

How Ecological Anxiety Shapes Sustainable Consumption in China

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ABSTRACT

This study examines how ecological anxiety is translated into sustainable consumption behavior through the three dimensions of green product value appraisal and whether perceived government policy support strengthens this relationship in China. A cross-sectional survey of 385 consumers in the Beijing–Tianjin–Hebei region was analyzed using partial least squares structural equation modeling (PLS-SEM), including parallel mediation and moderation. The study found that ecological anxiety positively predicted sustainable consumption behavior ($\beta = 0.249$, $p < .001$), and the three dimensions of green product value- functional, ecological, and personal value ($\beta = 0.420$, 0.404 , and 0.404 , respectively; $p < .001$). Functional value ($\beta = 0.052$, $p < .05$) and personal value ($\beta = 0.044$, $p < .05$) significantly mediated the relationship, whereas ecological value did not ($\beta = 0.040$, $p = .061$). Perceived government policy support strengthened the ecological anxiety–sustainable consumption relationship ($\beta = 0.149$, $p < .01$). These findings advance theoretical understanding by elucidating the multi-channel emotional-cognitive-behavioral pathway and its boundary conditions and offer practical guidance for designing effective sustainability interventions.

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1. Introduction

Sustainable consumption requires more than awareness of environmental problems. Climate change, pollution, resource depletion, and ecological degradation increasingly confront consumers with choices about how they purchase, use, and dispose of products, yet environmental awareness does not necessarily translate into sustained behavior (Sesini et al., 2020). Consumer research therefore needs to explain how environmental motivation becomes an actionable consumption response.

Ecological anxiety has emerged as an important psychological response to environmental threats, encompassing worry, apprehension, and distress associated with climate change and ecological degradation (Thoma et al., 2021). Its behavioral consequences are not uniform: some dimensions are associated with pro-environmental engagement, whereas others may relate to distress or avoidance (Boluda-Verdú et al., 2022; Hogg et al., 2024). Daily-diary and meta-analytic evidence nevertheless indicates an overall positive association with pro-environmental behavior, alongside substantial heterogeneity across contexts and behaviors (Lutz et al., 2023; Davì et al., 2026). This heterogeneity makes the consumer decision process through which ecological anxiety becomes sustainable consumption particularly important.

The Theory of Consumption Values (TCV) proposes that consumer choice reflects multiple forms of value rather than a single utility calculation (Sheth et al., 1991). Green-consumption research similarly shows that consumers evaluate sustainable products through functional, ecological, and personal considerations (Gonçalves et al., 2016; Ng et al., 2023; Sun et al., 2022; Yan et al., 2024; Yuan et al., 2022). However, research has focused largely on perceived value as a predictor of green purchase intention or behavior. Less is known about how an environmental psychological state such as ecological anxiety shapes distinct value appraisals that subsequently influence broader sustainable consumption behavior.

Green product value is relevant because environmental concern may prompt consumers to evaluate different benefits of sustainable products. Functional value concerns usefulness, effectiveness, reliability, quality, and expected performance (Cao et al., 2021; Suphasomboon and Vassanadumrongdee, 2022); personal value captures personally meaningful or emotional benefits (Luo et al., 2022; Ng et al., 2023); and ecological value reflects perceived contributions to environmental protection, pollution reduction, and resource conservation (Hudayah et al., 2023; Zhao et al., 2024). Although related, these dimensions need not exert equivalent behavioral influence. Examining them separately can show whether ecological anxiety translates into sustainable consumption through environmental meaning itself or through value appraisals that make sustainable choices more actionable.

Consumer decisions are also embedded in an institutional context. Perceived government policy support can shape expectations about the accessibility, credibility, and feasibility of sustainable consumption through information, incentives, standards, and regulation (Pham et al., 2023). Evidence from China likewise indicates that policy and institutional conditions matter for green consumption (Shen and Wang, 2022; Hua and Pang, 2024). Yet less attention has been given to whether perceived policy support changes the extent to which ecological anxiety is translated into sustainable consumption. This study therefore treats perceived government policy support as a contextual boundary condition.

Three gaps motivate the study. First, although ecological anxiety has been linked to pro-environmental behavior, the consumer mechanism connecting it to sustainable consumption remains insufficiently understood. Second, the multidimensionality of green product value is recognized, but the three value dimensions have received limited attention as differentiated pathways between ecological anxiety and sustainable consumption. Third, the institutional context remains underdeveloped in explaining when ecological anxiety is more likely to result in sustainable consumption, particularly when consumers perceive stronger government policy support.

To address these gaps, the study develops and tests an integrated model positioning ecological anxiety as the psychological antecedent, functional, ecological, and personal green product value as parallel consumer-evaluation mechanisms, sustainable consumption behavior as the outcome, and perceived government policy support as a moderator. Using survey data from 385 consumers in the Beijing–Tianjin–Hebei region of China, PLS-SEM is used to test the direct, mediating, and moderating relationships.

