Shaping Sustainable Choices

The Interaction of Value-Based Framing and Core Personal Values in Consumer Behavior

by

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0.0 Abstract

This study investigates the influence of value-based framing on sustainable purchasing behavior, examining how biospheric, altruistic, hedonic, and egoistic values shape consumer choices. Using an experimental design, the study analyzed responses from three participant groups: control, self-enhancement framing, and self-transcendence framing. Our findings reveal that biospheric and altruistic values consistently promote sustainable choices, with self-transcendence framing showing significant impact. This research contributes both theoretical and practical insights for sustainable marketing.

Keywords: *sustainable purchasing, value-based framing, Schwartz theory, Boumann EPV-Q, consumer behavior*

1.0 Introduction

In recent years, global interest in sustainable eating has surged, influenced by a growing sustainability agenda and an expanded variety of plant-based and eco-friendly food options in supermarkets (Grimmelt et al., 2022). Younger, urban consumers are particularly drawn to sustainable choices, marking a shift in dietary preferences across cultures (Kulykovets & Sypko, 2024; Statista, 2024). Despite this growth, many households still rely on traditional food, though innovation in sustainable offerings is expected to accelerate changes in consumer habits (Sonti et al., 2023; European Environment Agency, 2021). This complexity raises questions about what truly drives the demand for sustainable foods—whether it's perceptions, values, or other underlying factors. Despite the rising interest in sustainable consumption, there is limited research addressing how value-based framing specifically influences purchasing behavior within both Portugal and the rest of the world. This research-gap highlights a need to understand not only the effects of framing on sustainable choices but also how these effects may vary by cultural and regional factors.

This study explores how personal values and product attributes influence sustainable eating choices. Research has shown that personal values play a significant role in food preferences, and that specific product attributes impact consumer decisions (Sobal et al., 2006; M Lusk & Briggeman, 2009). By examining how value-based framing of product descriptions affects consumer choices, this study aims to provide insights for producers, public institutions and other ecosystem players (e.g., retailers) promoting sustainable eating, potentially guiding similar trends in other markets.

2.0 Theory & Literature review

This chapter explores the theoretical framework and literature underpinning the study. It covers foundational models of consumer behavior, such as Mittal and Lee's (1989) model of involvement, and cognitive processes like Kahneman's Dual-Process Model (2003), highlighting biases and framing effects. Lastly, it examines values—biospheric, altruistic, hedonic, and egoistic—and their role in shaping sustainable purchasing decisions.

Consumer involvement has become increasingly significant in explaining purchasing behavior, particularly for food products (Knox et al., 1994). The basic model of consumer involvement, developed by Mittal and Lee (1989), offers a framework to understand this phenomenon, highlighting two types of involvement: *enduring* and *situational*. Enduring involvement is influenced by a consumer's previous and current experiences with a product, while situational involvement is shaped by the immediate context of a purchase. Both types of involvement contribute to the overall *felt involvement* that a consumer experiences, which can strongly influence their choices. Van Loo et al. (2017) demonstrate a clear link between consumer involvement and the purchase of sustainable and plant-based food items, with both enduring and situational factors playing a crucial role (Knox et al., 1994).

Values and attitudes play a key role in individual decision-making, especially concerning food choices. According to Hauser et al. (2013), values serve as guiding principles, influencing consumer choices, such as the decision to buy sustainable products. Kahneman's Dual-Process Theory (2003) provides further insight into the cognitive processes behind these choices, distinguishing between two systems: the fast, automatic, and impulsive System 1, and the slower, more analytical System 2, which relies on reflection. This dynamic interaction between impulsive and reflective thinking highlights the complexity of consumer behavior, especially when sustainability or ethical considerations are involved. Hoffman et al. (2009) describe this process as an ongoing mental negotiation, where situational and dispositional factors influence the balance between these two systems. Framing also plays a critical role in consumer decision-making. Kahneman and Tversky (1981) found that how choices are framed can dramatically affect preferences, even when the options presented are identical in substance. In this context, framing product descriptions in ways that resonate with consumers' values can be a key driver in influencing their behavior toward more sustainable choices. Challagalla & Dalsace, (2024) highlight that framing techniques commonly used in marketing, such as value-based messaging, can be especially impactful in product descriptions. Their findings suggest that aligning communication with consumers' personal values—like emphasizing self-oriented or socially conscious benefits—can make sustainable food products more appealing, increasing the likelihood of a positive purchasing decision. Additionally, Belk's Theory of the Extended Self (1988) suggests that consumers often see their purchases as reflections of their identity, using products to express and reinforce their values. In the context of sustainable choices, individuals may view eco-friendly products as extensions of their environmental values and self-concept, embodying their commitment to sustainability. Schwartz's (2012) *Theory of Basic Human Values* provides a structured understanding of how values influence consumer behavior. Schwartz identifies 56 distinct values, which he organizes

into two opposing dimensions: 1) *Openness to Change* versus *Conservation* and 2) *Self-Enhancement* versus *Self-Transcendence* (Schwartz, 2012). This study focuses on the latter, as it encompasses values related to both personal benefit and collective well-being, dimensions which are at the foundation of this study. Adding to Schwartz's initial research, Bouman et al. (2018) identify four key values within the framework—*egoistic*, *hedonic*, *altruistic*, and *biospheric*—which they argue are particularly effective in predicting environmentally oriented behavior. These values together form the *Environmental - Personal Value Questionaire* (E-PVQ), which acts as a guiding principle for individuals, particularly when it comes to sustainability and purchasing decisions. By framing sustainable products in ways that resonate with core personal values, this study explores whether such alignment reinforces identity expression through purchasing behavior, potentially enhancing consumers' likelihood of selecting sustainable options. This perspective aligns with Schwartz's (2012) assertion that biospheric, altruistic, and other core values can act as guiding principles, shaping both individual and socially-oriented purchasing motivations.

The *biospheric* value reflects a concern for the environment and ecological well-being (Bouman et al., 2018). This value has gained prominence in Portugal, where 95% of the population has either changed or is willing to change their behavior in response to climate and environmental concerns (European Investment Bank, 2024). Food purchasing is one area where this shift is evident, as consumers increasingly opt for sustainable products (Doshi et al., 2023). Consumers motivated by biospheric values are more inclined to make environmentally conscious decisions, illustrating how deeply values influence behavior. Kriwy & Mecking, (2012) support this view by demonstrating that consumers in markets with higher levels of development are more likely to engage in organic consumption, which is strongly connected to environmental concerns and the biospheric value orientation.

The altruistic value emphasizes concern for the well-being of others. Consumers guided by altruistic values are more likely to select products that reflect their ethical beliefs, including plant-based and sustainable options that contribute to the well-being of both people and animals (Bouman et al., 2018). In Portugal, consumers driven by altruistic values increasingly engage in ethical purchasing behaviors, such as selecting fair trade and cruelty-free products, reflecting a commitment to societal and environmental well-being. For example, 56% of Portuguese consumers report prioritizing sustainable options, including locally sourced and eco-friendly products, in their purchasing decisions (Cunha et al., 2017; Simões et al., 2023).

Hedonic values, on the other hand, are centered around personal pleasure and well-being (Bouman et al., 2018). Research indicates that consumers who prioritize hedonic values are drawn to products that offer sensory enjoyment and satisfaction. A study by Maehle et al. (2015) found that consumers view sustainable alternatives as highly desirable when they are both tasty and healthy, reinforcing the importance of hedonic values in driving consumer behavior. Environmental concern can also serve as a quality factor for consumers, intertwining with hedonic values in food choices and contributing to sustainable product purchases. Petrescu et al. (2019) found that perceptions of health and environmental impact shape consumer views on product quality.

Although *egoistic* values are often associated with self-interest and less environmentally friendly behavior, they can still lead to sustainable purchasing under certain conditions. Bouman et al. (2018) suggest that when consumers perceive personal benefits—such as superior taste or quality—associated with sustainable products, egoistic motivations can drive environmentally conscious decisions. For example, organic or plant-based products that are viewed as healthier or tastier can appeal to egoistic consumers, who prioritize their own well-

being but are still making more sustainable choices (Bouman et al., 2018; Sonti et al., 2023). Based on these insights, the following research question is proposed:

"Value-based framing of product descriptions, along with individuals' biospheric, altruistic, hedonic, and egoistic values, has a significant effect on the purchase of sustainable food products."

3.0 Method

This study uses quantitative methods and a positivist research philosophy to examine the impact of value-based framing on sustainable food choices, focusing on observable patterns in consumer behavior (Creswell, 2014). A deductive approach applies Schwartz's theory of basic human values to test predefined hypotheses about value-based framing, rather than generating new theories (Creswell, 2014). Through correlational research, the study aims to establish generalizable insights into how framed product descriptions influence consumer decisions in the context of plant-based products. Using a cross-sectional design, data is collected at a single point in time to analyze correlations between framing and consumer choices, providing insights into the role of personal values in purchasing behavior. This chapter begins by presenting the survey design, followed by an exploration of the analysis framework and sample considerations. It then delves into the examination of the analytical hypotheses and concludes with a discussion of the moral and ethical considerations underpinning the study.

3.1 Survey and Experimental Design

The survey used closed-ended, nominal scale questions to gather demographic data and Likert scale questions to assess alignment between participants' values (biospheric, altruistic, hedonic, and egoistic) and sustainable product choices. The 7-point Likert scale, designed to avoid central tendency bias (Finstad, 2010) , was based on Bouman's Environmental-Personal Value Questionnaire (EPV-Q) to measure values in environmental contexts (Bouman et al., 2018).

Question and answer orders were randomized to reduce cognitive load and potential biases, such as carryover and order effects (Stefkovics & Kmetty, 2022). An attention question was embedded to enhance data quality (IntelliSurvey, 2022). In a between-subject design, participants were assigned to one of three groups: a control group or one of two treatment groups. The control group received standard product descriptions, while treatment groups experienced self-enhancement framing (emphasizing personal benefits) or self-transcendence framing (emphasizing consideration for others and the environment). Each participant completed five hypothetical purchasing scenarios to capture the impact of value-based framing on sustainable choices.

3.2 Post-Experiment Analysis and Sampling Considerations

After completing the purchasing scenarios, participant responses were analyzed to explore the relationship between personal values—*biospheric, altruistic, hedonic, and egoistic*—and sustainable product choices. Responses were recorded on a 7-point Likert scale, from "Strongly Disagree" to "Strongly Agree," with the Likert scale responses treated as interval data (Bouman et al., 2018). A multiple linear regression analysis examined whether these values significantly influenced the number of sustainable products chosen across control and treatment groups, with cognitive load considerations minimized by the survey's design (Krosnick, 1991). Demographic data, including age, gender, income, education, and employment, provided essential context for sample characteristics and potential influences on choices (Dillman et al., 2014). An a priori statistical power analysis was conducted with a target power level of 80% to detect a small effect size (Cohen's $d = 0.2$) at a significance threshold of $p < 0.05$ (Cohen, 1988). Although a sample size of 930 participants (310 per group) was ideal, resource constraints limited the study to 330 participants, increasing the risk of a Type II error (Field, 2013). Data was collected via Pollfish from October 25 to November 11, yielding a sample that was sufficient for the study's objectives within available resources. The target population for

this study consists of Portuguese consumers, with the sampling frame derived primarily through non-probability methods, specifically convenience and snowball sampling (Sharma, 2017). Respondents were primarily reached through social media platforms, which served as the main channels for distributing the survey. However, as the sampling frame is limited, it does not fully represent the broader Portuguese population, resulting in low research coverage. Coverage errors are evident in both undercoverage (e.g., fewer older demographics) and overcoverage (e.g., potential duplicate entries). These coverage errors, alongside potential self-selection bias from voluntary participation, are recognized as limitations that may affect the study's generalizability (Dillman et al., 2014).

