

Influence of Environmental Concern and Green Packaging Perception on Consumers' Willingness to Pay For FMCG: Green Skepticism as A Mediator

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Abstract

As sustainability concerns grow, FMCG firms have increasingly turned to eco-friendly packaging as part of their green strategy. Yet a gap persists between consumers' pro-environmental attitudes and their actual purchase behavior, since favorable attitudes toward the environment do not always translate into a premium price consumers are willing to pay. Building on this gap, this study investigates how environmental concern and green packaging perception shape FMCG consumers' willingness to pay, with green skepticism examined as a potential mediating pathway. A total of 176 FMCG consumers in Indonesia were recruited through a purposive-sampling procedure to serve as the study's respondents. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0. The results show that EC and GP directly and positively predict WTP, whereas the indirect pathways through GS were not statistically supported. Notably, GP was found to reduce GS the reverse of what was hypothesized and GS itself showed no significant bearing on WTP. These findings indicate that in the FMCG context, consumers translate environmental concern and green packaging perception directly into willingness to pay, without a meaningful skeptical evaluation process. This study contributes theoretically by identifying the boundary conditions of green skepticism as a mediating mechanism in low-involvement product categories, and offers practical implications for FMCG companies in designing sustainability communication that is directly value-oriented for consumers.

Keywords:

Environmental concern; Green packaging perception; Green skepticism; Willingness to pay; PLS-SEM.

1. INTRODUCTION

Global attention to environmental sustainability has intensified as environmental degradation worsens and waste packaging waste in particular continues to accumulate. The World Bank (Kaza et al., 2018) Waste is at the center of this concern: global solid waste output now exceeds two billion tons a year, roughly 12% of it single-use plastic. Meanwhile, the Ministry of Environment and Forestry of the Republic of Indonesia (2022) while Indonesia alone contributes over 68 million tons annually, plastics accounting for about 17% of that figure. Such conditions have pushed consumers toward greener consumption habits; a shift felt strongly in the fast-moving consumer goods (FMCG) sector given its high sales volume and rapid product turnover.

Despite rising environmental awareness, real-world practices reveal a discrepancy: while green packaging is becoming increasingly available, not all consumers are willing to pay more for such products. In consumer behavior literature, this phenomenon is widely recognized as the attitude-behavior gap (Carrington et al., 2014). Environmental concern (EC) is conceptualized as the degree of an individual's worry about the impact of human activities on the environment (Schultz, 2001), where consumers with high EC tend to exhibit pro-environmental attitudes (Dunlap et al., 2000). On the other hand, packaging serves not only to protect the

product but also as a medium to communicate a company's sustainability values (Rokka & Uusitalo, 2008). Prior evidence indicates that when packaging is perceived favorably, it tends to improve how consumers evaluate the product and shapes a more positive overall attitude toward it (Steenis et al., 2017). However, empirical findings regarding the relationship between green packaging perception (GP) and willingness to pay (WTP) remain inconsistent, particularly in the FMCG category, which consists of low-involvement and highly price-sensitive products.

One factor hypothesized to explain this inconsistency is green skepticism (GS), defined as consumers' doubt regarding the truthfulness and honesty of environmental claims made by companies (Mohr et al., 1998). GS typically arises due to the prevalence of "greenwashing", a marketing strategy that exaggerates sustainability claims without solid grounds (Delmas & Burbano, 2011). Chen & Chang (2013), as well as Farooq & Wicaksono (2021), demonstrated that GS can diminish consumer trust and weaken both purchase intentions and WTP for green products. Consequently, GS is frequently positioned as a psychological mechanism that mediates the relationship between pro-environmental attitudes and actual consumption behavior.

This paper forms part of an ongoing research effort by the author focused on green consumer behavior within the FMCG sector. In contrast to previous studies that positioned GS as a mediator and brand trust as a moderator within a more complex model, this paper specifically re-evaluates the mediating role of GS within a simplified model, using EC and GP as predictors, GS as a mediator, and WTP as the outcome variable, utilizing newly collected independent primary data. This approach is crucial because most prior studies have examined these relationships partially (Goh & Balaji, 2016) and have rarely integrated WTP as a measure of actual consumption behavior within the Indonesian FMCG context (Haryono et al., 2025; Vironika & Maulida, 2025).