The study makes three contributions. First, it extends ecological-anxiety research into consumer behavior by examining sustainable consumption as a behavioral response. Second, it shows that green product value dimensions have differentiated roles: functional and personal value significantly transmit ecological anxiety to sustainable consumption, whereas ecological value does not. Third, it identifies perceived government policy support as a contextual boundary condition that strengthens the ecological anxiety–sustainable consumption relationship.

2. Theoretical Framework and Hypotheses

The study integrates the Transactional Model of Stress and Coping (TMSC) and the Theory of Consumption Values (TCV). TMSC explains how environmental threats may generate anxiety and motivate responses perceived as feasible and constructive (Lazarus and Folkman, 1984). TCV explains why consumers evaluate green products through multiple practical, personal, and ecological benefits (Sheth et al., 1991). Perceived government policy support is positioned as an institutional boundary condition that may make sustainable responses more feasible and supported.

Within TMSC, ecological anxiety can be understood as a response to perceived environmental demands. When ecological threats are consequential and personally relevant, individuals may experience anxiety and seek ways of coping. If sustainable consumption is perceived as attainable, anxiety may become associated with constructive action. This interpretation is consistent with evidence linking eco-anxiety to pro-environmental behavior (Lutz et al., 2023; Hogg et al., 2024; Davì et al., 2026).

TCV complements this explanation by specifying the appraisal process between environmental motivation and consumption. Consumers may consider functional utility, personal benefits, and ecological consequences when evaluating green products. Research confirms that multiple perceived values are relevant to green-product evaluation and purchase-related outcomes (Ng et al., 2023; Suphasomboon and Vassanadumrongdee, 2022; Yuan et al., 2022). Accordingly, ecological anxiety may heighten attention to green alternatives and activate differentiated value appraisals that influence sustainable consumption.

2.1 Ecological anxiety and sustainable consumption behavior

Ecological anxiety may influence sustainable consumption because environmental threats become more salient and personally consequential. From a stress-and-coping perspective, this response may increase the perceived urgency of environmental problems and motivate behavioral responses perceived as reducing ecological harm. Recent evidence links eco-anxiety with pro-environmental behavior and green-product intentions, although effects vary across dimensions and contexts (Lutz et al., 2023; Hogg et al., 2024; Sharma et al., 2023).

Sustainable consumption is a relevant behavioral response because consumers can incorporate environmental considerations into product choices, purchasing practices, and resource use. Thus, ecological anxiety may increase the salience of environmental consequences and encourage behaviors perceived as reducing ecological harm. Accordingly:

H1: Ecological anxiety positively influences sustainable consumption behavior.

2.2 Ecological anxiety and green product value

The direct relationship between ecological anxiety and sustainable consumption does not explain how an environmental psychological response becomes a consumer decision. Consumers also evaluate whether green products provide sufficient benefits to justify choosing them over conventional alternatives. Consistent with TCV, these evaluations may involve multiple forms of value (Sheth et al., 1991; Gonçalves et al., 2016; Ng et al., 2023).

Green product value is represented through three distinct dimensions. Functional value concerns usefulness, effectiveness, reliability, quality, and performance (Cao et al., 2021; Suphasomboon and Vassanadumrongdee, 2022). When ecological threats become more salient, consumers may pay greater attention to green alternatives that address environmental concerns without substantial performance sacrifice.

H2a: Ecological anxiety positively influences green product functional value.

Ecological value concerns perceived contributions of green products to environmental protection, pollution reduction, resource conservation, and ecological improvement. Existing research supports the relevance of perceived environmental or green value in sustainable-product evaluation (Hudayah et al., 2023; Zhao et al., 2024). Because ecological anxiety increases the salience of environmental threats, it may increase attention to the ecological consequences of products and thereby ecological value appraisal.

H2b: Ecological anxiety positively influences green product ecological value.

Personal value concerns personally meaningful benefits associated with green products, including positive emotional and other individual benefits (Luo et al., 2022; Ng et al., 2023). Ecological anxiety may increase attention to green products that offer personally meaningful ways to respond to environmental concerns, connecting environmental motivation more closely with individual consumption decisions.

H2c: Ecological anxiety positively influences green product personal value.

2.3 Green product value as a mediating mechanism

Green product value may provide a cognitive bridge between ecological anxiety and sustainable consumption. Ecological anxiety can increase attention to green alternatives, after which consumers evaluate their practical, personal, and environmental benefits. These appraisals may subsequently influence sustainable consumption.

Research shows that perceived value can play differentiated roles in green-consumption processes (Ng et al., 2023; Dong and Huang, 2024). The three pathways are therefore assessed separately: functional value may reduce perceived performance trade-offs, personal value may make sustainable choices more personally actionable, and ecological value may reinforce the environmental meaning of the choice. Accordingly:

H3a: Green product functional value mediates the positive relationship between ecological anxiety and sustainable consumption behavior.