3.3 Analytical Hypothesis and Statistical Testing Strategy

This study's analytical approach examined the influence of value-based framing on sustainable product choices across three groups: control. The central research question posits that value-based framing, alongside individual values (biospheric, altruistic, hedonic, and egoistic), significantly impacts sustainable purchasing decisions. In this study, the independent variable is the type of value-based framing (control, self-enhancement, or self-transcendence), while the dependent variable is the choice of sustainable products.

Table 1: Hypotheses overview

Hypothesis
Value-based framing of product descriptions, along with individuals' biospheric, altruistic, hedonic, and egoistic values, has a significant effect on the purchase of sustainable food products.
H1: Value-based framing impacts the likelihood of choosing sustainable products.
H2: A positive relationship exists between an individual's biospheric value and sustainable product choices.
H3: A positive relationship exists between an individual's altruistic value and sustainable product choices.
H4: A positive relationship exists between an individual's hedonic value and sustainable product choices.
H5: A positive relationship exists between an individual's egoistic value and sustainable product choices.

To assess group differences in sustainable choices, a two-sample independent t-test was conducted at a 5% significance level. Given the sample size of 330, well above 30, the central limit theorem justified assuming normality in the data (Kwak & Kim, 2017). Further assumptions were verified with tests for homogeneity of variance ($p > 0.05$), normal distribution of residuals, homoscedasticity, outlier detection, linearity, and Variance Inflation Factor (VIF) to ensure model suitability (Appendix 3,4,5,6 & 7) (Osborne & Waters, 2002). Multiple linear regression models were used to explore whether biospheric, altruistic, hedonic, and egoistic values significantly predicted sustainable choices across the control and treatment groups. This analysis was based on Bouman et al.'s (2018) Environmental-Personal Value Questionnaire (E-PVQ) and focused on the main effects of each value, without including higher-order interactions (Field, 2013). An Analysis of Variance (ANOVA) was also applied to assess differences in sustainable choices across the three groups, incorporating gender as an independent variable to examine potential gender-specific responses to value-based framing. This combined approach of regression and ANOVA provided a comprehensive view of how individual values and framing conditions influenced sustainable choices across consumer segments (Osborne & Waters, 2002).

3.4 Moral Considerations

Ethical considerations were carefully addressed throughout the development and administration of the questionnaire. In line with the ethical standards outlined in the Belmont Report (Miracle, 2017), informed consent was obtained from all participants before they took part in the study. The experimental nature of the survey, which involved framing product descriptions in different ways, was not explicitly disclosed to participants to ensure more genuine responses, following the ethical recommendations of Kvale (2007). Disclosing the full details of the experiment upfront could have influenced participants' reactions, thereby

affecting the study's outcomes. To minimize social desirability bias, participants were assured of the anonymity of their responses and encouraged to provide honest answers (Dillman et al., 2014). Additionally, they were informed that their participation was voluntary, with the option to exit the survey at any point. In line with GDPR regulations, sensitive personal data, such as IP addresses, were deleted to protect participants' privacy (GDPR.eu, n.d.).

4.0 Analysis

This section presents the results of the study, beginning with a description of the sample, followed by an ANOVA to test group differences. It then examines the effects of value-based framings and personal values on sustainable choices through regression analysis, concluding with an evaluation of product-specific attributes.

4.1 Sample description.

The final sample comprised 330 Portuguese participants (see Appendix 1), with a gender distribution of 55.2% male and 44.8% female, spanning ages 18 to 70, with the majority between 25 and 45 years. Educational qualifications leaned toward undergraduate degrees (36.4%), with 33.3% holding a master's or doctoral degree. Most respondents (73.3%) were full-time employees, with 10.6% preferring not to disclose their employment status. Income levels were fairly balanced across different income brackets (see Appendix 1 for details).

Sociodemographic differences between the study groups were examined (Age, Gender, Education Level, Income, Location/Geography), revealing no significant discrepancies. This ensures that any response differences can be attributed to the experimental conditions rather than demographic variations (Lowest t-test P-value = 0.0727; Appendix 2).

4.2 ANOVA

The primary objective of this study is to determine whether significant differences exist in consumer choices between sustainable and non-sustainable food products across various value-based framings. An experimental survey was conducted with three conditions: a control group and two treatment groups using self-enhancement and self-transcendence framings. To assess the differences among these groups, a one-way ANOVA was performed at a 0.05 significance level to test the research question: "*Value-based framing of product descriptions, along with individuals' biospheric, altruistic, hedonic, and egoistic values, has a significant effect on the purchase of sustainable food products"*.(Table 2, 3, 4 & 5) As described in the methodology, all assumptions necessary for this analysis were met, allowing for an accurate evaluation of each framing's impact on sustainable product choices (see Appendix 3,4,5,6 & 7).

Control vs. Self-Enhancement

The comparison between the control and self-enhancement groups yielded a mean difference of 0.40 with a p-value of 0.0464, indicating a statistically significant effect, albeit with a small effect size (d = -0.31) (Fritz et al., 2012). Based on this outcome, this study cautiously reject the null hypothesis, suggesting that self-enhancement framing has a marginally significant impact on sustainable product choices. A power analysis indicated that achieving 80% power with a small effect size (d = 0.2) would require approximately 512 participants per group for a t-test, highlighting the benefit of a larger sample size for confirming this effect (Appendix 8)

Control vs. Self-Transcendence

The analysis between the control and self-transcendence groups revealed a stronger effect. The mean difference of 0.62, combined with a p-value of 0.0007, indicates a statistically significant outcome supporting the hypothesis that self-transcendence framing encourages sustainable choices. With a moderate effect size (d = -0.48) (Fritz et al., 2012), this study reject the null

hypothesis for this comparison, confirming that self-transcendence framing significantly influences sustainable product choices.

Self-Enhancement vs. Self-Transcendence

The comparison between the self-enhancement and self-transcendence framing conditions yielded a mean difference of 0.22 with a non-significant p-value of 0.3914. With a small effect size (d = -0.19) (Fritz et al., 2012), this study fails to reject the null hypothesis, suggesting no significant difference between self-enhancement and self-transcendence framings on sustainable choices.

To verify the robustness of these findings, additional analyses were conducted. Separate two-sided t-tests between each pair of conditions confirmed similar results (Appendix 8), adding no further insights. A two-way ANOVA was also performed, including gender as an additional factor to examine potential interaction effects. Results indicated no significant interaction between framing conditions and gender, $F(2, 324) = 0.47$, $p = 0.626$, and gender alone did not have a statistically significant effect on sustainable choices ($p = 0.339$; Appendix 8).

The ANOVA and subsequent Tukey HSD post hoc tests highlight that self-transcendence framing has a moderate effect on sustainable choices, leading to the acceptance of the hypothesis regarding its influence. In contrast, the hypothesis concerning self-enhancement framing is only marginally supported and warrants cautious interpretation, whereas any significant difference between self-enhancement and self-transcendence framings is not supported. These findings imply that while self-transcendence framing significantly influences sustainable product choices, self-enhancement framing does not demonstrate a similar impact compared to both the control group and the self-transcendence group.

Table 2: Summary of ANOVA

Comparison	F-value	DF (Between)	DF (Within)	p-value	Eta-Squared (η^2)	Cohen's f	Power
Treatment Groups	7.01	2	327	0.0011	0.0411	0.2071	0.93

Table 3: Tukey HSD Post-Hoc Test Results

Comparison	Mean Diff.	Lower CI	Upper CI	p-value
Control vs. T1 (SE)	0.40	0.01	0.80	0.0464 *
Control vs. T2 (ST)	0.62	0.23	1.02	0.0007 ***
T1 vs. T2	0.22	-0.18	0.61	0.3914

Table 4: Cohen's d for Pairwise Comparisons

Comparison	Cohen’s d	95% CI (Lower)	95% CI (Upper)
Control vs. T1 (SE)	-0.31	-0.58	-0.05
Control vs. T2 (ST)	-0.48	-0.75	-0.21
T1 vs. T2	-0.19	-0.45	0.07

Table 5: Detailed Summary of Condition Variables

Group	N	Mean	SD	SE
C	108	1.81	1.42	0.14
T1 (SE)	110	2.21	1.15	0.11
T2 (ST)	112	2.43	1.17	0.11

4.3 Regression and moderation analysis.

The multiple linear regression analysis for this study examines the impact of four core personal values on sustainable purchasing behavior, based on Bouman et al.'s (2018) Environmental-Personal Value Questionnaire (E-PVQ). These values (egoistic, hedonic, altruistic, and biospheric) also act as moderators, potentially affecting how value-based framing influences sustainable purchasing choices.

Cronbach's Alpha Reliability Analysis

To ensure the reliability of the different scales used in this study, Cronbach's alpha was calculated for each scale.

Table 6: Cronbach's Alpha

Scale	Items Count	Cronbach's Alpha	Reliability Interpretation
Biospheric	4	0.951	Excellent
Altruistic	5	0.887	Good
Hedonic	3	0.872	Good
Egoistic	5	0.789	Acceptable

All scales demonstrated high internal consistency, with Cronbach's alpha values exceeding .70. The Biospheric scale showed the highest reliability (α = .95), followed by the Altruistic (α = .89), Hedonic (α = .87), and Egoistic (α = .79) scales, indicating that items within each scale are well correlated and consistently measure the intended constructs (Tavakol & Dennick, 2011).

Table 7:Multiple Linear Regression Analysis for Control, Self-Enhancement, and Self-Transcendence Groups

Group	Variable	Estimate	Std. Error	t-value	p-value
Control	Intercept	1.17	0.80	1.47	0.14
	Biospheric	**0.41**	**0.06**	**7.37**	**<0.01 *** **
	Altruistic	-0.38	0.17	-2.23	0.03 *
	Hedonic	0.13	0.16	0.83	0.41
	Egoistic	0.02	0.10	0.20	0.85
Self-Enhancement	Intercept	1.51	0.73	2.06	0.04 *
	Biospheric	**0.51**	**0.08**	**6.54**	**<0.01 *** **
	Altruistic	0.07	0.14	0.51	0.61
	Hedonic	-0.32	0.12	-2.57	0.03 *
	Egoistic	-0.19	0.10	-1.91	0.06 .
Self-Transcendence	Intercept	1.91	0.95	2.02	0.05 *
	Biospheric	**0.34**	**0.16**	**2.12**	**0.04 ***
	Altruistic	-0.19	0.14	-1.34	0.18
	Hedonic	0.16	0.15	1.11	0.27
	Egoistic	**-0.40**	**0.08**	**-5.32**	**<0.01 *** **

- Significance codes: *** = 0.001, ** = 0.01, * = 0.05, . = 0.1

Table 8: : R^2 and Adjusted R^2 for Each Model

Model	R^2	Adjusted R^2
Control Group	0.35	0.33
Self-Enhancement	0.38	0.36
Self-Transcendence	0.33	0.31
Combined Model	0.38	0.35

Control Group Regression

For the control group, biospheric values demonstrated a positive and statistically significant effect on sustainable product choices (β = 0.406, $p < 0.001$), indicating that individuals with stronger biospheric values are more inclined to choose sustainable products. This aligns with Bouman et al.'s assertion that biospheric values play a critical role in sustainable purchasing behavior. Interestingly, altruistic values in this group had a significant negative association with sustainable choices (β = -0.377, $p = 0.027$), suggesting that higher altruistic scores may be linked to lower sustainable product selection. The hedonic and egoistic values showed no statistically significant impact on sustainable choices in the control group (p-values of 0.407 and 0.846, respectively). The adjusted R-squared for this model was 0.326, suggesting that 32.6% of the variance in sustainable product choice was accounted for by these values.