Based on this background, this study aims to: (1) examine the effect of environmental concern on green skepticism; (2) examine the effect of green packaging perception on green skepticism; (3) examine the effect of environmental concern on willingness to pay; (4) examine the effect of green packaging perception on willingness to pay; and (5) examine the effect of green skepticism on willingness to pay, while also evaluating the significance of the indirect effects of EC and GP on WTP through GS. The findings are expected to contribute theoretically by identifying the boundary conditions of green skepticism as a mediating mechanism, and practically by assisting FMCG managers in designing more effective green marketing strategies.

1.1. Environmental Concern

Environmental concern (EC) refers to an individual's level of worry about environmental conditions and the impact of human activities on nature's preservation (Schultz, 2001). EC reflects the extent to which individuals possess awareness, attitudes, and moral responsibilities toward environmental issues, alongside their readiness to support sustainable consumption practices. In green marketing, EC acts as a psychological foundation influencing how consumers evaluate products, brands, and corporate environmental claims, especially for FMCG products that carry a substantial environmental footprint. (Dunlap et al., 2000; García-Salirrosas et al., 2024).

1.2. Green Packaging Perception

Green packaging perception (GP) is the consumer's perception of the extent to which a product's packaging is considered eco-friendly, sustainable, and reflective of the company's commitment to environmental protection (Magnier et al., 2016). This perception is formed through consumers' evaluations of packaging materials, design, recyclability, and the clarity of environmental information on the pack (Rokka & Uusitalo, 2008). Since packaging is one of the primary touchpoints for communicating sustainability values, Prior evidence indicates that when packaging is perceived favorably, it tends to improve how consumers evaluate the product and shapes a more positive overall attitude toward it (Steenis et al., 2017).

1.3. Green Skepticism

Green skepticism (GS) is defined as the level of doubt consumers harbor regarding the honesty, credibility, and authenticity of environmental claims made by companies (Goh & Balaji, 2016; Mohr et al., 1998). GS typically emerges as a response to greenwashing practices and exaggerated or inconsistent environmental claims (Delmas & Burbano, 2011; Farooq & Wicaksono, 2021). Psychologically, GS serves as an evaluative filter that influences how consumers process green information before converting it into final purchasing decisions (Chen & Chang, 2013).

1.4. Willingness to Pay

Willingness to pay (WTP) describes the extent to which a consumer is prepared to accept a higher price than that of a conventional product in exchange for a specific attribute, such as environmental friendliness (White et al., 2019). WTP does not merely show a preference for green products; it also reflects the depth of consumer commitment to sustainability values, making it an essential indicator of the success of a company's green marketing strategy (Homburg et al., 2005; Monroe, 2003).

1.5. Hypothesis Development

Conceptually, environmental concern is expected to increase consumers' cognitive vigilance toward the environmental claims they encounter. Grounded in the motivated reasoning framework (Kunda, 1990; Nyhan & Reffer, 2010), environmentally conscious individuals are more likely to process green information critically and demand concrete evidence, which can elevate GS. This is supported by Farooq & Wicaksono (2021), who indicated that consumers' cognitive evaluation of environmental claims serves as a catalyst for developing skeptical attitudes.

H1: Environmental concern has a significant effect on green skepticism.

Drawing on the Elaboration Likelihood Model, eco-friendly packaging functions as a persuasive cue that consumers process either centrally or peripherally. Should the packaging come across as overstated or lacking authenticity, this critical processing is likely to intensify green skepticism. (Petty & Cacioppo, 2012; Farooq & Wicaksono, 2021; Magnier et al., 2016).

H2: Green packaging perception has a significant effect on green skepticism.

EC conceptually motivates consumers to value ecological benefits as a core component of overall product value, making environmentally conscious consumers more inclined to accept a higher price for such value (García-Salirrosas et al., 2024; Kim & Hall, 2020).

H3: Environmental concern has a significant positive effect on willingness to pay.

GP acts as a signal of quality, value, and corporate environmental commitment; hence, a favorable packaging perception may encourage consumers to accept a higher purchase price (Biswas & Roy, 2015; Steenis et al., 2017).

H4: Green packaging perception has a significant positive effect on willingness to pay.