H3b: Green product ecological value mediates the positive relationship between ecological anxiety and sustainable consumption behavior.

H3c: Green product personal value mediates the positive relationship between ecological anxiety and sustainable consumption behavior.

2.4 Perceived government policy support as a boundary condition

Sustainable consumption occurs within an institutional environment that can facilitate or constrain action on environmental motivations. Consumers may recognize green-product value while facing barriers involving cost, availability, information, infrastructure, and uncertainty. Perceived government policy support (PGPS) refers to consumers' support for government environmental policies intended to encourage environmentally responsible behavior, including financial and non-financial incentives, environmental taxes, emissions trading, information provision, regulatory restrictions, and public messaging (Clayton, 2018).

Government interventions can influence the economic and informational conditions surrounding sustainable consumption through incentives, information, regulation and standards (Pham et al., 2023). Evidence from China likewise indicates that policy conditions are relevant to green consumption (Shen and Wang, 2022; Hua and Pang, 2024). From a stress-and-coping perspective, perceived policy support may strengthen constructive responses to ecological anxiety by signaling that sustainable action is feasible and institutionally supported.

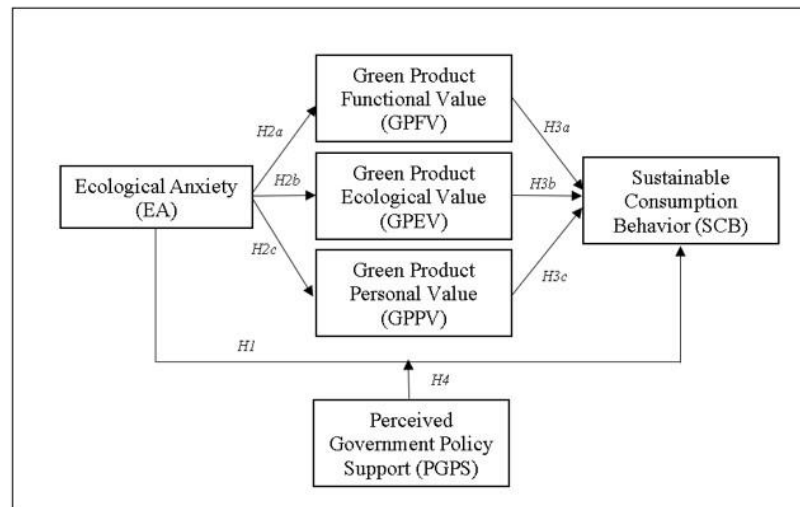
PGPS is therefore examined not merely as an antecedent of sustainable consumption but as a boundary condition that may alter the strength of the ecological anxiety–sustainable consumption relationship. Stronger perceived government policy support is expected to strengthen this relationship.

H4: Perceived government policy support positively moderates the relationship between ecological anxiety and sustainable consumption behavior.

2.5 Conceptual Model

The proposed framework positions ecological anxiety as the psychological antecedent, functional, ecological, and personal green product value as parallel evaluation mechanisms, and sustainable consumption behavior as the outcome. Perceived government policy support moderates the ecological anxiety–sustainable consumption relationship. The conceptual model is presented in Figure 1.

Figure 1: Conceptual Framework of Ecological Anxiety, Green Product Value Dimensions, and Sustainable Consumption



3. Research Methods

3.1. Research design and setting

This quantitative, cross-sectional survey examined relationships among ecological anxiety, green product value, sustainable consumption behavior, and perceived government policy support in the Beijing–Tianjin–Hebei (BTH) region of China from February to April 2026.

3.2. Sampling and data collection

The study used non-probability sampling to recruit consumers aged 18 years or older with sufficient experience to evaluate green products and sustainable consumption practices. Data were collected through Questionnaire Star using professional survey panels and snowball sampling via social media. A pilot test of 30 participants assessed questionnaire clarity and comprehensibility before the main survey.

Geographic allocation followed population proportions, yielding 77 responses from Beijing, 48 from Tianjin, and 260 from Hebei Province. A total of 502 completed questionnaires were initially obtained before screening.

3.3 Data-quality screening and final sample

Data-quality procedures retained only fully completed questionnaires, excluded respondents failing two or more attention checks, removed speeders completing the survey in less than 50% of the median completion time (approximately 5 minutes), and excluded straight-lining across more than 80% of consecutive items. These procedures produced 385 valid responses from 502 completed questionnaires (23.3% exclusion).

As shown in Table 1, the sample was nearly balanced by gender, with 195 males (50.6%) and 190 females (49.4%). Respondents aged 18–30 comprised 46.0%, followed by 31–45 (27.0%), 45–59 (22.3%), and 60+ (4.7%). Most held a bachelor's degree (51.2%), and the largest income group reported RMB 4,001–8,000 (34.0%). Demographics were

descriptive and were not included as control variables because the structural model was specified from the theoretical framework.

