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**Cognitive Biases in Green Consumption: How Consumer
Preferences for Sustainable Products Are Shaped**

**by
Anika Singh**

A Thesis

Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Master of Science

in

Applied Economics

Lehigh University

(December 2025)

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This thesis is accepted and approved in partial fulfillment of the requirements for the Master of Science.

Date:

Thesis Advisor:

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Abstract

This study examines how cognitive biases influence consumer evaluations of eco-labeled products. A randomized online experiment exposed participants to one of three identical dish-soap products varying only by label type: generic eco-label, third-party certification, or no label. Participants rated perceived quality, safety, effectiveness, and willingness to pay (WTP), and completed measures of environmental awareness, knowledge, and confirmation bias. Results show that eco-labels significantly increased perceived quality and marginally increased willingness to pay. While this pattern is consistent with a potential green halo effect, the increase in WTP could also stem from genuine preferences for lower environmental impact, so the interpretation should be made thoughtfully. Certification did not strengthen these effects, indicating consumers respond more to symbolic cues than verified environmental claims. Confirmation bias correlated with environmental awareness but not knowledge, and label effects were strongest among environmentally aware, bias-positive participants. Overall, eco-labels shape consumer judgment by influencing perceptions of product quality rather than by activating moral or value-based motivations.

1. Introduction and Background

Growing concerns over environmental sustainability have prompted businesses, policymakers, and consumers to pay greater attention to eco-friendly products and responsible consumption practices. Governments and organizations continue to promote sustainability initiatives aimed at mitigating climate change, resource depletion, and environmental degradation. However, the effectiveness of these efforts depends not only on supply-side innovations but also on understanding the psychological and behavioral factors that influence consumer decisions.

Research in behavioral economics increasingly demonstrates that consumer behavior often deviates from rational utility-maximization assumptions. Individuals rely on mental shortcuts, known as heuristics, to simplify complex decisions, but these same heuristics can give rise to cognitive biases, the systematic patterns of deviation from rational judgment (Tversky & Kahneman, 1974). In the context of sustainable consumption, such biases can either facilitate or hinder the adoption of environmentally friendly products. Two cognitive mechanisms are particularly relevant to this study: confirmation bias and the halo effect. Confirmation bias refers to the tendency to favor information that aligns with existing beliefs while discounting or overlooking contradictory evidence (Vedejova & Cavojova, 2022). The halo effect describes a cognitive process in which one positive product attribute influences perceptions of other unrelated attributes (Nisbett & Wilson, 1977). For example, when a product described as “eco-friendly” is also perceived as higher in quality, safer, or more dependable, even though these functional traits are not objectively connected to its environmental performance. In other words, consumers may believe eco-labeled products are better overall, even when no empirical evidence supports this belief.

Confirmation bias is particularly relevant in this context because eco-labels often provide ambiguous information. Individuals tend to interpret such cues in ways that align with their existing environmental attitudes: pro-environmental consumers may treat eco-labels as credible signals of superior product performance, while environmentally skeptical consumers may discount or overlook them. This motivated interpretation can meaningfully shape how consumers evaluate otherwise identical products. Eco-labels thus serve as powerful heuristic cues in consumer decision-making. For individuals with strong pro-environmental values, such labels can activate belief-consistent processing, reinforce favorable attitudes, and increase their willingness to pay. Conversely, consumers with weaker environmental commitment may respond less to these cues, focusing instead on tangible product features such as price or functionality.

Importantly, not all eco-labels convey the same degree of informational credibility. Some are supported by rigorous third-party certifications, while others are unverified or overly broad marketing claims. Understanding whether consumers distinguish between credible certifications and vague sustainability claims is crucial, especially amid growing concerns about greenwashing. Misinterpretation of loosely defined eco-labels can mislead well-intentioned consumers and erode trust in sustainable markets.

This thesis investigates how cognitive biases influence consumer perceptions and valuations of eco-labeled products and whether these effects stem from heuristic-driven judgments rather than informed preferences. It further examines how individual differences such as environmental awareness and factual knowledge moderate the interpretation of eco-labels. By disentangling perceptual inference from genuine preference-based evaluation, this research

contributes to a deeper understanding of green consumer psychology. It also offers practical insights into ethical marketing, eco-label policy design, and sustainability communication.

To empirically investigate these dynamics, the study employs a controlled between-subjects experiment that manipulates eco-label signals and measures both perceptual and behavioral responses. The results indicate that eco-labels modestly enhance perceived product quality and are associated with a slight increase in willingness to pay; importantly, this increase in WTP appears to operate indirectly through higher perceived quality rather than reflecting a direct halo effect on price. However, certified eco-labels did not outperform generic sustainability claims, suggesting that consumers respond more to symbolic environmental cues than to verified standards. Moreover, confirmation bias and environmental awareness jointly amplified the influence of labels, while perceived quality mediated their effect on willingness to pay. Overall, these findings highlight that green consumption decisions are guided primarily by perception-based heuristics rather than by explicit pro-environmental intentions.