As a form of doubt regarding the credibility of green claims, GS conceptually lowers consumer confidence in a product's ecological value. Thus, a higher level of GS is expected to reduce consumers' likelihood of making financial sacrifices in the form of WTP (Farooq & Wicaksono, 2021; Goh & Balaji, 2016).

H5: Green skepticism has a significant negative effect on willingness to pay.

In addition to testing the direct hypotheses above, this study also examines the significance of the indirect effects of EC and GP on WTP through GS, assessing whether GS functions as a mediating mechanism in this model, consistent with the analytical approach used by Farooq & Wicaksono (2021).

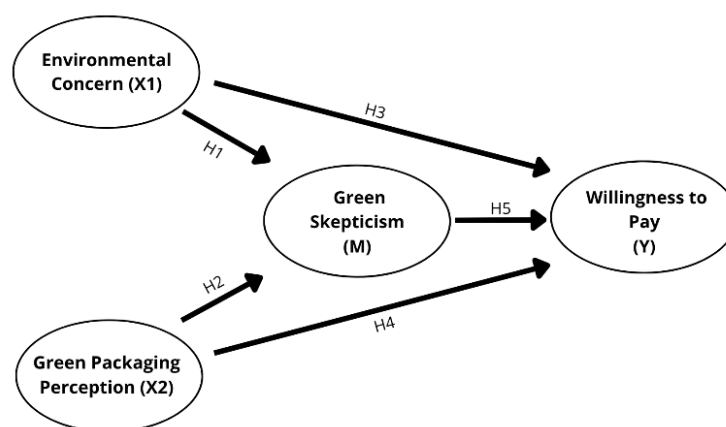


Figure 1. Conceptual Framework

2. RESEARCH METHOD

A quantitative, explanatory design was employed to test the causal links proposed among the study's variables (Sugiyono, 2019). The population consists of FMCG consumers in Indonesia who are environmentally conscious and have been exposed to information regarding eco-friendly packaging. Non-probability sampling using a purposive sampling method was employed. The respondents had to meet the criteria of having purchased daily fast-moving consumer goods (FMCG) and having noticed environmental claims on packaging, such as "recyclable," "eco-friendly," or "biodegradable" labels (Sugiyono, 2021).

The research model consists of 16 reflective indicators across four constructs (EC, GP, GS, and WTP, with four indicators each). Referring to the guidelines of Hair et al. (2022), which recommend a minimum

sample size of 5 to 10 times the number of indicators, the final sample of 176 respondents met the minimum threshold required for PLS-SEM estimation. Primary data were gathered via an online survey (Google Forms) using a 5-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Each construct was measured using four reflective indicators, as presented in Table 1.

Table 1. Operationalization of Variables

Variable	Code	Indicators	Source
Environmental Concern	X1.1- X1.4	Concern about environmental issues; responsibility to preserve the environment; considering environmental impacts before buying; feeling disturbed by environmental damage caused by humans.	Schultz (2001); Dunlap et al. (2000)
Green Packaging Perception	X2.1- X2.4	Packaging is perceived as environmentally friendly; made from materials that do not harm nature; reflects corporate concern; environmental information on packaging is easy to understand and convincing.	Magnier et al. (2016)
Green Skepticism	M1.1- M1.4	Doubting the truthfulness of eco-friendly claims; believing companies exaggerate green claims; not fully trusting corporate concern; questioning the honesty of product sustainability claims.	Mohr et al. (1998)
Willingness to Pay	Y1.1- Y1.4	Willingness to pay more for eco-friendly products; perceiving the premium price as worth the benefits; choosing green products despite higher costs; having no objection to paying more for sustainable products.	White et al. (2019)

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Demographic Profile of Respondents

The demographic characteristics of the 176 respondents based on age, domicile, and monthly income are presented in Table 2.

Table 2. Profile of Respondents

Characteristic	Category	Frequency	Percentage
Age	17-20 years old	30	17.0%
	21-25 years old	97	55.1%
	26-30 years old	40	22.7%
	>30 years old	9	5.1%
Domicile	Surabaya	97	55.1%
	Jakarta	55	31.3%
	Semarang	24	13.6%
Income	<Rp1,000,000	30	17.0%
	Rp1,000,000-3,999,999	87	49.4%
	Rp4,000,000-9,999,999	53	30.1%
	>Rp10,000,000	6	3.4%

The majority of respondents were aged 21-25 years (55.1%), resided in Surabaya (55.1%), and had a monthly income between IDR 1,000,000 and IDR 3,999,999 (49.4%). This profile indicates that the respondents are dominated by consumers in their early productive years with middle-income levels, a segment highly relevant to daily FMCG consumption.