Participation was voluntary; respondents were informed of the study purpose, confidentiality procedures, and use of aggregated data. Informed consent was obtained before participation, and the research protocol received institutional ethical review.

Table 1. Sample Characteristics (N = 385)

Characteristic	Category	Frequency	Percentage
Age	18-30 years	177	46.0%
	31-45 years	104	27.0%
	45-59 years	86	22.3%
	60+ years	18	4.7%
Gender	Male	195	50.6%
	Female	190	49.4%
Education	Primary or below	12	3.1%
	Junior high	23	6.0%
	Senior high	91	23.6%
	Bachelor's	197	51.2%
	Graduate+	62	16.1%
Monthly Income	No income	24	6.2%
	≤2,000 RMB	46	11.9%
	2,001-4,000 RMB	107	27.8%
	4,001-8,000 RMB	131	34.0%
	≥8,001 RMB	77	20.0%

3.4 Measures

All substantive constructs used five-point Likert-type scales (1 = strongly disagree; 5 = strongly agree). The final questionnaire comprised 69 indicators across six constructs. Ecological anxiety (EA) was measured with 13 indicators adapted from Hogg et al. (2024). Functional, ecological, and personal green product value each comprised six indicators adapted from Gonçalves et al. (2016) and Ng et al. (2023). Sustainable consumption behavior (SCB) used 30 indicators adapted from Hamza et al. (2023), and perceived government policy support (PGPS) used eight indicators adapted from Clayton (2018) and contextualized to China. Full items are provided in Table 1.

Table S1. Measurement Items, Item Codes, and Response Scale

Construct	Item Code	Measurement Item	Response Scale
Ecological Anxiety (EA)	EA1	Feeling nervous, anxious or on edge.	1-5
	EA2	Not being able to stop or control worrying.	1-5
	EA3	Worrying too much.	1-5
	EA4	Feeling afraid.	1-5
	EA5	Unable to stop thinking about future climate change.	1-5
	EA6	Unable to stop thinking about past events related to climate change.	1-5
	EA7	Unable to stop thinking about climate change.	1-5
	EA8	Difficulty sleeping.	1-5

Green Product Functional Value (GPFV)	EA9	Difficulty enjoying social situations with family and friends.	1-5
	EA10	Difficulty working and/or studying.	1-5
	EA11	Feeling anxious about the impact of your personal behaviours on climate change.	1-5
	EA12	Feeling anxious about your personal responsibility to help address climate change.	1-5
	EA13	Feeling anxious that your personal behaviours will do little to help fix climate change.	1-5
	GPFV1	I think purchasing green products is beneficial to me.	1-5
	GPFV2	I think purchasing green products is useful to me.	1-5
	GPFV3	I think purchasing green products has functional significance for me.	1-5
	GPFV4	I understand that green products meet the expected quality standards.	1-5
	GPFV5	I understand that using harmless materials to manufacture green products is reasonable.	1-5
	GPFV6	I understand that green products have reasonable prices and excellent quality.	1-5
Green Product Personal Value (GPPV)	GPPV1	Purchasing green products gives me a sense of happiness.	1-5
	GPPV2	Purchasing green products makes me feel happy.	1-5
	GPPV3	I feel personally satisfied when I purchase green products.	1-5
	GPPV4	Purchasing green products makes me feel good about myself.	1-5
	GPPV5	Purchasing green products provides me with a sense of personal fulfillment.	1-5
	GPPV6	Purchasing green products reflects values that are personally important to me	1-5
Green Product Ecological Value (GPEV)	GPEV1	Purchasing green products helps improve the ecological environment.	1-5
	GPEV2	Perceiving the packaging of green products can meet environmental protection requirements.	1-5
	GPEV3	Purchasing and using green products will reduce environmental pollution.	1-5
	GPEV4	Perceiving that the use of green products can achieve the goal of resource conservation.	1-5
	GPEV5	Perceiving that the use process of green products consumes a lot of energy.	1-5
	GPEV6	Purchasing and using green products helps enhance environmental awareness.	1-5
Sustainable Consumption Behavior (SCB)	SCB1	I believe people should encourage their friends not to use products that pollute or harm the environment.	1-5
	SCB2	I try to influence the consumption of people in my social circle, even if they do not share the same values.	1-5
	SCB3	I participate in activities of environmental preservation.	1-5
	SCB4	Whenever I see people consuming in a manner I	1-5