Treatment Group 1 Regression

In treatment group 1 (Self-Enhancement), biospheric values again showed a significant and positive relationship with sustainable choices (β = 0.508, $p < 0.001$). This result supports the hypothesis that biospheric values drive sustainable behaviors across varying framing contexts. The hedonic value, however, had a significant negative coefficient (β = -0.319, $p = 0.012$), which could indicate that participants who score higher in hedonic values are less responsive to sustainable choices under self-enhancement framing. Egoistic values, while only marginally significant (β = -0.189, $p = 0.059$), also indicated a slight tendency to reduce sustainable

product choice. The adjusted R-squared was 0.357, meaning 35.7% of the variation in sustainable product choice was explained by the model for this group.

Treatment Group 2 Regression

For treatment group 2 (Self-Transendence), biospheric values continued to show a positive and significant effect on sustainable product choice (β = 0.338, p = 0.036). Egoistic values, however, displayed a strong negative association with sustainable choices (β = -0.400, p < 0.001), suggesting that individuals with high egoistic values were less inclined to choose sustainable products under self-transcendence framing. Altruistic and hedonic values did not exhibit significant associations with sustainable choice (p-values of 0.182 and 0.268, respectively) in this group. The adjusted R-squared for this treatment was 0.308, explaining 30.8% of the variance in sustainable product choice.

4.4 Combined Regression with Interaction Terms

Table 9: Combined Regression Analysis with Interaction Terms

Variable	Estimate	Std. Error	t-value	p-value
Intercept	**2.11**	**0.11**	**19.42**	**<0.01 *** **
treatment1	0.09	0.15	0.63	0.53
treatment2	-0.04	0.19	-0.21	0.83
Biospheric	**0.41**	**0.05**	**8.29**	**<0.01 *** **
Altruistic	**-0.38**	**0.15**	**-2.51**	**0.01 *** **
Hedonic	0.13	0.14	0.94	0.35
Egoistic	0.02	0.09	0.22	0.83
treatment1*Biospheric	0.04	0.10	0.43	0.67
treatment2*Biospheric	-0.07	0.18	-0.39	0.70
treatment1*Altruistic	**0.41**	**0.22**	**1.91**	**0.06 . **
treatment2*Altruistic	0.19	0.21	0.87	0.39
treatment1*Hedonic	**-0.45**	**0.19**	**-2.30**	**0.02 *** **
treatment2*Hedonic	0.03	0.21	0.16	0.87
treatment1*Egoistic	-0.20	0.14	-1.45	0.15
treatment2*Egoistic	**-0.42**	**0.12**	**-3.52**	**<0.01 *** **

- Significance codes: *** = 0.001, ** = 0.01, * = 0.05, . = 0.1

To further investigate the moderating effect of framing on the values associated with sustainable choices, a combined linear multiple regression model with interaction terms was conducted. In this model, all continuous variables were mean-centered to improve interpretability of the main effects and interaction terms. Biospheric values maintained a positive main effect across treatments ($\beta = 0.41$, $p < 0.01$), reinforcing the hypothesis that biospheric values are consistently associated with sustainable purchasing behavior (H2). Similarly, altruistic values exhibited a significant negative main effect ($\beta = -0.38$, $p = 0.01$), aligning with findings from the control and treatment group analyses. Significant interactions emerged in this model: treatment group 1 and hedonic values ($\beta = -0.45$, $p = 0.02$) and treatment group 2 and egoistic values ($\beta = -0.42$, $p < 0.01$). These interactions indicate that the relationship between personal values and sustainable product choices varies depending on the framing context. Specifically, hedonic values tend to reduce sustainable choices under self-enhancement framing, while egoistic values have an even more pronounced negative effect on sustainable choices under self-transcendence framing. Although the interaction between treatment group 1 and altruistic values approached significance ($\beta = 0.41$, $p = 0.06$), it did not meet the conventional threshold. The adjusted R-squared for the combined model was 0.367, indicating that 36.7% of the variation in sustainable choice behavior was explained by the model.

4.5 Regression analysis – Attributes:

Lastly a multiple linear regression model was used to evaluate the influence of various product attributes—including price, nutritional value, shelf life, brand, allergy-friendly properties, vegan labeling, high quality, local production, organic production, and a smaller carbon footprint—on sustainable product choices across the control group, treatment group 1, and treatment group 2 (see Appendix 9 Tables A for detailed results).

In the control group, no product attribute showed a statistically significant effect on sustainable choices. However, in treatment group 1, where descriptions were framed to emphasize self-enhancement, price emerged as a significant factor, with a negative coefficient ($\beta = -0.358$, $p < 0.001$). This suggests that participants were less likely to choose sustainable options as the price increased, highlighting cost sensitivity within the self-enhancement framing.

Similarly, in treatment group 2, where descriptions focused on self-transcendence, price also displayed a significant negative effect on sustainable product choice ($\beta = -0.221$, $p = 0.026$). This consistent result across both treatment groups suggests that price plays a central role in sustainable purchasing decisions, regardless of the framing context, while the remaining attributes appear to exert minimal influence on sustainable choices.

This study's analysis therefore shows that self-transcendence framing significantly increases sustainable product choices, supporting H1, while self-enhancement framing has a marginal effect. Regression results indicate that biospheric values consistently drive sustainable choices, supporting H2, while altruistic, hedonic, and egoistic values have context-dependent effects, partially supporting H3 and H5 but not H4. Altruistic values positively influence sustainable choices under self-enhancement framing, while hedonic and egoistic values tend to reduce sustainable choices under certain conditions. Price sensitivity emerges as a key factor, as higher prices deter sustainable choices in both treatment groups.

5.0 Discussion

The findings of this study emphasize the role of personal values, framing, and product attributes in shaping sustainable purchasing decisions. Schwartz's (2012) value theory underscores that biospheric, altruistic, hedonic, and egoistic values guide behavior, with biospheric values consistently showing a positive impact on sustainable choices

An intriguing pattern emerges in the effects of altruistic values across conditions. In the control group, altruistic values negatively influence sustainable choices ($\beta = -0.38$, $p = 0.03$), possibly reflecting a prioritization of ethical concerns unrelated to environmental sustainability, such as broader societal welfare. Under Treatment 1, however, this negative effect is neutralized ($\beta = 0.07$, $p = 0.61$). This shift suggests that self-enhancement framing may compensate for the negative baseline effect by redirecting altruistic motivations toward sustainable behavior. It could represent a balance of opposing effects—negative influence in the control offset by positive activation in Treatment 1—or a recalibration where altruistic values align with self-oriented benefits like personal responsibility or reputation enhancement.

Framing effects provide insights into how self-transcendence and self-enhancement messaging influence sustainable choices. Self-transcendence framing had a moderate, statistically significant impact on sustainable choices, with high statistical power reducing the risk of Type II error and suggesting reliable findings. In contrast, self-enhancement framing exhibited a marginal effect and lower statistical power, indicating that practical limitations may have reduced the impact of self-enhancement messages. Visceral factors, such as immediate emotional reactions (e.g., empathy or guilt), likely contribute to framing effectiveness, as such affective motivators can encourage deeper cognitive engagement in sustainable choices (Loewenstein, 1996). Price sensitivity emerged as a substantial factor, potentially acting as a barrier to sustainable choices in both self-transcendence and self-enhancement contexts. Involvement theory provides additional insights, highlighting varying engagement levels in purchasing decisions. Drawing on Knox et al.'s (1994) continuum, participants likely exhibited both enduring and situational involvement, shifting between automatic, System 1 processing, and deliberate, System 2 decision-making. Framing that emphasized social or environmental benefits leads to greater cognitive engagement (Reppmann et al., 2024),

indicating that the effectiveness of framing may increase when consumer involvement is higher, as in more thoughtful, high-engagement decisions.

Despite the potential impact of value-based framing, the study's results suggest that text-based framing alone may lack the strength to consistently influence behavior.

The study also highlights the interplay between automatic and deliberate processing. Kahneman's (2003) dual-process theory supports the idea that intuitive System 1 responses to framing are often overridden by practical, cost-based System 2 considerations. This explains why framing effects alone did not consistently influence sustainable choices, as immediate, value-based reactions were tempered by more pragmatic concerns like price. Mixed effects of altruistic and hedonic values further complicate value-based motivations. As Bouman et al. (2018) noted, competing priorities such as price sensitivity can override intrinsic values, and Schwartz's (1992) theory of value prioritization suggests that individuals may act in line with prioritized values over those that are secondary.

5.1 Theoretical and Managerial Implications

This study makes significant theoretical contributions by advancing the understanding of how value-based framing and it's subcomponents can influence sustainable purchasing choices. Drawing from Schwartz's (2012) theory of basic human values, the findings emphasize the pivotal role of biospheric, and egoistic values in shaping consumer behavior. Notably, biospheric values consistently support sustainable product choices across different framing contexts, reinforcing the established link between pro-environmental values and purchasing behavior (Bouman et al., 2018). However, the varied effects of altruistic and hedonic values suggest that consumer values may not uniformly drive purchasing behaviors, indicating a complex interaction influenced by framing conditions. This underscores the importance of message context in value-based framing (Kahneman & Tversky, 1981). The study further

supports Tarkiainen and Sundqvist's (2009) argument that ideological beliefs alone may not drive habitual purchases when practical considerations, like price, hold sway. In line with Kahneman and Tversky's (1981) framing theory, this research suggests that multi-dimensional framing, including visual or interactive elements, could more effectively engage consumers. The managerial implications are clear and actionable. This study indicates that companies can effectively employ self-transcendence framing to promote sustainable choices, particularly among consumers with higher biospheric or altruistic values. Strategic integration of self-transcendence framing in product descriptions, marketing campaigns, and corporate messaging can enhance brand alignment with environmentally conscious consumers, thereby strengthening brand credibility within the sustainable marketplace. However, the limited effect of self-enhancement framing implies that emphasizing personal benefits may be less impactful unless paired with other persuasive elements, such as price incentives or product benefits related to quality and exclusivity.

Belk's Theory of the Extended Self (1988) provides additional context, suggesting that consumers may not readily associate sustainable products with a hedonic identity. Sustainable products may require clearer alignment with biospheric or other intrinsic values to reinforce identity expression. Marketing strategies that connect eco-friendly products to self-expression through core values may enhance appeal, especially when combined with tangible benefits like quality or exclusivity. Price sensitivity emerges as an important consideration within framing strategies. Price was a significant determinant across all groups, revealing that consumers prioritize affordability even in value-driven contexts. This aligns with dual-process theory (Kahneman, 2003), where initial, value-based reactions are moderated by more deliberate, cost-based decisions. Thus, companies aiming to increase sustainable purchases should consider strategies to mitigate perceived cost barriers, such as emphasizing long-term economic or health benefits of sustainable options or offering incentives aligned with value framing.

Beyond the food industry, this study's methodology and insights are relevant for other sectors seeking to encourage sustainable behaviors. For example, apparel, home goods, and personal care brands could apply value-based framing to influence eco-friendly product adoption. A cosmetics brand, for instance, could use self-transcendence framing by highlighting how product ingredients support biodiversity and minimize waste, resonating with biospheric and altruistic consumers. This research broadens both academic and practical understandings of consumer motivations in sustainability contexts, establishing a foundation for future studies on framing techniques and other consumer engagement strategies. It highlights the importance of aligning with intrinsic values while addressing the economic and habitual barriers to sustainable purchasing, offering valuable insights for companies and researchers across industries.