Research Questions

1. How does confirmation bias (selective interpretation of information consistent with one's environmental attitudes) shape consumer responses to eco-labeled products? Do pro-environmental individuals view such labels as stronger signals of product quality, while environmentally skeptical consumers discount or overlook them?
2. To what degree does the halo effect lead consumers to infer higher product quality, safety, or effectiveness from environmental labels, even when objective product characteristics remain constant?
3. How do individual differences such as environmental attitudes, environmental knowledge, age, and education moderate the influence of confirmation bias and the halo effect on perceived product value and willingness to pay?

2. Literature Review

Cognitive biases are systematic deviations from rational decision-making and play a significant role in shaping consumer behavior, particularly in the context of green consumption. Two key biases, confirmation bias and the halo effect, are especially relevant. Confirmation bias leads individuals to interpret information in ways that align with their pre-existing beliefs (Tversky & Kahneman, 1974), while the halo effect causes consumers to extend favorable judgments from one attribute (e.g., being "eco-friendly") to unrelated dimensions such as healthiness or overall quality (Nisbett & Wilson, 1977).

Recent work has refined our understanding of confirmation bias as a multi-stage process. (Vedejova & Cavojova, 2022) showed that bias emerges most strongly during information search, where individuals selectively seek evidence confirming their existing attitudes, and during interpretation, when they judge supportive information as more credible than opposing evidence. However, the study found no confirmation bias in memory recall, suggesting that bias operates primarily during active reasoning rather than passive memory. These findings highlight the motivational nature of confirmation bias. People are driven to preserve consistency in their beliefs, and this is particularly relevant to eco-labeling, where consumers with strong environmental attitudes may overtrust supportive information about "green" products while dismissing contradictory evidence.

For consumers with strong pro-environmental values, a green label may serve as a cue that confirms their beliefs that eco-labeled products are inherently better. However, the extent to which green labels offer verified information, such as through third-party certifications (e.g., “USDA Organic,” “Fair Trade”), can significantly affect how these biases manifest. Some labels may function primarily as heuristic shortcuts, while others provide perceived informational content. (Zhang, Li, Tan, & Zhong, 2023) find that anticipated pride in environmental behavior can shift consumers' focus from self-interest to social benefit, though self-interested motivations remain strong drivers. Similarly, (Johnson, Sugerman, Morwitz, Johar, & Morris, 2024) demonstrate that consumers possess low carbon competence; they are often unable to accurately estimate which behaviors or industries contribute most to greenhouse gas emissions. Across five studies, participants' estimates of emission intensity were random, driven by attribute substitution using irrelevant cues such as familiarity or frequency of recommendation to judge environmental impact. This inaccuracy not only weakens the link between environmental intention and action but also increases vulnerability to greenwashing, where misleading eco-claims exploit consumers' limited understanding of actual carbon impact.

Together, these findings indicate that both motivational and cognitive limitations shape green consumption. Confirmation bias sustains belief-congruent reasoning, while carbon incompetence reflects a lack of factual calibration. In combination, they explain why many consumers believe their green choices are effective when, in fact, their judgments are guided by intuition and heuristics rather than objective environmental impact.

Importantly, perceptions of product quality may conflate functional attributes (e.g., taste, durability, effectiveness) with environmental ones (e.g., carbon footprint, recyclability). In many studies, these dimensions are blurred, making it difficult to determine whether higher willingness to pay (WTP) is due to genuine product superiority or cognitive biases (Luchs, Naylor, Irwin, & Raghunathan, 2010). This study clarifies that, for measurement, “quality” refers only to functional product attributes, while environmental benefits will be considered separately.

WTP alone is not sufficient to diagnose cognitive bias. Consumers might rationally pay more for green-labeled products due to the intrinsic valuation of sustainability. Thus, to isolate the effects of confirmation bias or the halo effect, it is essential to explicitly control product quality and measure participants' environmental values and interpretations of the label. This approach helps determine whether premium valuations are bias-driven or based on informed preferences.

Social and emotional drivers also influence green consumption. Consumers often use eco-friendly products as signals of social status or group identity, particularly among younger, environmentally aware demographics (Griskevicius, Tybur, & Van den Bergh, 2010); (Hartmann & Apaolaza-Ibanez, 2012). Gender-based differences have also been observed; (Olfat, 2025) found that women are more likely to act on environmental concerns, while men often require a stronger match between their product preferences and green claims. These behaviors intersect with cognitive biases, reinforcing their strength in specific contexts.

Demographic and contextual factors moderate these effects. Younger, more educated, and environmentally conscious consumers are often more susceptible to the halo effect and confirmation bias (Chen & Chang, 2012); (Kim & Chung, 2011), though recent findings suggest psychological factors may at times outweigh demographic ones (Sakai, Piaralal,

Raghavan, & Vs, 2024). Cultural values also play a role; role-collectivist cultures may amplify social-norm-driven biases, while individualistic ones emphasize personal benefit (Imiru, 2023).