3.1.2. Measurement Model Evaluation (Outer Model)

Convergent validity results show that all indicators had outer loading values above 0.60, with the majority exceeding the ideal threshold of 0.708 (Hair et al., 2022). One indicator, X2.3 of the Green Packaging Perception construct, had an outer loading of 0.669. Although slightly below the ideal threshold, it was retained because the construct's overall AVE and composite reliability remained solid and acceptable.

Table 3. Outer Loadings

Indicator	EC	GP	GS	WTP
X1.1	0.827	-	-	-
X1.2	0.764	-	-	-
X1.3	0.768	-	-	-
X2.1	-	0.781	-	-
X2.2	-	0.824	-	-

X2.3	-	0.669	-	-
X2.4	-	0.762	-	-
M1.1	-	-	0.863	-
M1.2	-	-	0.866	-
M1.3	-	-	0.833	-
M1.4	-	-	0.899	-
Y1.1	-	-	-	0.871
Y1.2	-	-	-	0.718
Y1.3	-	-	-	0.800
Y1.4	-	-	-	0.803

Indicator X1.4 was excluded from the final model because its outer loading fell below the required retention threshold.

Table 4. AVE and Construct Reliability

Variable	AVE	Cronbach's Alpha	Composite Reliability
Environmental Concern (EC)	0.619	0.693	0.830
Green Packaging Perception (GP)	0.579	0.758	0.846
Green Skepticism (GS)	0.749	0.889	0.923
Willingness to Pay (WTP)	0.640	0.811	0.876

Every construct's AVE exceeded the 0.50 benchmark, confirming that convergent validity was achieved (Hair et al., 2022). The composite reliability values for all constructs were above 0.70, establishing construct reliability. Although the Cronbach's alpha for EC was slightly below 0.70 (0.693), the construct was deemed reliable because its composite reliability was robust (0.830). This aligns with Hair et al. (2022), who argue that composite reliability is a superior measure in PLS-SEM compared to Cronbach's alpha, which tends to underestimate reliability in constructs with few indicators.

Additionally, discriminant validity testing using cross-loadings confirmed that all indicators loaded highest on their respective constructs compared to other constructs, demonstrating that discriminant validity was established.

3.1.3. Structural Model Evaluation (Inner Model)

The Variance Inflation Factor (VIF) values ranged from 1.315 to 2.624, which is well below the conservative threshold of 5 (Hair et al., 2022). This indicates that the model is free from multicollinearity issues and common method bias.

Table 5. R-Square Values

Variable	R-Square	Adjusted R-Square	Category
Green Skepticism (GS)	0.054	0.043	Weak
Willingness to Pay (WTP)	0.414	0.403	Moderate

The R^2 value shows that EC and GP explain only 5.4% of the variance in GS. This suggests that consumer skepticism in this study is primarily driven by factors outside this model, such as exposure to actual greenwashing incidents or corporate brand reputation. Conversely, EC and GP together explained 41.4% of the variance in WTP. This indicates a moderate explanatory power, proving that both exogenous variables are robust predictors of consumers' willingness to pay more.

3.1.4. Hypothesis Testing

Table 6. Direct Effect Results

Path	Coefficient (O)	T-Statistics	P-Values	Remarks
EC -> GS (H1)	0.014	0.157	0.875	Not significant
GP -> GS (H2)	-0.237	3.592	0.000	Significant (negative direction)
EC -> WTP (H3)	0.508	6.875	0.000	Significant positive
GP -> WTP (H4)	0.241	3.023	0.003	Significant positive
GS -> WTP (H5)	0.066	1.128	0.259	Not significant

Table 7. Indirect Effect Results

Indirect Path	Coefficient (O)	T-Statistics	P-Values	Remarks
EC -> GS -> WTP	0.001	0.119	0.906	Not significant
GP -> GS -> WTP	-0.016	1.032	0.302	Not significant

Based on Table 6 and Table 7, the summary of the hypothesis testing results is as follows: H1 is rejected, as EC has no significant effect on GS ($t = 0.157$; $p = 0.875$). H2 is rejected in terms of its hypothesized direction, because GP exerts a significant negative effect on GS ($t = 3.592$; $p = 0.000$). H3 is accepted, since EC has a significant positive effect on WTP ($t = 6.875$; $p = 0.000$). H4 is accepted, as GP has a significant positive effect on WTP ($t = 3.023$; $p = 0.003$). H5 is rejected, because GS does not significantly affect WTP ($t = 1.128$; $p = 0.259$). Furthermore, indirect effect testing demonstrates that GS does not mediate the influence of either EC or GP on WTP, as both indirect effect values are statistically insignificant.