5.2 Limitations and Future Research

This study provides valuable insights into how personal values, framing, and product attributes influence sustainable purchasing behavior. However, several limitations should be noted, along with suggestions for future research. The sample was skewed toward younger, educated individuals, which may impact generalizability. Furthermore, according to Hofstede's cultural dimensions theory, values like self-enhancement may be perceived differently across cultures (Hofstede, 2011). In cultures with lower individualism scores, for instance, self-enhancement framing might have a weaker effect, potentially influencing sustainable choices differently if the study were conducted in such cultural contexts. While demographic comparisons showed no significant group differences (lowest t-test p-value = 0.0727), the use of non-probability sampling may limit external validity, as these demographics often lean toward sustainability. Future studies could enhance representativeness with probability sampling to yield a more accurate view of broader population attitudes (Etikan et al., 2016). The reliance on hypothetical

purchasing scenarios may not fully capture real-world behavior, introducing a potential intention-behavior gap (Vermeir & Verbeke, 2006). Ethnographic studies in real settings, like supermarkets, could provide more authentic insights into sustainable purchasing by observing actual consumer decisions (Hammersley, 2006). The use of familiar brands may have introduced a routine bias, with participants potentially relying on habitual preferences rather than framing effects (Chen & Chang, 2016; Tarkiainen & Sundqvist, 2009). Familiarity can trigger System 1 processing, where consumers make automatic choices (Kahneman, 2003), thus reducing the influence of framing. Future research could use lesser-known or generic brands to better isolate framing effects. Self-reported data introduces a risk of social desirability bias, particularly regarding sustainability, where respondents may overstate ethical intentions (Cerri et al., 2019). Despite employing Bouman et al.'s (2018) Environmental-Personal Value Questionnaire (E-PVQ), bias may persist. To capture more authentic responses, future research could use indirect questioning or implicit association tests to minimize social desirability bias (Cerri et al., 2019). Cognitive capacity constraints, or limited bandwidth, may also have affected responses. Given the framing demands, participants might have experienced cognitive load, which could impact engagement with or comprehension of value-based messaging (Whitney et al., 2008). The text-based framing for self-enhancement and self-transcendence showed mixed results, with self-transcendence framing having a stronger impact. One major limitation is that the framing might not have been impactful simply due to ineffective wording on the authors part. Another reason could be that text alone may lack the engagement needed for significant behavioral shifts, suggesting that multimedia framing (e.g., images or videos) could enhance engagement and reduce cognitive dissonance, helping participants align values with actions (Florence et al., 2022). Addressing these limitations—through improved sampling, observational methods, budget scenarios, brand-neutral products, controls for social desirability, enhanced framing, and broader societal measures—could extend these findings

and deepen the understanding of how personal values, framing, and other influences shape sustainable consumer behavior. The study's reliability is considered moderate. If repeated with the same method, analytical strategy, and data collection, similar results are likely (Roberts & Priest, 2006). This is supported by the high internal consistency of the scales measuring biospheric, altruistic, hedonic, and egoistic values, indicated by Cronbach's alpha (Tavakol & Dennick, 2011). However, certain design and sampling limitations may affect the reliability across different populations. Internal validity is also moderate (Roberts & Priest, 2006). The use of snowball sampling, a non-probability approach, may have introduced bias by recruiting participants with similar characteristics, affecting sample representativeness (Etikan et al., 2016). Although the study targeted an 80% power level, resource limitations reduced the sample size, lowering statistical power and increasing the risk of a Type II error. This limitation affects the strength of cause-and-effect conclusions between framing and purchasing behavior. The use of Likert scale data as interval data, while common, introduces assumptions that may reduce the precision of results, as Likert scales are ordinal in nature (Jamieson, 2004). Despite these limitations, random assignment to conditions and control over extraneous factors helped mitigate confounding variables, enhancing internal validity. Future research should consider refining sampling methods and measurement tools to improve the reliability and internal validity of findings in similar studies.

6.0 Conclusion:

This study explored how value-based framing in product descriptions, aligned with biospheric, altruistic, hedonic, and egoistic values, impacts sustainable purchasing behavior.

The findings reveal that biospheric values consistently promote sustainable choices across different contexts, highlighting the foundational role of environmental concern in consumer decision-making. Self-transcendence framing demonstrated a moderate, statistically significant impact on sustainable product selections, supporting the hypothesis (H1) that framing can

enhance pro-environmental behavior. In contrast, self-enhancement framing showed only a marginal effect, suggesting that while personal benefits resonate with consumers, messages that emphasize broader social and environmental considerations are more effective in motivating sustainable choices. Price sensitivity emerged as a significant factor across all groups, revealing that consumers' sustainable intentions are often moderated by financial considerations. This indicates that although value-based messaging can drive sustainable choices, practical constraints like cost remain a primary concern. These findings echo Tarkiainen & Sundqvist's (2009) argument that ideological beliefs alone may not predict purchasing behavior, especially when habitual or economic factors are at play.

The results of this study contribute to consumer behavior literature by illustrating the interplay between intrinsic values, framing, and practical factors in shaping sustainable choices. The application of Schwartz's value theory provided a useful lens to understand how distinct values influence behavior, while involvement and dual-process theories helped explain the varying degrees of engagement and decision-making strategies. For practitioners, these insights suggest that marketing strategies for sustainable products could benefit from emphasizing collective benefits and social impact, particularly through self-transcendence messaging. However, the importance of affordability underscores the need for accessible pricing strategies to support sustainable purchasing intentions. Future research could build upon these findings by employing more immersive framing techniques, such as visual and interactive media, to test the effectiveness of value-based messaging in real-world contexts. Additionally, studying sustainable behavior across diverse demographics and purchasing scenarios would provide a more holistic understanding of the factors influencing value-driven decisions. By addressing these areas, future studies can further clarify how to bridge the gap between sustainability intentions and actual consumer behavior, providing a stronger foundation for promoting sustainable consumption practices.

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Appendix

Appendix 1 - Detailed Demographics

Value	Count	Percentage	Category
Male	182	55,15	Gender
Female	148	44,85	Gender
Employed Full-Time	242	73,33	Employment Status
Employed Part-Time	11	3,33	Employment Status
Self-Employed Full-Time	27	8,18	Employment Status
Self-Employed Part-Time	6	1,82	Employment Status
Temporarily Unemployed	16	4,85	Employment Status
Full-Time Homemaker	5	1,52	Employment Status
Retired	11	3,33	Employment Status
Student	11	3,33	Employment Status
Prefer Not To Answer	1	0,3	Employment Status
18	4	1,212121	Age
19	4	1,212121	Age
20	5	1,515152	Age
21	4	1,212121	Age
23	3	0,909091	Age
24	13	3,939394	Age
25	4	1,212121	Age
26	9	2,727273	Age
27	6	1,818182	Age
28	7	2,121212	Age
29	6	1,818182	Age
30	7	2,121212	Age
31	5	1,515152	Age
32	10	3,030303	Age
33	7	2,121212	Age
34	7	2,121212	Age
35	10	3,030303	Age
36	9	2,727273	Age
37	12	3,636364	Age
38	11	3,333333	Age
39	12	3,636364	Age
40	10	3,030303	Age
41	10	3,030303	Age
42	11	3,333333	Age
43	5	1,515152	Age
44	17	5,151515	Age
45	7	2,121212	Age
46	9	2,727273	Age
47	11	3,333333	Age
48	10	3,030303	Age

49	10	3,030303	Age
50	8	2,424242	Age
51	8	2,424242	Age
52	5	1,515152	Age
53	6	1,818182	Age
54	8	2,424242	Age
55	4	1,212121	Age
56	5	1,515152	Age
57	2	0,606061	Age
58	4	1,212121	Age
59	4	1,212121	Age
60	3	0,909091	Age
61	3	0,909091	Age
62	2	0,606061	Age
63	2	0,606061	Age
64	2	0,606061	Age
65	4	1,212121	Age
67	2	0,606061	Age
68	1	0,30303	Age
69	1	0,30303	Age
70	1	0,30303	Age
High School	20	6,06	Education Level
Associate's Degree	30	9,09	Education Level
Bachelor's Degree	120	36,36	Education Level
Master's Degree	110	33,33	Education Level
Doctorate	15	4,55	Education Level
Prefer Not To Answer	35	10,61	Education Level
Under €10,000	40	12,12	Income Level
€10,000-€20,000	90	27,27	Income Level
€20,001-€30,000	70	21,21	Income Level
€30,001-€40,000	50	15,15	Income Level
Over €40,000	45	13,64	Income Level
Prefer Not To Answer	35	10,61	Income Level
Portugal	330	100	Location

Appendix 3 - Normal Distribution of Residuals

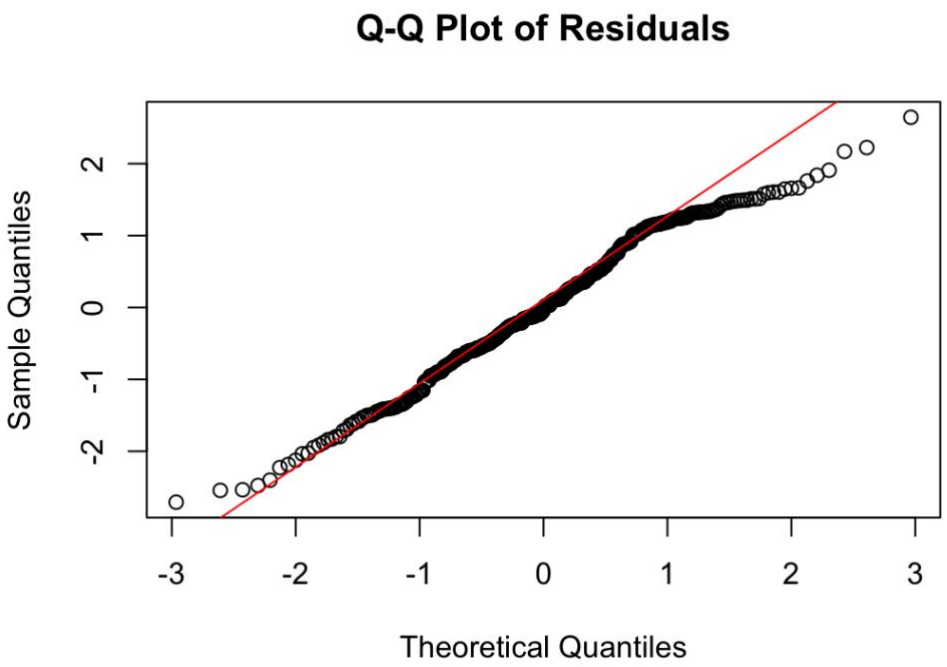
Assessment of Normality

Normality of residuals is a key assumption in regression analysis, as it ensures the reliability of p-values and confidence intervals in inferential statistics. In this study, the normality of residuals was assessed through both visual inspection and statistical testing.

Q-Q Plot of Residuals

A Q-Q plot was created to visually assess the distribution of residuals. If the residuals are approximately normally distributed, they should fall along the reference line in the Q-Q plot.

Figure 1: Q-Q Plot of Residuals



The Q-Q plot is used to visually inspect if the distribution of residuals deviates from normality. As seen in the plot, most of the residuals lie close to the theoretical line, suggesting that the residuals approximately follow a normal distribution. While there are some deviations at the tails, overall, the assumption of normality is considered reasonable for this analysis.