Green marketing strategies often leverage these biases. For example, vague eco-labeling can unintentionally (or strategically) lead consumers to overestimate the quality and efficacy of a product. While confirmation bias may be reinforced by messages that align with consumers' environmental beliefs (Tversky & Kahneman, 1974), overreliance on ambiguous labeling can result in greenwashing, eroding consumer trust (Tarabieh, 2020). (Johnson, Sugerman, Morwitz, Johar, & Morris, 2024) warn that such misperceptions are not simply motivational but stem from cognitive difficulty in understanding invisible, abstract quantities like CO₂. This highlights the importance of accessible, transparent environmental information and credible third-party certifications, enabling consumers to make informed choices.

(Dewi, et al., 2025) highlight that product characteristics, pricing, and promotional strategy have a more substantial influence on green purchase intentions than product placement. (Winarni, 2024) further shows that green brand awareness significantly mediates the relationship between green product labeling and purchase behavior, indicating that perception plays a critical role.

From an ethical standpoint, leveraging cognitive biases in green marketing raises essential concerns. Misusing the halo effect or exploiting confirmation bias may lead to misinformed consumer choices, particularly if environmental claims are unverified or exaggerated. (Rex & Baumann, 2007) To address this, education campaigns and third-party labels can provide clarity, enabling consumers to make decisions that align with their actual values. The Theory of Planned Behavior (Sharma & Foropon, 2019) further supports the idea that green product attributes influence consumer behavior through perceived control, social norms, and attitudes.

Despite recent advances, gaps remain. Little is known about how demographic moderators interact with cognitive biases across cultural contexts, or how consumers distinguish between environmental claims and objective product performance. Additionally, while some neural and emotional mechanisms are beginning to be explored, this study does not seek to contribute to the neuroeconomic literature. Instead, it offers an empirical behavioral economics approach to disentangle whether perceived benefits and price premiums arise from bias, genuine valuation, or both.

Together, these findings suggest that consumer responses to sustainability claims are shaped not only by environmental values but also by cognitive limitations and motivated reasoning. The halo effect may lead consumers to infer superior product quality from the presence of an eco-label, even when functional attributes are unchanged. In parallel, confirmation bias can prompt environmentally oriented consumers to selectively interpret sustainability information in ways that reinforce their existing beliefs about environmental benefits, while skeptics may dismiss such information or interpret it unfavorably. Moreover, limited understanding of environmental impact more broadly; not only carbon emissions, can increase consumers' reliance on simple heuristic cues such as green labels, rather than verified or detailed environmental information. To empirically evaluate these mechanisms, the present study employs controlled product evaluations with varying label treatments, enabling a direct assessment of whether perceived environmental benefit and willingness to pay arise from informed preferences or bias-driven processing.

3. Methodology

This study employs a between-subjects online experiment to examine how cognitive biases shape consumer evaluations of eco-labeled products. Respondents were randomly assigned to view one of three versions of an identical household dish soap product:



Figure 1: Product 1 (Generic eco-labeled product)



Figure 2: Product 2 (Third-party certified eco-label)



Figure 3: Product 3 (No environmental-friendly label)

Each participant evaluated only one product to avoid contrast effects, demand effects, and learning spillovers that arise when individuals compare multiple treatment conditions. This structure follows experimental guidance suggesting that between-subjects designs are preferable when subtle perception effects and treatment expectancy risks are present, particularly in consumer judgment studies (Charness, Gneezy, & Kuhn, 2012).

This design isolates whether differences in perceived product quality, perceived safety, and willingness to pay (WTP) emerge solely due to the presence of an eco-label, consistent with the halo effect. While the halo effect concerns inferences about product attributes, the study additionally examines whether environmental attitudes and motivated reasoning shape the interpretation of environmental claims, reflecting confirmation-bias processes.

Participants

A total of 271 participants completed the study via Prolific. Respondents were restricted to adults aged eighteen and older and recruited to reflect diverse age, gender, education, and income backgrounds which was reflective of the US population. Participants were compensated \$1.30 per study that took approximately 2.75 minutes, equivalent to a rate of roughly \$28 per hour, which is higher than the ethical compensation standards for online research. A total of 306 complete responses were collected but 35 of those responses were excluded prior to analysis due to failed CAPTCHA checks or bot-like response patterns, resulting in a final sample of 271 valid participants.

Procedure

Participants first completed a CAPTCHA-style bot screening task, then provided informed consent and proceeded to the experiment.

Participants were then shown a sole product image either an eco-labeled product, a certified eco-labeled product, or an unlabeled control randomly assigned via Qualtrics. Immediately after viewing the product, participants evaluated it across several dimensions. They provided ratings of perceived quality, perceived effectiveness, and perceived safety/healthiness using

five-point Likert scales. They also indicated their maximum willingness to pay using a dollar-based slider ranging from zero to five dollars.