		do not consider adequate, I question them.	
	SCB5	I would be willing to increase my expenses by 20% to use natural resources more adequately.	1-5
	SCB6	I usually make conscious efforts to limit the use of products made from scarce resources.	1-5
	SCB7	I am willing to make personal sacrifices to reduce pollution, even if immediate results are not significant.	1-5
	SCB8	I consider the environmental potential of my actions in many of my decisions.	1-5
	SCB9	I avoid doing all my shopping in large stores (big retailers and multinational companies).	1-5
	SCB10	I avoid consuming industrially produced items as much as possible.	1-5
	SCB11	I try to help local commerce in my region when I shop.	1-5
	SCB12	I refrain from buying products that have too much packaging.	1-5
	SCB13	I substitute products I usually buy for ecological reasons.	1-5
	SCB14	I change my shopping habits because of my concern with the environment.	1-5
	SCB15	I avoid using products or services that harm the environment.	1-5
	SCB16	I generally buy products that come in recyclable packaging.	1-5
	SCB17	I generally buy products that pollute less.	1-5
	SCB18	I try to choose food without additives.	1-5
	SCB19	I try to have a healthy eating habit.	1-5
	SCB20	I try to eat as little processed/industrialized food as possible.	1-5
	SCB21	I believe every consumer can have a positive effect on society by buying products from socially responsible companies.	1-5
	SCB22	I believe all consumers should be interested in the environmental consequences of the products they buy.	1-5
	SCB23	I believe that I can influence people to consume in a better way through my example.	1-5
	SCB24	I try to attend conferences about sustainability.	1-5
	SCB25	I try to read newspapers, magazines, and blogs about sustainability.	1-5
	SCB26	I have found information online that has made me change my consumption pattern.	1-5
	SCB27	I usually buy products from companies that hire people with special needs.	1-5
	SCB28	I usually buy products from companies that help victims of natural disasters.	1-5
	SCB29	I generally buy products from companies that help underprivileged people.	1-5
	SCB30	I usually buy products whose profits are partially donated to humanitarian causes.	1-5
Perceived Government Policy Support (PGPS)	PGPS1	Provide financial subsidies to encourage people to install or use energy-saving devices, like solar panels or energy-saving appliances.	1-5
	PGPS2	Provide non-financial incentives, like special	1-5

	lanes and reserved parking for people who drive electric or hybrid cars.	
PGPS3	Impose a tax on individuals' use of energy or on carbon emissions, like a higher gasoline tax.	1–5
PGPS4	Impose a tax on businesses' use of energy or on carbon emissions.	1–5
PGPS5	Allocate companies the right to use a certain amount of energy or emit a certain amount of carbon dioxide, and allow a market in which companies can sell their unneeded pollution rights to other businesses that need more.	1–5
PGPS6	Provide people with information about the amount of energy they are using and the carbon emissions they are generating.	1–5
PGPS7	Prohibit the use of devices that use excessive energy or generate excessive pollution, like inefficient air conditioners.	1–5
PGPS8	Encourage people to use more renewable fuel sources through public messaging.	1–5

Response scale. Unless otherwise indicated, all substantive items were measured using a five-point Likert-type scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

3.5 Data Analysis

Data were analyzed using partial least square- structural equation model (PLS-SEM) in SmartPLS 4. The measurement model was assessed before the structural model, and direct, indirect, and interaction effects were evaluated using bootstrapping.

3.5.1 Measurement Model Assessment

Measurement assessment examined outer loadings, Cronbach's alpha, rho_A, composite reliability, average variance extracted (AVE), heterotrait-monotrait ratio (HTMT), and variance inflation factor (VIF). These indicators were interpreted against established PLS-SEM criteria.

3.5.2 Structural Model Assessment

The structural model was evaluated using bootstrapping for standardized path coefficients (β), t-statistics, p-values, and f^2 . Explanatory power was assessed using R^2 and adjusted R^2 ; predictive relevance using Q^2 ; out-of-sample prediction using PLSpredict; and approximate fit using standardized root mean square residual (SRMR) and normed fit index (NFI).

3.5.3 Mediation Analysis

The three green product value dimensions were modeled as parallel mediators between ecological anxiety and sustainable consumption behavior.

Ecological Anxiety → Green Product Functional Value → Sustainable Consumption Behavior

Ecological Anxiety → Green Product Ecological Value → Sustainable Consumption Behavior

Ecological Anxiety → Green Product Personal Value → Sustainable Consumption Behavior

Bootstrapping was used to assess each indirect effect without assuming normality of its sampling distribution (Nitzl et al., 2016; Sarstedt et al., 2020). The three pathways were estimated simultaneously to assess their distinct mediating roles.

3.5.4 Moderation Analysis

PGPS was modeled as a moderator of the ecological anxiety–sustainable consumption relationship through the interaction term EA × PGPS. The interaction coefficient was evaluated using bootstrapping.

4. Results

4.1 Descriptive statistics

Data from 385 respondents were analyzed. Table 2 reports the means, standard deviations, skewness, and kurtosis for the principal constructs.