Assessing normality is crucial for validating the assumptions underlying regression analysis, ensuring the reliability of p-values and confidence intervals in the model.

Appendix 4 - Homoscedasticity Analysis

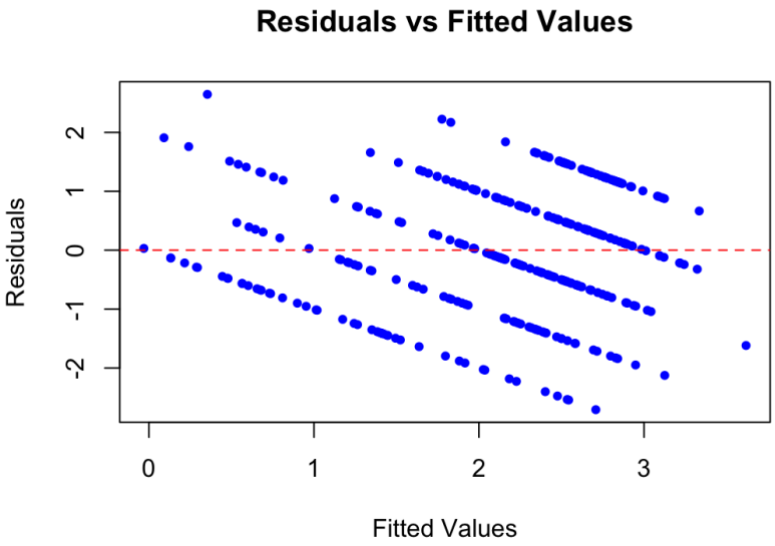
Homoscedasticity Analysis

Homoscedasticity refers to the assumption that the variance of the residuals (errors) is constant across all levels of the independent variables. This assumption is crucial for ensuring that the regression model's predictions are equally reliable across different levels of the independent variables, which is one of the underlying assumptions of linear regression.

Residuals vs. Fitted Values Plot

To check for homoscedasticity, a residuals vs. fitted values plot was generated. The plot displays the residuals on the y-axis and the fitted values on the x-axis, with the purpose of visually inspecting whether the spread of residuals remains relatively constant across different levels of the fitted values.

Figure 1: Residuals vs. Fitted Values Plot



The plot indicates that there is some evidence of non-constant variance (heteroscedasticity), as the spread of residuals appears to increase at certain levels of fitted values. Ideally, the residuals should form a horizontal band around zero, without any systematic pattern.

The observed pattern suggests that the assumption of homoscedasticity may not hold fully in this model, which may have implications for the reliability of the significance tests and confidence intervals of the regression coefficients. This finding necessitates considering alternative approaches or transformations, such as using heteroscedasticity-consistent standard errors or applying a data transformation, to ensure robust results.

Appendix 5 - Outlier Detection and Analysis

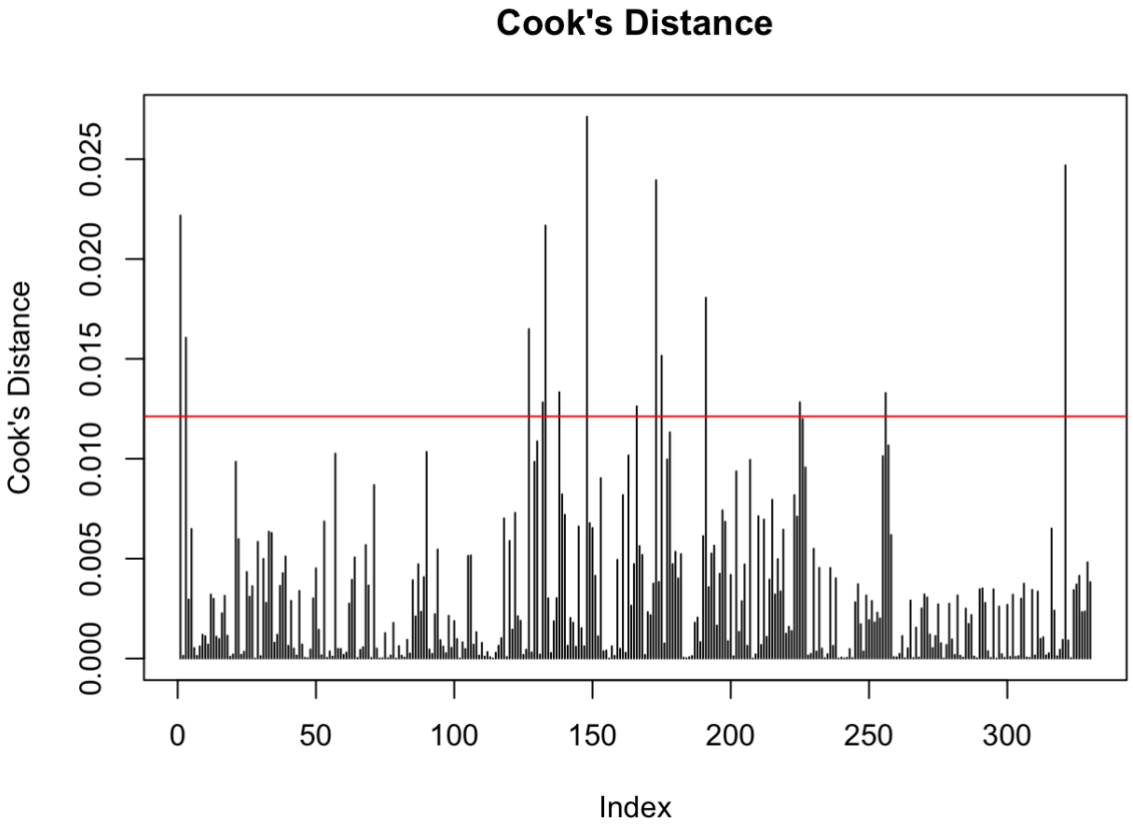
Outlier Analysis

Outliers in a dataset can have a disproportionately large impact on the results of a regression analysis, potentially distorting statistical tests and influencing the results of a study. Therefore, it is important to detect, assess, and handle any outliers before interpreting the results. In this study, the following steps were undertaken to identify significant outliers and influential data points:

Step 1: Calculate Cook's Distance

Cook's distance was calculated for each data point to assess its influence on the regression model's parameters. Observations with a Cook's distance greater than a threshold of approximately 0.015 (marked by a red line) were flagged as potential influential outliers.

Figure 1: Cook's Distance Plot

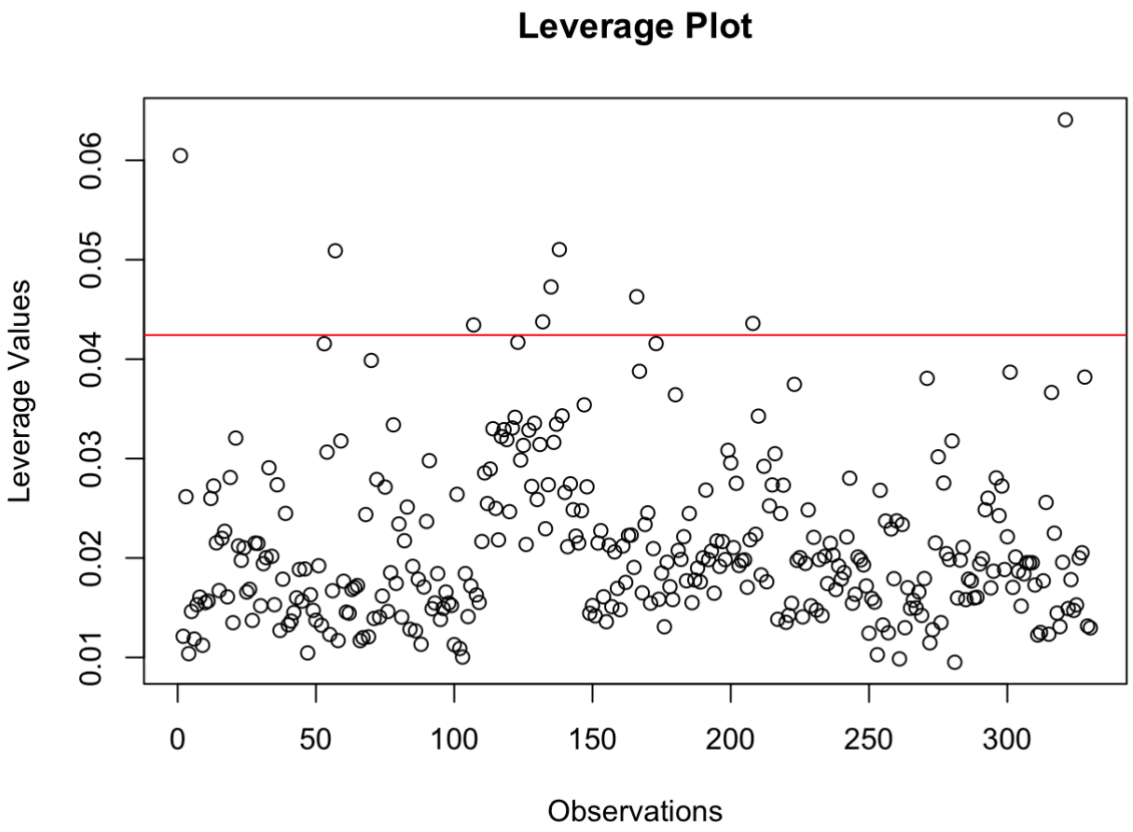


- The plot indicates that certain data points may have undue influence on the model. Based on Cook's distance, observations at index numbers 1, 3, 127, 132, 133, 138, 148, 166, 173, 175, 191, 225, 256, and 321 were detected as potentially influential. These points were considered for further investigation to determine whether their inclusion in the model would skew the regression results.

Step 2: Leverage Plots

A leverage plot was generated to examine the leverage values for each observation. High leverage points are those that have the potential to influence the regression equation by virtue of their position in the predictor space, rather than the outcome.