Following the product evaluation, participants completed several additional measures. They first answered a label-recognition and credibility item serving as a manipulation check. They then responded to questions assessing their environmental attitudes and values, followed by a factual question on global emissions sources to capture objective environmental knowledge. Finally, participants provided demographic information, including age, gender, education, and income.

Measures

The primary dependent variables in this study were perceived product quality, perceived effectiveness, perceived safety, and willingness to pay. Perceptions of quality, effectiveness, and safety were each measured using five-point Likert scales, with higher scores indicating more favorable evaluations. Willingness to pay (WTP) was measured using a monetary slider ranging from \$0 to \$5, capturing the maximum price participants were willing to pay for the product presented.

The key independent variable was the product's label condition, which included three randomly assigned treatments: a generic eco-label, a certified eco-label, and a no-label control. Several moderator variables were included to account for individual differences in sustainability-related cognition and attitudes. These included an environmental awareness index derived from self-reported attitudes, an objective environmental knowledge measure based on a factual emissions question, and a confirmation-bias index constructed from selective exposure to pro-versus anti-environmental information. Demographic variables: including age, gender, education, income, and self-reported preference for eco-friendly products were included as controls to isolate psychological and perceptual effects from socio-economic influences.

Variable Category	Variable	Measurement
Dependent Variables	Perceived quality	5-point Likert scale
	Perceived effectiveness	5-point Likert scale
	Perceived safety/healthiness	5-point Likert scale
	Willingness to pay (WTP)	\$0–\$5 slider
Independent Variable	Label condition	Generic eco-label, certified eco-label, no-label control
Moderator Variables	Environmental awareness	Self-reported attitude index
	Environmental knowledge	Objective factual question
	Confirmation bias	Selective exposure to pro- vs anti-green headlines
Control Variables	Age, gender, education, income	Self-reported
	Preference for eco-products	Self-reported Likert measure

Table 1: Summary of Variables and Their Measurement

Hypotheses

The empirical analysis assesses the following hypotheses:

H1 (Motivated Green Response): Consumers with stronger pro-environmental attitudes and higher confirmation-bias tendencies will evaluate eco-labeled products more favorably and show greater willingness to pay than environmentally skeptical consumers, who are expected to show weaker or no such responses.

H2 (Halo Effect): Eco-labeled products will receive higher perceived quality and safety ratings than identical unlabeled products.

H3 (Certification Effect): Third-party certified labels will produce stronger effects than generic eco-claims.

Analytical Strategy

Data analysis proceeded in a structured sequence. First, descriptive statistics were computed to summarize participant demographics, environmental attitudes, and key outcome variables. Second, mean-comparison tests were conducted to examine differences across the randomly assigned label conditions. Third, a series of regression models estimated the effect of eco-labels on perceived product quality and willingness to pay. These models were estimated sequentially, beginning with a baseline specification including only the label condition, followed by models

incorporating demographic controls and sustainability-related attitudes. Interaction models were then estimated to assess whether environmental awareness and confirmation-bias tendencies moderated the impact of label exposure. Finally, a mediation analysis evaluated whether perceived product quality served as a mechanism linking eco-label exposure to willingness to pay. Robust standard errors were used throughout, and significance thresholds of $p < 0.05$ (primary) and $p < 0.10$ (directionally supportive behavioral effects) were applied in line with behavioral-economics research conventions.

Ethics & IRB Approval

This research received approval from the Lehigh University IRB, and participation was voluntary and anonymous. No identifying information was collected, consistent with the survey disclosure.

4. Results

Overview

This section presents the empirical results of the study. Because each participant evaluated only one product condition, the design avoids learning effects, anchoring, and direct comparison biases across label treatments. Results are presented sequentially, beginning with descriptive statistics, followed by treatment-group comparisons, correlation patterns, regression analyses, and moderation and mediation tests.

A total of $N = 271$ participants were retained after quality checks. As described in the Methods, participants were randomly assigned to view one of three otherwise identical dish-soap products that differed only in label type: a generic eco-label, a third-party certified eco-label, or no label. For analytical clarity and statistical power, the two labeled conditions were pooled into a single “eco-label” group when theoretically appropriate. All statistical analyses were conducted in R aligned with the theoretical framework and study design.

Descriptive Statistics

Variable	Product 1: Generic	Product 2: Certified	Product 3: No label
Quality (1-5)	3.64 (SD = 0.83)	3.68 (SD = 0.84)	3.44 (SD = 0.75)
Effectiveness (1-5)	3.33 (SD = 0.75)	3.34 (SD = 0.72)	3.33 (SD = 0.75)
Safety (1-5)	4.04 (SD = 0.83)	4.04 (SD = 0.83)	3.90 (SD = 0.90)
WTP (\$)	3.09 (SD = 1.00)	3.05 (SD = 0.99)	2.83 (SD = 1.00)

Table 2: Descriptive statistics across key outcome variables

An initial review of the means reveals that respondents assigned to eco-label conditions rated the product higher in overall quality, with no statistically significant difference in safety ratings. It also indicated a slightly higher willingness to pay, compared to the no-label condition.