3.2. Discussion

The result for H1 demonstrates that environmental concern does not significantly affect green skepticism. This contradicts initial expectations based on motivated reasoning (Kunda, 1990; Nyhan & Reffer, 2010), which assumed that highly environmentally conscious consumers would evaluate green claims more critically. A plausible explanation is that environmental concern among FMCG consumers tends to be generic and does not automatically translate into highly critical scrutiny of specific brand claims. Consequently, EC alone is insufficient to trigger the deep cognitive elaboration required by the Elaboration Likelihood Model (Petty & Cacioppo, 2012). This pattern is also consistent with recent evidence on Indonesian young consumers, who tend to be driven more by perceived value and emotional appeal than by systematic evaluation of price or claims within low-involvement product categories such as FMCG (Saragi, 2025). It further aligns with broader findings among environmentally engaged younger cohorts, whose expressed environmental concern frequently fails to translate into a more critical or evaluative posture toward specific sustainability claims (Hosany & Serdiuk, 2025). Given that the majority of respondents in this study were aged 21-25 (55.1%) and from middle-income backgrounds, it is plausible that their environmental concern functions primarily as a general value orientation rather than a driver of active claim scrutiny.

For H2, GP was found to have a significant negative effect on GS, which is the inverse of the hypothesized positive direction. This finding can be logically interpreted: as consumers' positive perception of packaging as a symbol of corporate environmental commitment increases, their skepticism decreases. Packaging acts as a tangible signal of credibility that aligns with sustainability claims. Thus, a positive packaging perception suppresses rather than triggers consumer skepticism, aligning with the views of (Magnier et al., 2016; Rokka & Uusitalo, 2008; Farooq & Wicaksono, 2021). This finding is consistent with recent evidence showing that even claims lacking substantive or verifiable content can shift consumers' environmental perceptions in a positive direction, functioning as a heuristic cue rather than prompting deeper scrutiny (Polonsky et al., 2025). Within this framework, a positive perception of green packaging may operate in a similar manner: rather than serving as evidence to be critically examined, it reassures consumers and substitutes for rather than provokes skeptical evaluation. This mechanism may be especially salient among the study's predominantly young, urban consumers in Surabaya, Jakarta, and Semarang, who as regular FMCG buyers are more likely to process packaging cues peripherally during routine purchasing.

The validation of H3 and H4 proves that both EC and GP have significant positive direct effects on WTP. This is consistent with García-Salirrosas et al. (2024), who asserted that greater environmental awareness increases consumers' willingness to attribute premium financial value to sustainable products. It also aligns with Steenis et al. (2017) and Biswas & Roy (2015), showing that positive green packaging perceptions drive premium price acceptance. Interestingly, the path coefficient of EC to WTP (0.508) is larger than that of GP (0.241), indicating that consumers' intrinsic environmental concern is a relatively stronger driver than extrinsic packaging perception alone.

The result for H5 shows that GS has no significant effect on WTP. This differs from the findings of Goh & Balaji (2016) as well as Farooq & Wicaksono (2021), who reported a significant negative impact of GS on green purchasing behavior. This divergence can be explained by the low R^2 of GS (5.4%) in this model, indicating that consumer skepticism in this sample was shaped by external factors beyond EC and GP. Thus, the variations of GS captured by this model were insufficient to exert a statistically significant influence on WTP. This result is also consistent with recent evidence suggesting that the effect of green skepticism on purchase-related outcomes is not always direct; instead, skepticism appears to operate through separate cognitive and emotional pathways that were not captured in the present model, such as consumers' motivation to seek further information or their sense of guilt over unsustainable choices (Zhou & Seo, 2026). This suggests that within a single-mediator model such as the present study, the non-significant direct path from GS to WTP may reflect the possibility that skepticism's true influence operates through mechanisms not captured here, rather than indicating that skepticism is simply irrelevant to consumer decision-making in this context. Given the sample's predominantly middle-income profile, practical purchasing considerations may also outweigh sustained skeptical evaluation at the point of decision in a low-involvement category like FMCG.