Figure 2: Leverage Plot

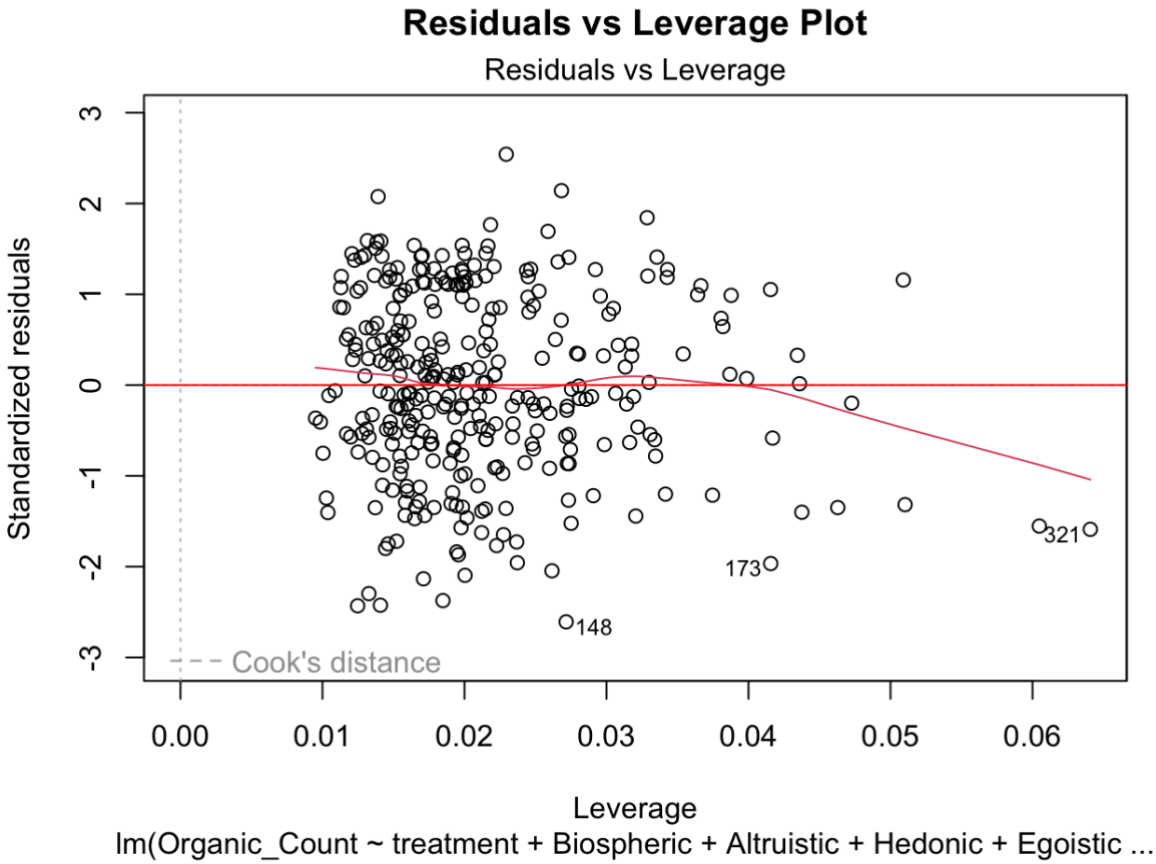


- The red line indicates the threshold for high leverage (calculated as 2 times the number of predictors divided by the sample size). Several data points were observed to have higher-than-usual leverage, which indicated they might exert undue influence on the regression.

Step 3: Residuals vs. Leverage Plot (Detection of Influential Points)

To visualize both residual values and leverage, a residuals vs. leverage plot was created. This plot helps identify influential data points by showing how much leverage an observation has in combination with its residuals.

Figure 3: Residuals vs. Leverage Plot



The observations with the highest residuals and leverage (such as 148, 173, and 321) are depicted in the plot. These influential data points were reviewed to determine if their effect on the model is justified or if they should be considered for removal.

A combination of Cook's distance, leverage plots, and residuals vs. leverage analysis was used to identify potential influential data points. Observations with high Cook's distance, leverage, and residuals were flagged for further inspection. Any points flagged by these diagnostics could potentially skew the results, and it is necessary to assess if they represent valid, meaningful data points or measurement errors that warrant exclusion from the analysis.

This analysis ensures that the final regression model used for hypothesis testing is robust, and the results drawn are not driven by a few extreme observations. The handling of outliers, in turn, enhances the reliability of the statistical analysis performed.

Appendix 6 – Linearity Analysis

In order to verify the linearity assumptions for the regression analysis, multiple scatterplots were created between the independent variables (Biospheric, Altruistic, Hedonic, Egoistic) and the dependent variable (Organic Count). These scatterplots, along with the corresponding linear regression lines, are presented in Figures 1-4. The scatterplots indicate varying relationships between each of the independent variables and the outcome variable.

Figure 1: Scatterplot - Biospheric vs Organic Count
The scatterplot indicates a positive linear relationship between the Biospheric variable and Organic Count, suggesting that an increase in Biospheric values is associated with an increase in organic choices.

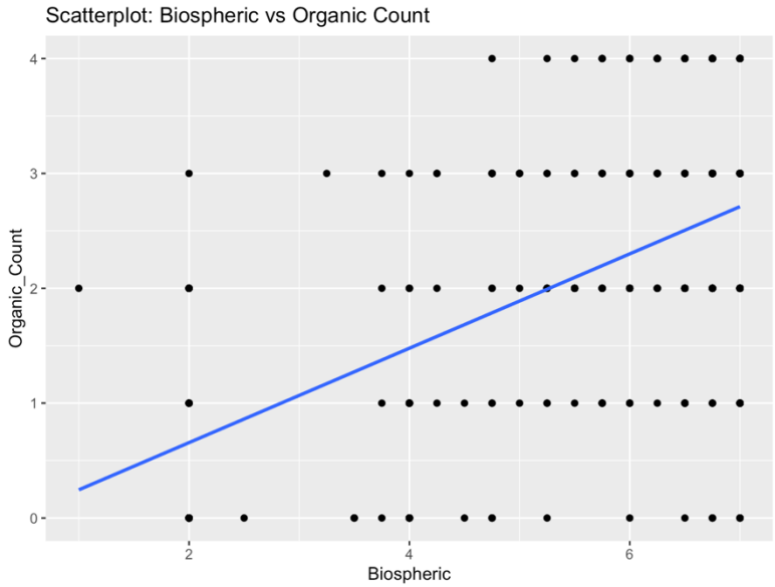


Figure 2: Scatterplot - Altruistic vs Organic Count
The scatterplot for the Altruistic variable reveals no noticeable relationship with Organic Count, as the linear regression line remains nearly horizontal.

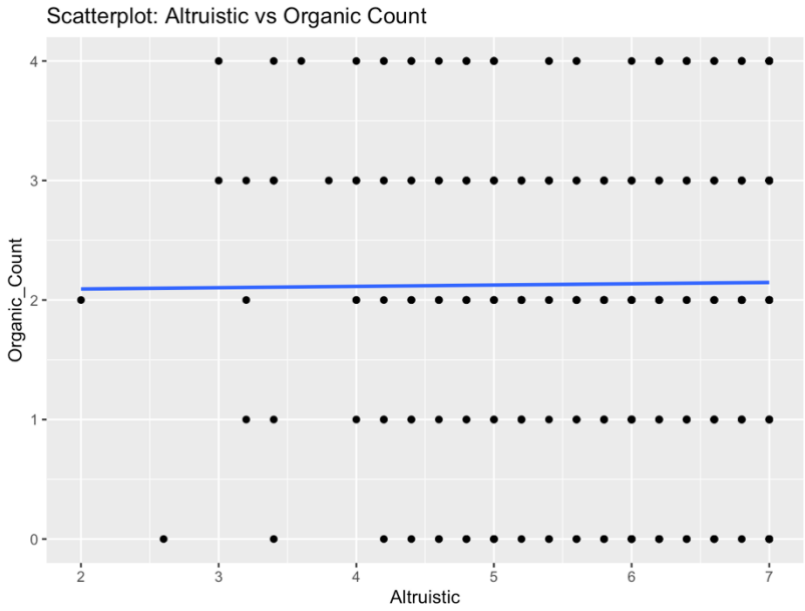


Figure 3: Scatterplot - Hedonic vs Organic Count The scatterplot for Hedonic suggests a slight negative relationship, though the trend is weak. The regression line indicates a slight decrease in Organic Count as Hedonic values increase.

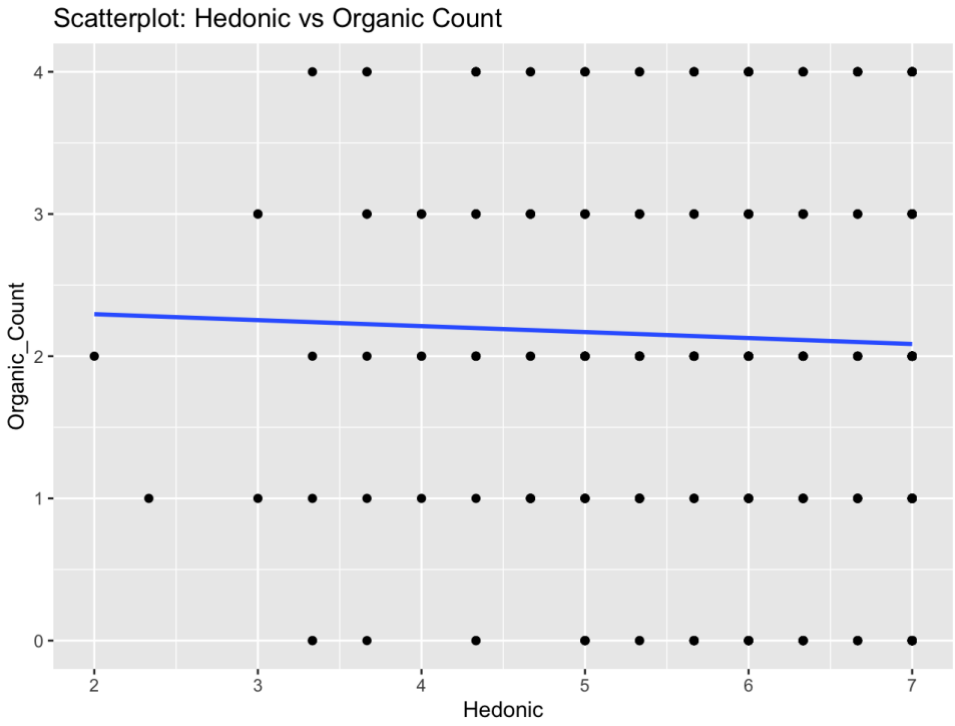
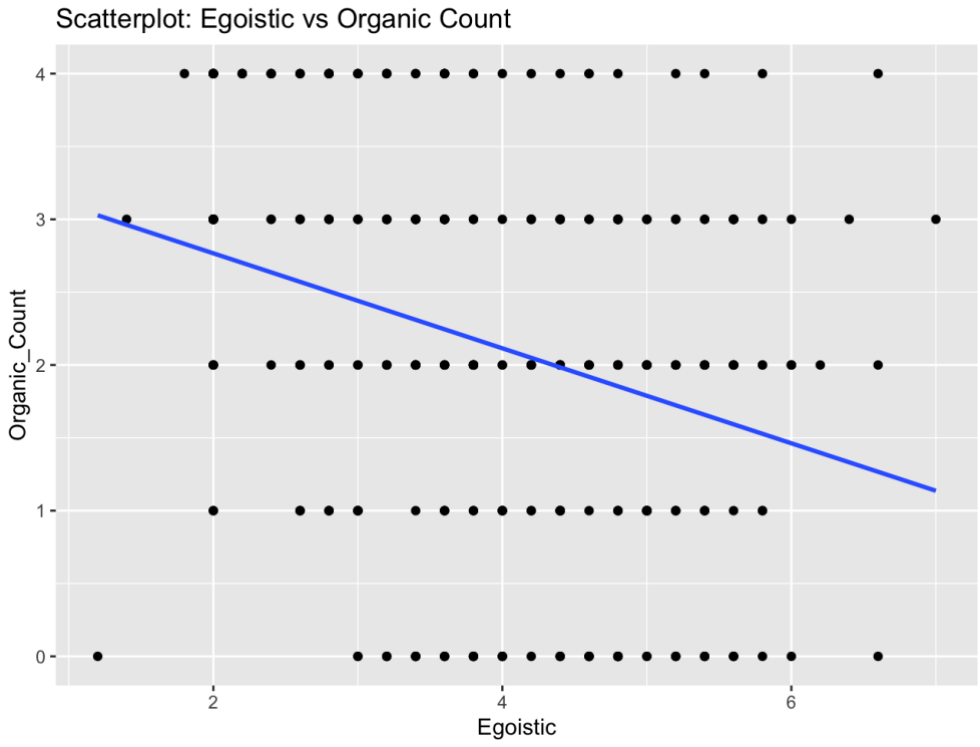
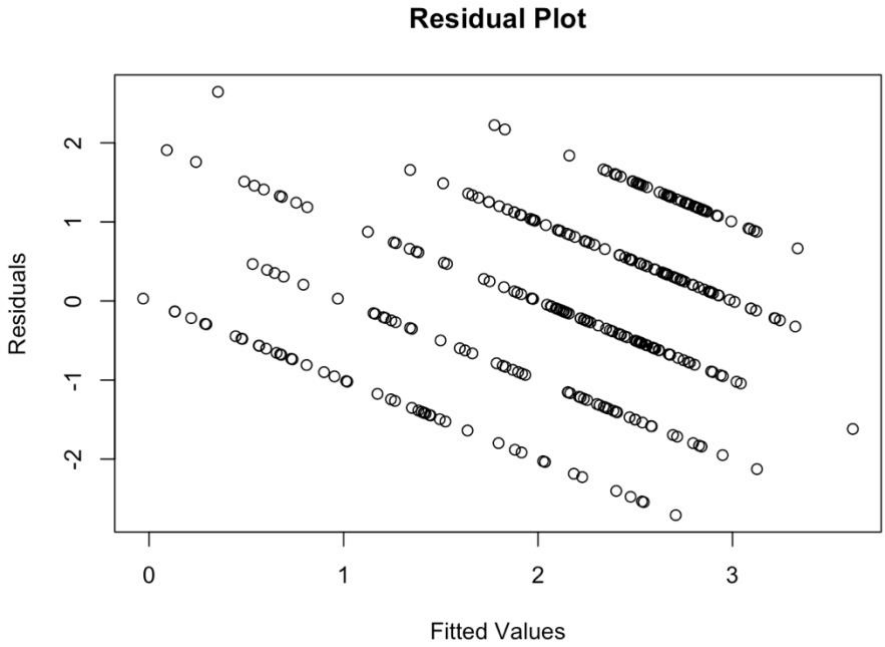