These foundational patterns suggest a baseline halo effect, where environmental cues spill over into perceptions of functional product attributes, aligning with findings from (Luchs, Naylor, Irwin, & Raghunathan, 2010) and (Nisbett & Wilson, 1977).

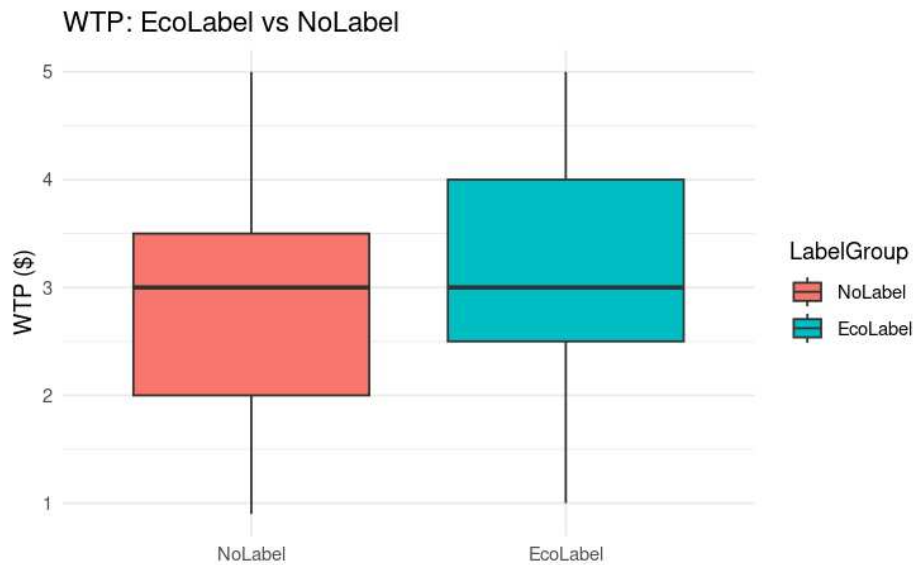


Figure 4: Comparison of Willingness to Pay Across Label Conditions

Treatment Effects: Eco-Label vs No-Label

Variable	NoLabel Mean	EcoLabel Mean (1 & 2)	t(df)	p-value	Interpretation
Quality	3.44	3.66	$t = -2.22$ (df ≈ 196)	0.027 *	Eco-labeled products rated significantly higher in quality
Effectiveness	3.33	3.34	$t \approx -0.04$ (df ≈ 174)	0.97	No difference
Safety	3.90	4.04	$t \approx -1.27$ (df ≈ 165)	0.20	No difference
WTP (\$)	2.83	3.07	$t \approx -1.90$ (df ≈ 174)	0.059 †	Eco-labeled products trend toward higher WTP (marginal)

† Marginally significant at the 10 % level

Table 3: Mean Differences Between Eco-Label and No-Label Conditions

When the two eco-label conditions (generic and certified) were pooled and compared to the no-label control, participants exposed to an eco-label rated the product significantly higher in perceived quality ($p \approx 0.027$) and showed a marginally higher willingness to pay ($p \approx 0.059$).

These results provide evidence of a positive perceptual effect associated with sustainability cues. In particular, the presence of an eco-label even in the absence of additional product information appears to elevate consumer evaluations. This pattern is consistent with the green halo effect, indicating that consumers may infer higher product quality from environmental labeling rather than from product attributes alone.

Dependent Variable	F (2,269)	p-value	Interpretation
Quality	2.324	0.0998	Marginal ($p < 0.10$). Slight trend toward higher quality for labeled products, but not significant at 0.05.
Effectiveness	0.003	0.997	Not significant
Safety	0.856	0.426	Not significant
WTP (\$)	1.855	0.158	Slightly higher mean WTP for labeled products, but not statistically significant.

Table 4: ANOVA Results Comparing Product Evaluations Across Label Conditions

However, a notable insight is that the certified eco-label did not generate significantly stronger effects than the generic eco-label. This implies that participants responded to the symbolic meaning of a green label rather than credible certification signals, a crucial insight for mitigating greenwashing risk.

Correlation Patterns

To assess the relationship between individual differences and product evaluations, correlation analyses were conducted. Confirmation bias was measured using a selective-exposure task in which participants chose between pro-environmental (supportive) and anti-environmental article headlines (skeptical); a higher tendency to select pro-environmental information indicated stronger confirmation-bias tendencies.

The results show a positive correlation between environmental awareness and confirmation bias ($r \approx .21$, $p < .001$), suggesting that individuals with stronger pro-environmental attitudes are also more inclined to selectively engage with information that supports those attitudes. In contrast, objective environmental knowledge did not meaningfully correlate with confirmation-bias scores, indicating that factual literacy about environmental issues does not necessarily reduce motivated reasoning. Together, these findings suggest that green consumer judgments are shaped more by value alignment and motivated perception than by objective knowledge or rational evaluation.