Table 2: Descriptive Statistics of the Study Constructs (N = 385)

Construct	Mean	Level	SD	Skewness	Kurtosis
Ecological Anxiety (EA)	3.322	Moderate	0.930	0.000	−1.010
Green Product Functional Value (GPFV)	3.326	Moderate	0.981	0.033	−1.044
Green Product Personal Value (GPPV)	3.361	Moderate	0.977	−0.024	−1.108
Green Product Ecological Value (GPEV)	3.357	Moderate	0.960	−0.021	−0.976
Sustainable Consumption Behavior (SCB)	3.317	Moderate	0.955	0.045	−1.223
Perceived Government Policy Support (PGPS)	3.281	Moderate	0.989	0.190	−1.077

Note. Mean interpretation: 1.00–1.80 = Very Low; 1.81–2.60 = Low; 2.61–3.40 = Moderate; 3.41–4.20 = High; 4.21–5.00 = Very High. SD = standard deviation.

Construct means ranged from 3.281 to 3.361, placing all variables in the moderate range. GPPV had the highest mean (3.361), followed by GPEV (3.357), GPFV (3.326), EA (3.322), SCB (3.317), and PGPS (3.281).

Skewness ranged from −0.021 to 0.190 and kurtosis from −1.223 to −0.976, indicating no substantive distributional concern for the PLS-SEM analysis.

4.2 Measurement model assessment

4.2.1 Indicator Reliability, Internal Consistency, and Convergent Validity

Table 3 summarizes the outer-loading ranges, Cronbach's alpha, rho_A, composite reliability, and average variance extracted (AVE).

Table 3: Construct Reliability and Convergent Validity

Construct	Loading Range	Cronbach's α	rho_A	CR	AVE
Ecological Anxiety (EA)	0.754–0.816	0.951	0.952	0.957	0.632
Green Product Functional Value (GPFV)	0.812–0.848	0.908	0.909	0.929	0.686
Green Product Personal Value (GPPV)	0.812–0.843	0.908	0.910	0.929	0.685
Green Product Ecological Value (GPEV)	0.804–0.844	0.907	0.908	0.928	0.682
Perceived Government Policy Support (PGPS)	0.809–0.827	0.929	0.932	0.941	0.668
Sustainable Consumption Behavior (SCB)	0.769–0.829	0.981	0.981	0.982	0.644

Note. CR = composite reliability; AVE = average variance extracted.

All indicator loadings exceeded 0.70 (0.754–0.848). Cronbach's alpha ranged from 0.907 to 0.981, rho_A from 0.908 to 0.981, and composite reliability from 0.928 to 0.982, supporting indicator reliability and internal consistency.

AVE values ranged from 0.632 to 0.686, exceeding 0.50 for every construct and supporting convergent validity.

Overall, the measurement model demonstrated satisfactory indicator reliability, internal consistency, and convergent validity.

4.2.2 Collinearity Assessment

Indicator-level VIF values were examined for excessive collinearity, as shown in Table 4.

Table 4: VIF (Multicollinearity) Summary

Construct	VIF Range
Ecological Anxiety (EA)	2.135–2.662
Green Product Ecological Value (GPEV)	2.051–2.448
Green Product Functional Value (GPFV)	2.082–2.512
Green Product Personal Value (GPPV)	2.184–2.372
Perceived Government Policy Support (PGPS)	2.286–2.533
Sustainable Consumption Behavior (SCB)	2.488–3.188
PGPS $\times$ EA	1.00

Note: VIF = Variance Inflation Factor

Indicator-level VIF values ranged from 1.000 to 3.188, below the commonly applied threshold of 5.00, indicating no critical collinearity concern. The maximum was observed among SCB indicators, while the interaction term had a VIF of 1.000. Overall, the indicators did not exhibit problematic multicollinearity.

4.2.3 Discriminant Validity

Discriminant validity was assessed using the heterotrait–monotrait ratio (HTMT). The results are presented in Table 5.

Table 5. Heterotrait–Monotrait Ratio (HTMT)

Construct	EA	GPEV	GPFV	GPPV	PGPS	SCB	PGPS × EA
Ecological Anxiety (EA)	—						
Green Product Ecological Value (GPEV)	0.432	—					
Green Product Functional Value (GPFV)	0.451	0.407	—				
Green Product Personal Value (GPPV)	0.432	0.462	0.437	—			
Perceived Government Policy Support (PGPS)	0.481	0.462	0.536	0.513	—		
Sustainable Consumption Behavior (SCB)	0.503	0.422	0.455	0.438	0.480	—	
PGPS × EA	0.204	0.293	0.343	0.286	0.290	0.334	—

HTMT values ranged from 0.204 to 0.536, with the highest value between GPFV and PGPS (0.536). All were below the conservative 0.85 threshold, supporting discriminant validity. The three green product value dimensions remained empirically distinguishable.

The interaction term showed HTMT values of 0.204–0.343 with the substantive constructs. Overall, discriminant validity was supported.

4.3 Structural Model Assessment

Table 6 shows the structural model was assessed for approximate fit, explanatory power, effect sizes, and predictive relevance.

Table 6: Model Fit Assessment

Fit Index	Saturated Model	Estimated Model
SRMR	0.033	0.078
d_ULS	2.690	14.832
d_G	1.314	1.475
Chi-square	2,608.619	2,796.538
NFI	0.884	0.876

Note. SRMR = standardized root mean square residual; d_ULS = squared Euclidean distance; d_G = geodesic distance; NFI = normed fit index.