Figure 4: Scatterplot - Egoistic vs Organic Count
The scatterplot for Egoistic values presents a notable negative trend, indicating that higher Egoistic scores are associated with fewer organic choices.



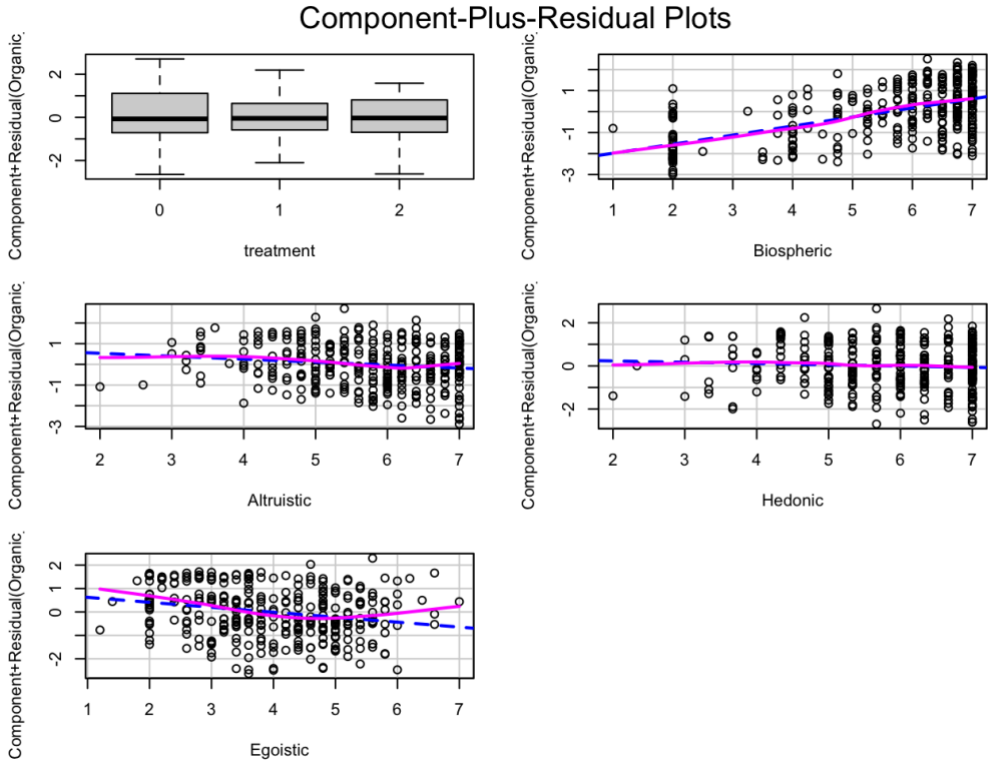
Residual Plot for Linearity

Figure 5 presents the residual plot, which was created to assess whether the linearity assumption holds across the entire dataset. The plot shows that the residuals are distributed relatively randomly around the horizontal axis, indicating that no strong non-linear pattern is present.



Augmented Component-Plus-Residual (ACPR) Plot

Figure 6 provides the ACPR plots for each of the independent variables. These plots help identify any curvature that would suggest a departure from linearity. The Biospheric variable's ACPR plot shows a slight upward trend, while the Egoistic variable shows a downward trend. The ACPR plots for Altruistic and Hedonic show relatively flat lines, which indicate minimal relationship with Organic Count. Overall, the ACPR plots confirm that linear relationships are reasonable for the majority of the independent variables, with no significant departures from linearity identified.



Appendix 7 – VIF

VIF Results:

In order to ensure that multicollinearity is not significantly affecting the regression model, a Variance Inflation Factor (VIF) analysis was conducted for the key independent variables. The VIF values provide insight into how much variance of each predictor is inflated due to correlation with other variables in the model. A VIF value above 10 generally indicates problematic multicollinearity, which could compromise the reliability of the model estimates. The results are summarized in the table below.

Table: Variance Inflation Factor (VIF) Analysis

Predictor	VIF Value	Degrees of Freedom	Tolerance
Treatment	1.213	2	1.050
Biospheric	1.355	1	1.164
Altruistic	2.434	1	1.560
Hedonic	2.356	1	1.535
Egoistic	1.081	1	1.040

The results indicate that all VIF values are well below the commonly used threshold of 10, suggesting that multicollinearity is not a significant issue for any of the predictors included in the regression model. The tolerance values, which are the reciprocal of VIF, are also consistent with acceptable ranges, further affirming the reliability of the regression analysis in this context.

The analysis confirms that the predictors are sufficiently independent from each other, thereby enhancing the credibility of the subsequent regression results and interpretations.

Appendix 8 – ANOVA & T-tests

T-Tests

Table 1: Summary of T-tests

Comparison	t-value	DF	p-value	Mean Diff.	SE Diff.	Cohen's d	Power	N for 80% Power
C vs. T1 (SE)	-1.98	216	0.05	-0.35	0.18	0.27	0.50	259
C vs. T2 (ST)	-3.56	218	0.00	-0.62	0.17	0.48	0.94	81
T1 vs. T2	-1.74	220	0.08	-0.27	0.15	0.23	0.41	N/A

Two way Anova

Factor	Df	Sum Sq	Mean Sq	F Value	Pr(>F)	Significance
Treatment	2	21.9	10.944	6.985	0.00107	**
Gender	1	1.4	1.435	0.916	0.33928	
Treatment	2	1.5	0.736	0.470	0.62559	
Residuals	324	507.6	1.567			

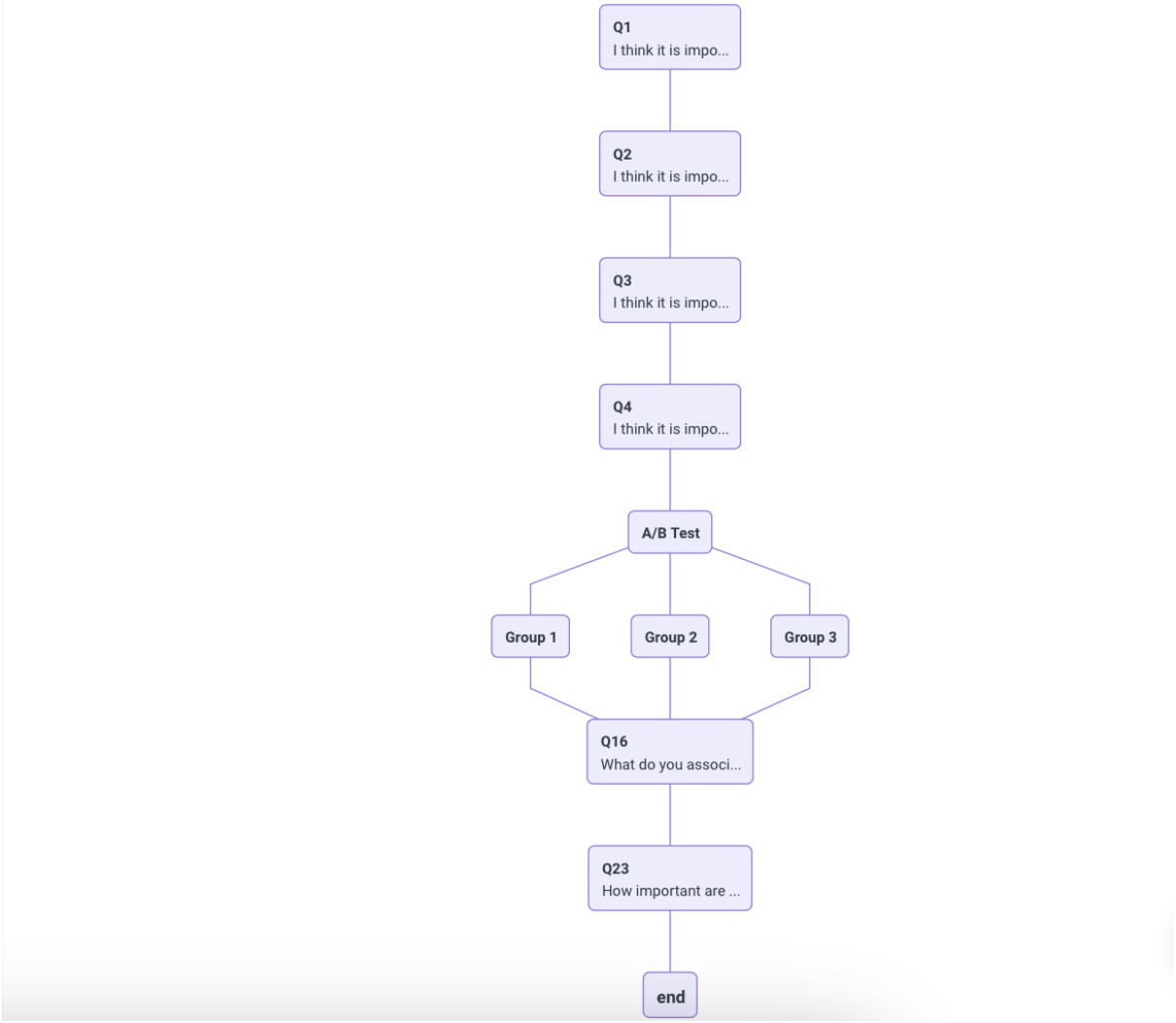
Appendix 9 – Attribute Regression Analysis

