	Root MSE	=	1.6482

will_purch_tot~ce	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
health_total_vice	.3647799	.3065446	1.19	0.243	-.2604219	.9899817
_cons	2.446541	.7277683	3.36	0.002	.9622475	3.930834

2.2.Virtue product (fruit and nut bar)

Table C-37: Regression analysis between perceived sustainability and willingness to purchase

```
. reg will_purch_total_virtue sust_total_virtue if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	14.83
Model	34.3727814	1	34.3727814	Prob > F	=	0.0006
Residual	71.8696429	31	2.31837558	R-squared	=	0.3235
				Adj R-squared	=	0.3017
Total	106.242424	32	3.32007576	Root MSE	=	1.5226

will_purch_tot~ue	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sust_total_virtue	.7116071	.1848097	3.85	0.001	.3346852	1.088529
_cons	.6705357	.6246526	1.07	0.291	-.6034517	1.944523

Table C-38: Regression analysis between perceived taste and willingness to purchase

```
. reg will_purch_total_virtue taste_total_virtue if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	12.16
Model	29.9405117	1	29.9405117	Prob > F	=	0.0015
Residual	76.3019126	31	2.46135202	R-squared	=	0.2818
				Adj R-squared	=	0.2586
Total	106.242424	32	3.32007576	Root MSE	=	1.5689

will_purch_tota~ue	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
taste_total_virtue	.670765	.1923214	3.49	0.001	.2785229	1.063007
_cons	.3483607	.7670971	0.45	0.653	-1.216144	1.912866

Table C-39: Regression analysis between perceived healthiness and willingness to purchase

```
. reg will_purch_total_virtue health_total_virtue if cue==1
```

Source	SS	df	MS	Number of obs	=	33
				F(1, 31)	=	19.81
Model	41.4221933	1	41.4221933	Prob > F	=	0.0001
Residual	64.8202309	31	2.09097519	R-squared	=	0.3899
				Adj R-squared	=	0.3702
Total	106.242424	32	3.32007576	Root MSE	=	1.446

will_purch_total~ue	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
health_total_virtue	.6129742	.137721	4.45	0.000	.3320904	.8938579
_cons	.6937878	.5456422	1.27	0.213	-.4190569	1.806632

3. The direct impact of the intrinsic and extrinsic cues (vs. no cues) on willingness to purchase

3.1.Vice product (chocolate bar)

Table C-40: t- t-test - comparison of willingness to purchase between minimum packaging label and control group

```
. ttest will_purch_total_vice if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.242424	.2887745	1.658883	2.65421	3.830639
minimal	31	3.419355	.310304	1.7277	2.785629	4.05308
combined	64	3.328125	.210176	1.681408	2.908122	3.748128
diff		-.1769306	.4233395		-1.023174	.669313

```
    diff = mean(control) - mean(minimal)                      t =  -0.4179
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3387         Pr(|T| > |t|) = 0.6774          Pr(T > t) = 0.6613
```

Table C-41: t- t-test - comparison of willingness to purchase between recyclable packaging label and control group

```
. ttest will_purch_total_vice if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.242424	.2887745	1.658883	2.65421	3.830639
recyclab	34	3.617647	.2925538	1.705867	3.022442	4.212852
combined	67	3.432836	.2053379	1.680764	3.022865	3.842806
diff		-.3752228	.4112438		-1.196533	.4460879

```
    diff = mean(control) - mean(recyclab)                     t =  -0.9124
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.1825         Pr(|T| > |t|) = 0.3649          Pr(T > t) = 0.8175
```

Table C-42: t- t-test - comparison of willingness to purchase between vegan label and control group

```
. ttest will_purch_total_vice if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.242424	.2887745	1.658883	2.65421	3.830639
vegan	34	3.294118	.3595635	2.096598	2.56258	4.025655
combined	67	3.268657	.2296263	1.879572	2.810193	3.72712
diff		-.0516934	.4627789		-.9759266	.8725398

```
    diff = mean(control) - mean(vegan)                        t =  -0.1117
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4557         Pr(|T| > |t|) = 0.9114          Pr(T > t) = 0.5443
```

Table C-43: t- t-test - comparison of willingness to purchase between organic label and control group

```
. ttest will_purch_total_vice if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	3.242424	.2887745	1.658883	2.65421	3.830639
organic	33	3.666667	.2940917	1.689428	3.067622	4.265712
combined	66	3.454545	.2061771	1.674991	3.042781	3.86631
diff		-.4242424	.4121658		-1.247638	.3991534

```
    diff = mean(control) - mean(organic)                          t =  -1.0293
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.1536         Pr(|T| > |t|) = 0.3072          Pr(T > t) = 0.8464
```

3.2.Virtue product (fruit and nut bar)

Table C-44: t- t-test - comparison of willingness to purchase between minimum packaging label and control group

```
. ttest will_purch_total_virtue if condition==1 | condition==4, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.848485	.3171882	1.822108	2.202394	3.494576
minimal	31	2.935484	.3309663	1.842742	2.259561	3.611407
combined	64	2.890625	.2272563	1.81805	2.43649	3.34476
diff		-.086999	.4582541		-1.003036	.8290378

```
    diff = mean(control) - mean(minimal)                          t =  -0.1898
Ho: diff = 0                                     degrees of freedom =       62

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4250         Pr(|T| > |t|) = 0.8500          Pr(T > t) = 0.5750
```

Table C-45: t- t-test - comparison of willingness to purchase between recyclable packaging label and control group

```
. ttest will_purch_total_virtue if condition==1 | condition==5, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.848485	.3171882	1.822108	2.202394	3.494576
recyclab	34	2.852941	.3048402	1.777509	2.232739	3.473143
combined	67	2.850746	.2181847	1.785919	2.415126	3.286366
diff		-.0044563	.439762		-.8827217	.873809

```
    diff = mean(control) - mean(recyclab)                         t =  -0.0101
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4960         Pr(|T| > |t|) = 0.9919          Pr(T > t) = 0.5040
```

Table C-46: t- t-test - comparison of willingness to purchase between vegan label and control group

```
. ttest will_purch_total_virtue if condition==1 | condition==2, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.848485	.3171882	1.822108	2.202394	3.494576
vegan	34	3.176471	.296956	1.731536	2.572309	3.780632
combined	67	3.014925	.2163516	1.770914	2.582965	3.446885
diff		-.3279857	.4341658		-1.195075	.5391033

```
    diff = mean(control) - mean(vegan)                            t =  -0.7554
Ho: diff = 0                                     degrees of freedom =       65

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.2264         Pr(|T| > |t|) = 0.4527          Pr(T > t) = 0.7736
```

Table C-47: t- t-test - comparison of willingness to purchase between organic label and control group

```
. ttest will_purch_total_virtue if condition==1 | condition==3, by (condition)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
control	33	2.848485	.3171882	1.822108	2.202394	3.494576
organic	33	3.060606	.3106061	1.784296	2.427922	3.69329
combined	66	2.954545	.2206494	1.792564	2.513878	3.395213
diff		-.2121212	.443942		-1.098997	.6747548

```
    diff = mean(control) - mean(organic)                          t =  -0.4778
Ho: diff = 0                                     degrees of freedom =       64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.3172         Pr(|T| > |t|) = 0.6344          Pr(T > t) = 0.6828
```

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