The estimated SRMR was 0.078, indicating acceptable approximate fit. NFI was 0.876 for the estimated model and 0.884 for the saturated model; d_ULS, d_G, and chi-square are reported as supplementary diagnostics.

4.3.1 Explanatory Power and Predictive Relevance

Table 7 shows the explanatory power and predictive relevance of the model.

The model explained 16.3% of GPEV, 17.7% of GPFV, and 16.4% of GPPV variance, and 38.1% of SCB variance (adjusted $R^2 = 0.371$). Explanatory power was therefore greater for SCB than for the three value dimensions.

Q^2 values were positive for all endogenous constructs: 0.108 for GPEV, 0.119 for GPFV, 0.109 for GPPV, and 0.239 for SCB, indicating predictive relevance.

Q^2_{predict} values were positive across the endogenous constructs (GPEV 0.087–0.142; GPFV 0.110–0.126; GPPV 0.079–0.131; SCB 0.163–0.246), providing supplementary evidence of out-of-sample predictive performance.

Table 7: Explanatory Power and Predictive Relevance

Endogenous Construct	R^2	Adj. R^2	Q^2	Q^2_{predict} Range
Green Product Ecological Value (GPEV)	0.163	0.161	0.108	0.087–0.142
Green Product Functional Value (GPFV)	0.177	0.174	0.119	0.110–0.126
Green Product Personal Value (GPPV)	0.164	0.161	0.109	0.079–0.131
Sustainable Consumption Behavior (SCB)	0.381	0.371	0.239	0.163–0.246

Note. R^2 = coefficient of determination; Q^2 = predictive relevance; Q^2_{predict} = out-of-sample predictive relevance obtained through PLSpredict.

4.4 Direct Effects and Hypothesis Testing

Table 8 reports the direct effects, statistical significance, and effect sizes for the hypothesized relationships.

Table 8. Direct Effects, Effect Sizes, and Hypothesis Testing

Structural Path	β	t-value	p-value	f^2
H1: EA $\rightarrow$ SCB	0.249	5.235	$p < .001$	0.072
H2a: EA $\rightarrow$ GPFV	0.420	10.405	$p < .001$	0.214
H2b: EA $\rightarrow$ GPEV	0.404	9.942	$p < .001$	0.194
H2c: EA $\rightarrow$ GPPV	0.404	10.158	$p < .001$	0.196
GPFV $\rightarrow$ SCB	0.124	2.422	.015	0.016
GPEV $\rightarrow$ SCB	0.098	1.904	.057	0.012
GPPV $\rightarrow$ SCB	0.110	2.309	.021	0.014
PGPS $\rightarrow$ SCB	0.187	3.600	$p < .001$	0.023

Note: EA = ecological anxiety, SCB = sustainable consumption behavior, GPFV = green product financial value, GPEV = green product economic value, GPPV = green product personal value.

EA positively predicted SCB ($\beta = 0.249$, $t = 5.235$, $p < .001$), supporting H1. It also positively predicted GPFV ($\beta = 0.420$), GPEV ($\beta = 0.404$) and GPPV ($\beta = 0.404$), all $p < .001$, supporting H2a–H2c.

The value dimensions showed differentiated effects on SCB. GPFV ($\beta = 0.124$, $p < .05$) and GPPV ($\beta = 0.110$, $p < .05$) were significant, whereas GPEV was not ($\beta = 0.098$, $p = .057$).

PGPS positively predicted SCB ($\beta = 0.187$, $t = 3.600$, $p < .001$). EA showed medium-sized effects on GPEV ($f^2 = 0.194$), GPFV ($f^2 = 0.214$), and GPPV ($f^2 = 0.196$), while its SCB effect ($f^2 = 0.072$) and the remaining structural effects were relatively small.

4.5 Mediation Analysis

The mediation analysis examined whether the three dimensions of green product value appraisal transmit the relationship between EA and SCB. Specific indirect effects obtained through bootstrapping are presented in Table 9.

Table 9: Specific Indirect Effects and Mediation Hypothesis Testing

Specific Indirect Effect	β	t-value	p-value
H3a: EA $\rightarrow$ GPFV $\rightarrow$ SCB	0.052	2.341	.019
H3b: EA $\rightarrow$ GPEV $\rightarrow$ SCB	0.040	1.873	.061
H3c: EA $\rightarrow$ GPPV $\rightarrow$ SCB	0.044	2.214	.027

Note: EA = ecological anxiety, SCB = sustainable consumption behavior, GPFV = green product financial value, GPEV = green product economic value, GPPV = green product personal value.

The indirect effect through GPFV was positive and significant ($\beta = 0.052$, $t = 2.341$, $p < .05$), supporting H3a. The indirect effect through GPPV was also significant ($\beta = 0.044$, $t = 2.214$, $p < .05$), supporting H3c. The indirect effect through GPEV was not significant ($\beta = 0.040$, $t = 1.873$, $p = .061$); therefore, H3b was not supported.