Table J: Summary of Attribute Regression Analysis by Group

Group	Variable	Estimate	Std. Error	t-value	p-value (Significance)
Control	Intercept	1.39	0.90	1.54	0.13
	Price	-0.13	0.11	-1.22	0.23
	Nutritional Value	0.18	0.15	1.19	0.24
	Shelf Life	-0.14	0.15	-0.90	0.37
	Brand	0.22	0.11	1.94	0.06 .
	Allergy Friendly	-0.19	0.13	-1.43	0.16
	Vegan	0.18	0.11	1.67	0.10 .
	High Quality	0.01	0.13	0.10	0.92
	Local Production	-0.22	0.12	-1.89	0.06 .
	Organic Production	0.24	0.13	1.84	0.07 .
	A Smaller Carbon Footprint	0.01	0.12	0.09	0.93
Self-Enhancement	Intercept	2.65	0.76	3.48	<0.01 ***
	Price	-0.36	0.10	-3.59	<0.01 ***
	Nutritional Value	0.03	0.12	0.23	0.82
	Shelf Life	0.08	0.11	0.71	0.48
	Brand	-0.06	0.10	-0.64	0.53
	Allergy Friendly	0.07	0.10	0.67	0.51
	Vegan	0.05	0.07	0.63	0.53
	High Quality	0.10	0.12	0.83	0.41
	Local Production	-0.01	0.11	-0.10	0.92
	Organic Production	-0.01	0.12	-0.11	0.91
	A Smaller Carbon Footprint	0.06	0.10	0.64	0.52
Self-Transcendence	Intercept	2.25	0.76	2.97	<0.01 **
	Price	-0.22	0.10	-2.27	0.03 *
	Nutritional Value	0.07	0.12	0.62	0.54
	Shelf Life	-0.15	0.11	-1.37	0.17
	Brand	-0.10	0.09	-1.08	0.28
	Allergy Friendly	-0.02	0.11	-0.17	0.87
	Vegan	0.12	0.08	1.55	0.12
	High Quality	0.02	0.12	0.17	0.86
	Local Production	-0.01	0.12	-0.07	0.94
	Organic Production	0.15	0.12	1.20	0.23
	A Smaller Carbon Footprint	0.19	0.12	1.55	0.13

Appendix 10 – Detailed Questionaire

Logic path:



Demographic questions and results has been removed for the sake of simplicity and GDPR laws. Detailed demographics can be seen in *Appendix 1*

Q1: I think it is important to... (MatrixSingleSelection)

	Unnecessary	2	3	4	5	6	Essential
Protect the environment							
Prevent environmental pollution							
Respect nature							
Be in unity with nature							

Q2: I think it is important to... (MatrixSingleSelection)

	Meaningless	2	3	4	5	6	Meaningful
Ensure everyone has equal opportunities							
Care for those who are worse off							
Be helpful to others							
Ensure all people are treated fairly							
That there is no war and conflict in the world							

Q3: I think it is important to... (MatrixSingleSelection)

	Not important	2	3	4	5	6	Very important
Enjoy life’s pleasures							
Do things you enjoy							
Have fun							
Please select the option "Very important" to prove you are not a bot (attention question)							

Q4: I think it is important to... (MatrixSingleSelection)

	Unnecessary	2	3	4	5	6	Essential

Have control over others' actions							
Have authority over others							
Be influential							
Have money and material possessions							
Work hard and be ambitious							

Q5: In this part of the survey, we ask you to imagine that you are on a hypothetical shopping trip. You will be presented with five pairs of products, and for each pair, we would like you to choose the product you would most likely buy. Each product pair will contain two options, and you'll make a total of five decisions.Please keep in mind:There are no right or wrong answers—we are simply interested in your personal preferences.Make your choices as if you were making a real purchase decision during your typical shopping trip.Don't overthink your answers—just choose the product that feels like the right choice for you at the moment. *(Description)*

Product Visual Overview

Here is a visual summary of the products used in the shopping scenarios, consistent across all groups:

FELIX Ketchup mild 450g

Felix

€ 3.79

€ 8.42 / 1 kg

Incl. VAT, excl. shipping

Organic Ketchup 400ml from Heinz

Heinz

€ 4.79

€ 11.98 / 1 l

Incl. VAT, excl. shipping

Sainsbury's British Free Range Eggs Large x6

(271)

BRITISH

£1.85 31p / ea

Add

Sainsbury's Woodland Free Range Large Eggs, SO Organic x6

(93)

ORGANIC BRITISH

£2.85 48p / ea

Add

Sainsbury's British or Irish 5% Fat Beef Mince 500g

TYPICAL LIFE 6 DAYS
CHILLED
ALDI PRICE MATCH*

£3.49 £6.98 / kg

Add

Sainsbury's Organic British Beef Mince 5% Fat 500g

ORGANIC
TYPICAL LIFE 6 DAYS
CHILLED

£5.50 £11.00 / kg

Add

Sainsbury's British Semi Skimmed Milk 1.13L (2 pint)

ALDI PRICE MATCH*

£1.20 £1.06 / ltr

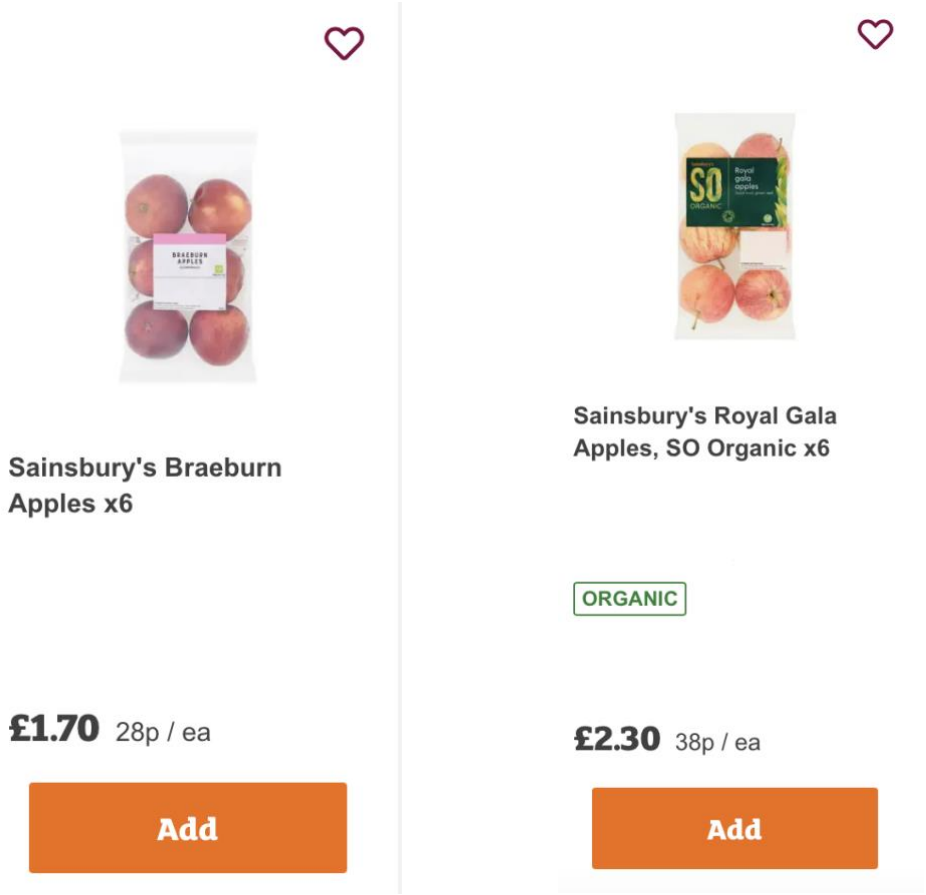
Add

Sainsbury's British Semi Skimmed Milk, SO Organic 1.13L (2 p...

ORGANIC

£1.65 £1.45 / ltr

Add



Q6: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Heinz Ketchup**
- **Heinz Organic Ketchup**

Q7: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's British Free Range Eggs (Large)**
- **Sainsbury's Woodland Free Range Eggs (Large, Organic)**

Q8: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **British or Irish 5% Fat Beef Mince (500g)**
- **Organic British Beef Mince (5% Fat, 500g)**

Q9: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's Semi-Skimmed Milk (1.13L)**
- **Sainsbury's Organic Semi-Skimmed Milk (1.13L)**

Q10: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Braeburn Apples (x6)**
- **Braeburn Organic Apples (x6)**

Q11: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Heinz Ketchup**
- **Heinz Organic Ketchup**
  Designed for those who prioritize both health and quality in their lifestyle. Made with carefully selected organic ingredients, it brings natural flavor and essential nutrients to every meal, fueling your commitment to well-being and success. Choosing Heinz Organic isn't just about taste—it's about embracing a higher standard of nutrition and excellence.

Q12: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's British Free Range Eggs (Large)**
- **Sainsbury's Woodland Free Range Eggs (Large, Organic)**
  Rich in nutrients that fuel your body and mind, they provide the energy you need to stay on top of your game. When you choose these eggs, you're making a statement about your commitment to excellence and a superior lifestyle.

Q13: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **British or Irish 5% Fat Beef Mince (500g)**
- **Organic British Beef Mince (5% Fat, 500g)**
  Packed with top-tier nutrients, it enhances your physical prowess, helping you look and feel your best. Choose the beef that reflects your drive for success.

Q14: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's Semi-Skimmed Milk (1.13L)**
- **Sainsbury's Organic Semi-Skimmed Milk (1.13L)**
  For those who refuse to compromise, this milk offers the perfect balance of rich flavor and low fat. It fuels your body with vital nutrients, ensuring you stay strong, sharp, and ahead of the competition. It's not just milk—it's a reflection of your superior choices.

Q15: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Braeburn Apples (x6)**
- **Braeburn Organic Apples (x6)**
  Not just any apples—they're a choice for those who seek the best for their bodies and their lives. Crisp, juicy, and packed with vitamins, they keep you at the top of your game. Show that you prioritize your health and well-being above all.

Q16: What do you associate with sustainable food products? *(MatrixSingleSelection)*

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
A smaller carbon footprint							
Organic production							
Local production							
High quality							

Q17: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Heinz Ketchup**

- **Heinz Organic Ketchup**
  Produced sustainably, using locally sourced tomatoes that minimize environmental impact. By choosing this ketchup, you're helping reduce food waste and supporting eco-friendly farming practices. The packaging is recyclable, further reducing your carbon footprint and protecting the planet.

Q18: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's British Free Range Eggs (Large)**
- **Sainsbury's Woodland Free Range Eggs (Large, Organic)**
  Come from free-range hens raised in humane conditions, supporting animal welfare and sustainable farming. By choosing these eggs, you're contributing to ethical food production and helping reduce environmental degradation. A better choice for both you and the planet.

Q19: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **British or Irish 5% Fat Beef Mince (500g)**
- **Organic British Beef Mince (5% Fat, 500g)**
  Sourced from farms committed to regenerative agriculture, which helps restore ecosystems and reduce greenhouse gas emissions. By choosing this product, you're supporting sustainable food systems and protecting the environment for future generations.

Q20: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Sainsbury's Semi-Skimmed Milk (1.13L)**
- **Sainsbury's Organic Semi-Skimmed Milk (1.13L)**
  Comes from cows raised on organic, eco-friendly farms where animal welfare and environmental conservation are prioritized. By choosing this milk, you help promote biodiversity, reduce pollution, and ensure a sustainable future for agriculture.

Q21: Which of these two products would you choose on a typical shopping trip? *(Single Selection)*

- **Braeburn Apples (x6)**
- **Braeburn Organic Apples (x6)**
  Grown using organic farming techniques that preserve soil health and protect natural

ecosystems. By choosing these apples, you're supporting sustainable agriculture that reduces pesticide use and promotes a healthier planet for all.

Q22: How important are the following criteria for you when purchasing sustainable food products *(MatrixSingleSelection)*

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Price							
Nutritional value							
Shelf life							
Brand							
Allergy-friendly							
Vegan							