Moderation Effects: Role of Confirmation Bias

Respondents were grouped into CB-positive and CB-negative segments based on selective-exposure behavior.

Willingness to Pay (WTP) by Confirmation Bias and Label Type

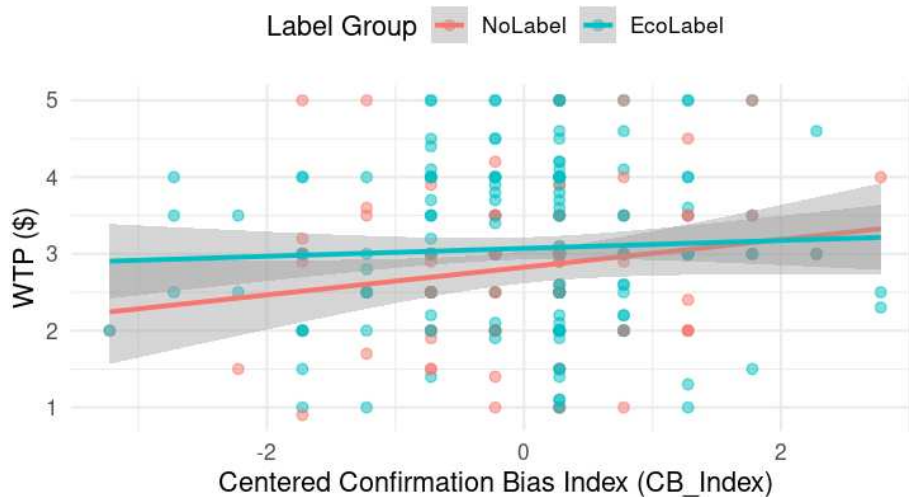


Figure 5: Moderation of Eco-Label Effects on Willingness to Pay by Confirmation Bias

Among participants with higher confirmation-bias tendencies, the presence of an eco-label did not meaningfully increase willingness to pay relative to the no-label condition, suggesting that individuals already predisposed toward pro-environmental information may not rely heavily on labeling cues when forming valuations. In contrast, the eco-label effect was more pronounced among participants with lower confirmation-bias scores, who demonstrated a higher willingness to pay for the labeled product than for the unlabeled product. This pattern suggests that eco-labels exert greater influence among individuals who are less motivated by pre-existing environmental beliefs, rather than among those who are already strongly aligned with them.

When perceived quality was included in the regression models, the direct association between confirmation bias and willingness to pay diminished, indicating that confirmation-bias tendencies primarily shape product valuations indirectly through perceived product quality and not through willingness to pay directly. In other words, perceptual judgments appear to mediate the link between individual cognitive tendencies and economic preferences.