Consistent with H1 and H5, the mediation analysis showed that GS does not mediate the effects of EC or GP on WTP. This finding adds a unique dimension to the literature, which commonly positions GS as a key mediator between environmental attitudes and green consumption behavior. It demonstrates that in low-involvement contexts like FMCG, consumers tend to translate their environmental concerns and packaging perceptions directly into willingness to pay more, without a complex or skeptical evaluation process. This pattern is consistent with emerging green consumer behavior research in Indonesia, which emphasizes direct

factors like trust and knowledge over complex psychological mediation processes. (Farooq & Wicaksono, 2021; Haryono et al., 2025; Van Hoang et al., 2025; Vironika & Maulida, 2025)

4. CONCLUSION

Based on the PLS-SEM analysis of 176 FMCG consumers in Indonesia, this study concludes the following:

- a. Environmental concern does not significantly affect green skepticism.
- b. Green packaging perception has a significant negative effect on green skepticism, contrary to the initial positive hypothesis.
- c. Environmental concern has a significant positive effect on willingness to pay.
- d. Green packaging perception has a significant positive effect on willingness to pay.
- e. Green skepticism does not significantly affect willingness to pay, and it does not mediate the relationship between environmental concern or green packaging perception and willingness to pay.

In summary, this study demonstrates that FMCG consumers' willingness to pay premium prices is primarily shaped directly by their environmental concerns and positive packaging perceptions, rather than being filtered through skeptical evaluations of companies' sustainability claims, highlighting the limited role of green skepticism as a mediating mechanism in low-involvement product categories.

For FMCG practitioners, since the highest-loading indicator for environmental concern is "concern about environmental issues" (X1.1) and for green packaging perception is "packaging materials do not harm nature" (X2.2), companies should focus on communication strategies that emphasize the tangible, real-world environmental impact of the packaging materials they use. Trying to manage or suppress consumer skepticism may be less effective, as this path did not significantly influence willingness to pay in this study. Given that both EC and GP exert significant direct effects on WTP while GS does not, marketing resources may be more effectively allocated toward strengthening concrete environmental messaging and visually credible packaging cues such as verifiable material information or recognized certifications rather than toward costly trust- or skepticism-reduction campaigns, which this study suggests yield limited returns on WTP. This is consistent with recommendations that credibility-based cues, rather than persuasive or moral appeals alone, are more effective in shaping consumer response to sustainability claims (Polonsky et al., 2025). The demographic profile of the sample further suggests that such communication may be most effectively delivered through digital channels, given the concentration of respondents in the 21-25 age group across major urban centers (Saragi, 2025); however, as channel preference was not directly measured in this study, this implication should be treated as a plausible extension rather than a direct empirical conclusion.

For future research, it is recommended to explore other relevant mediators or moderators, such as perceived greenwashing, brand trust, or perceived credibility of environmental claims. The latter is particularly relevant given recent evidence that consumer response to green claims is shaped less by claim substantiveness and more by the credibility signal the claim conveys (Polonsky et al., 2025; Rehman et al., 2025), which may better capture the underlying evaluative mechanism than skepticism itself. Future studies should also expand sample coverage to include more diverse product categories and geographic locations, and consider longitudinal research designs.

Several limitations must be acknowledged. First, the cross-sectional design and reliance on self-reported data may introduce perceptual bias and preclude causal inference. Second, the purposive sampling technique limits the generalizability of the findings, and the number of indicators per construct was relatively restricted (four indicators). Third, the sample was geographically concentrated in three urban centers on Java (Surabaya, Jakarta, and Semarang), limiting generalizability to consumers outside Java or in more rural settings. Fourth, the sample skewed toward respondents aged 21-25 (55.1%), constraining generalizability across other age cohorts. Finally, the low R^2 value obtained for Green Skepticism (5.4%) indicates that the model omits substantive antecedents of skepticism, representing a limitation of model specification rather than measurement alone. These limitations should be carefully considered when interpreting and replicating these findings.

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