TP for EcoLabel vs NoLabel by Confirmation-Bias Direction

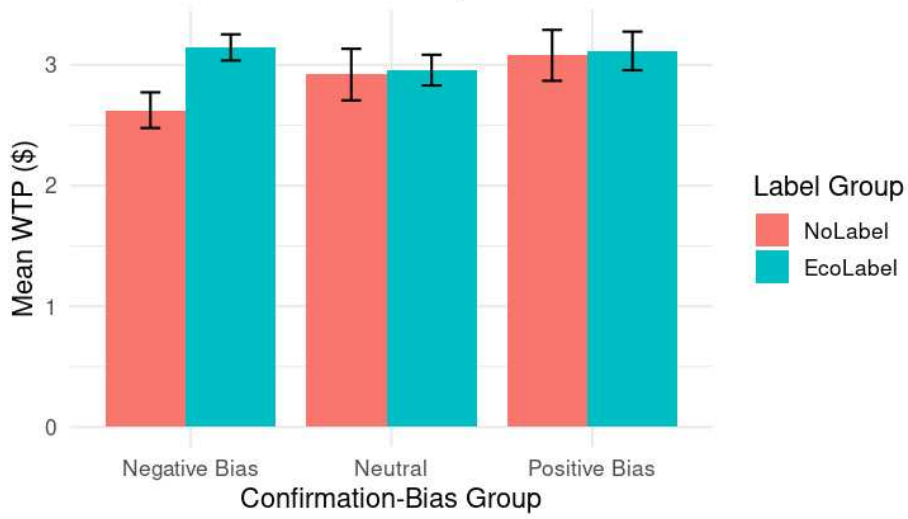


Figure 6: Moderation Effects: Role of Environmental Awareness

CB-Positive: WTP by Awareness x Label

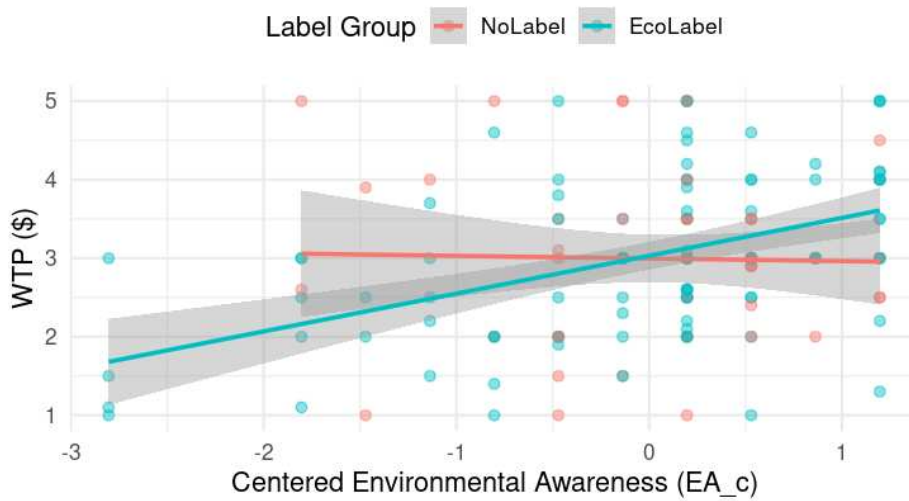


Figure 7: WTP by Environmental Awareness and Label (CB-Positive)

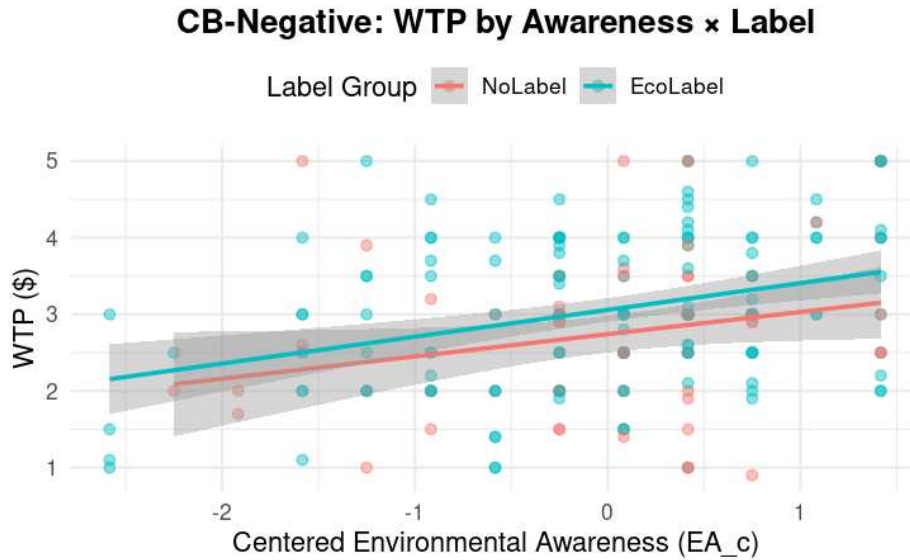


Figure 8: WTP by Environmental Awareness and Label (CB-Negative)

A similar pattern emerged with environmental awareness. High-awareness participants in the CB-positive group showed the most substantial label-driven perception shifts, reinforcing the role of motivational alignment.

Importantly, awareness alone did not generate effects without bias, underscoring the behavioral-economic insight that values require a cognitive trigger; in this case, selective information processing, which translates into evaluation patterns.

Summary of Key Findings

Observation	Interpretation
Eco-labels improve perceived quality	Evidence of the halo effect
Eco-labels slightly increase WTP	Consumers reward green cues modestly
Certification does not outperform a generic claim	Consumers rely on symbolic heuristics
Awareness → Confirmation Bias	Motivated cognition, not knowledge
Bias moderates perceptions, not spending directly	Bias operates through belief updating

Table 5: Overview of Main Empirical Findings

5. Discussion

Interpretation of Findings

The findings suggest that eco-labels play a subtle yet significant role in influencing consumer decisions. Even without explicit information about environmental impact, the presence of a label alone elevated perceptions of quality and safety. This aligns with the experimental logic that green information serves as a heuristic quality cue, illustrating bounded rationality.

The marginal effect on WTP is consistent with prior research, which indicates that consumers express sustainability preferences more strongly in stated attitudes and perception measures than in monetary tradeoffs (Laroche, Bergeron, & Barbaro-Forleo, 2001); (Luchs, Naylor, Irwin, & Raghunathan, 2010); (Peattie, 2010). As such, price behavior reflects a partial

willingness to act on environmental preferences, moderated by product category and value stakes.

Cognitive Pathway

The results indicate a sequential cognitive process underlying consumer responses to eco-labels. Exposure to an environmental label first shapes initial perceptions, which in turn influences product evaluations. For individuals with pro-environmental orientations, labels may activate value-consistent interpretation; however, the findings also show that label effects on willingness to pay were strongest among participants with weaker confirmation-bias tendencies, suggesting that eco-labels serve primarily as heuristic cues rather than reinforcing pre-existing strong environmental values. Perceived product quality emerges as a key mediator in this process: label exposure increases perceived quality, and this perceptual shift subsequently translates into a modest increase in willingness to pay. This pattern implies that valuation of environmentally labeled products operates largely through perceptual channels, not solely through intrinsic moral preferences or ideological commitment.

Consumer Interpretation and Greenwashing Risk

The study also provides insight into how consumers interpret distinct types of environmental claims. The absence of substantial differences between the certified eco-label and the generic sustainability label suggests that many consumers may not distinguish between verified environmental certifications and more ambiguous sustainability cues. As a result, even minimal or symbolic environmental signals can meaningfully influence product assessments, highlighting consumer vulnerability to potentially misleading green messaging. From a policy and ethical marketing standpoint, these findings underscore the importance of clear, credible label standards and efforts to improve consumer understanding of environmental certifications to mitigate greenwashing risk.

Contribution to Behavioral Economics

More broadly, this research contributes to the behavioral-economics literature by demonstrating that motivated reasoning, rather than factual environmental knowledge, predicts selective interpretation of sustainability information. Eco-labels function as low-effort cognitive heuristics, shaping evaluations quickly and with limited scrutiny, and the observed effects are relatively modest in monetary terms, consistent with shallow or context-dependent green preferences in low-stakes consumer settings. Together, these findings suggest that sustainability-oriented marketing influences consumers primarily by shaping perceptions rather than activating deep pro-social motivations, providing insight into when and how environmental labels can effectively influence consumer behavior.

Overall Inference

In summary, consumers appear to respond to eco-labels primarily because these labels shape their perceptions of product quality rather than solely activating intrinsic environmental motivations. The evidence suggests that green labels operate as heuristic cues that influence evaluations even in the absence of deeper pro-environmental commitment, leading to modest increases in willingness to pay. This distinction has meaningful implications for theory and practice: it highlights the role of perceptual mechanisms in sustainability preference formation, suggests that eco-labels may be especially influential among consumers with weaker pre-

existing environmental orientations, and underscores the importance of credible and transparent labeling standards for ethical marketing and policy design.

Future Scope

Although this study advances understanding of how cognitive mechanisms shape responses to eco-labeling, there remain several opportunities for further research. Future work could examine higher-stakes product categories, such as appliances, electronics, or automobiles to determine whether eco-label effects persist when financial decisions are more consequential. Incorporating real-purchase or incentive-compatible designs would also strengthen evidence on the economic significance of these effects beyond stated willingness to pay. Additional research might explore interventions aimed at improving label literacy, such as clearer environmental disclosures or educational prompts, to assess whether transparency reduces susceptibility to vague sustainability claims. Cross-cultural studies could provide insight into how social norms influence the strength and direction of eco-label responses, and longitudinal designs may help clarify whether repeated exposure to credible environmental information builds trust or, conversely, whether misleading labels erode confidence over time. Together, these directions would deepen understanding of when and for whom eco-labeling strategies are effective, ethical, and robust.

6. Conclusion

This study provides empirical evidence that eco-labels shape consumer perceptions and have a modest influence on willingness to pay in everyday product categories. Participants exposed to eco-label treatments rated the product as higher in perceived quality and demonstrated slightly higher WTP, consistent with a halo-based interpretation effect. Importantly, certification did not outperform a generic sustainability claim, suggesting that consumers respond more to symbolic environmental framing than to verified or rigorous labeling standards. This phenomenon underscores potential vulnerabilities to greenwashing and highlights the need for improved label transparency and consumer education.

The findings further demonstrate that pro-environmental cognition is not solely driven by objective knowledge. While confirmation bias correlated positively with environmental awareness, it did not correlate with factual environmental understanding. This suggests that sustainability judgments are shaped more by value-aligned identity and motivated reasoning than by informational accuracy. Moreover, label effects were amplified particularly among individuals who exhibited both high pro-environmental attitudes and confirmation bias tendencies; yet, these effects operated primarily through enhanced perceptions of product quality rather than direct ideological willingness to pay.

Taken together, these results support a behavioral-economic view of green consumption: eco-labels function as heuristic cues that influence product evaluations through perceptual and motivational pathways. For marketers, the findings underscore the importance of taking ethical responsibility to avoid vague sustainability claims. For policymakers, they underscore the importance of promoting transparent labeling standards and fostering environmental literacy that extends beyond symbolic cues.

Overall, this thesis advances the understanding of green consumer decision-making by distinguishing between perception-driven valuation and genuine sustainability motivation, offering practical implications for policy, ethical advertising, and sustainable market design.

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8. Appendix

Link to Qualtric Survey Questions:

<https://drive.google.com/file/d/1wg8nGQaQlBaPsy0n79vYuU0MimpODHR8/view?usp=sharing>