Overall, the results indicate selective mediation: functional and personal value significantly and partially mediate the ecological anxiety–SCB relationship, whereas ecological value does not. This pattern is consistent with the significant direct EA–SCB effect and the differentiated direct effects of the value dimensions.

4.6 Moderation Analysis

The moderating role of PGPS was assessed by examining the interaction between EA and PGPS in predicting SCB. The moderation results are presented in Table 10.

Table 10. Moderating Effect of Perceived Government Policy Support

Moderating Path	β	t-value	p-value	f^2
H4: EA $\times$ PGPS $\rightarrow$ SCB	0.149	3.272	.001	0.026

Note: EA = ecological anxiety, SCB = sustainable consumption behavior, PGPS = perceived government policy support

The EA $\times$ PGPS interaction was positive and significant ($\beta = 0.149$, $t = 3.272$, $p < .01$), supporting H4. The interaction produced a small f^2 of 0.026, indicating a modest incremental effect.

The positive interaction indicates that the ecological anxiety–SCB relationship is stronger when consumers perceive greater government policy support, establishing PGPS as a contextual condition of the relationship.

5. Discussion

5.1 Ecological anxiety and sustainable consumption

The findings support H1: ecological anxiety was positively associated with sustainable consumption ($\beta = 0.249$, $p < .001$). This is consistent with evidence linking eco-anxiety to pro-environmental behavior (Lutz et al., 2023; Hogg et al., 2024; Davì et al., 2026) and

extends that literature to sustainable consumption as a market-related behavioral outcome.

From a stress-and-coping perspective, environmental threats may increase the salience and perceived urgency of ecological problems, motivating responses that consumers view as relevant to those threats. Sustainable consumption is one such response because everyday purchasing and consumption choices can express environmental concern.

The effect is relatively small ($f^2 = 0.072$), indicating that ecological anxiety is a motivational factor rather than a sufficient determinant of sustainable consumption. This supports examining the evaluative and contextual processes through which anxiety is translated into behavior.

5.2 Ecological anxiety and green product value appraisal

The results support H2a–H2c: ecological anxiety positively predicted functional ($\beta = 0.420$), ecological ($\beta = 0.404$) and personal value ($\beta = 0.404$), all $p < .001$. Thus, ecological anxiety was associated with broader green-product value appraisal rather than only greater attention to environmental benefits.

This extends TCV by positioning value appraisal as a cognitive-evaluative response to an environmental psychological state. Prior research establishes multiple forms of green-product value (Ng et al., 2023; Suphasomboon and Vassanadumrongdee, 2022; Shao and Lin, 2024); the present findings show that ecological anxiety is positively related to each dimension.

The similar coefficients indicate that ecological anxiety was associated with the three value dimensions at comparable levels. Environmental concern therefore does not displace conventional consumer-value considerations; consumers may simultaneously recognize environmental benefits and assess usefulness and personal relevance.

The key distinction is between recognizing value and translating it into behavior. Ecological anxiety stimulated all three appraisals, but their behavioral consequences differed in the mediation analysis.

5.3 Differential mediation of green product value

The three value dimensions did not have equivalent behavioral effects. Functional value significantly mediated the ecological anxiety–SCB relationship ($\beta = 0.052$, $p < .05$), as did personal value ($\beta = 0.044$, $p < .05$), whereas ecological value did not ($\beta = 0.040$, $p = .061$). H3a and H3c were supported, but H3b was not.

This selective mediation refines research that treats green value as a general construct. Functional value may reduce perceived trade-offs involving product performance, while personal value may make sustainable action more immediately relevant to the consumer (Ng et al., 2023; Suphasomboon and Vassanadumrongdee, 2022).

The nonsignificant ecological-value pathway suggests a potential value–behavior gap: consumers may recognize environmental benefits without that recognition alone translating into sustainable consumption. Ecological value is therefore not irrelevant;

rather, it operates differently from functional and personal value within the present model.

Taken together, the findings support a differentiated view of green product value. Ecological anxiety is associated with broad value appraisal, but functional and personal value constitute the significant behavioral bridges in this model.

Taken together, the mediation results provide a more precise explanation of how ecological anxiety relates to sustainable consumption. Ecological anxiety is associated with broader green-product value appraisal, but functional and personal value provide the significant behavioral bridges, whereas ecological value alone does not. This selective mediation is more informative than an assumption that all dimensions of green product value should exert equivalent behavioral influence.

5.4 The moderating role of perceived government policy support

PGPS had a positive direct association with SCB ($\beta = 0.187$, $p < .001$), and the $EA \times PGPS$ interaction was positive and significant ($\beta = 0.149$, $p < .01$), supporting H4. The interaction indicates that the ecological anxiety–SCB relationship becomes stronger as perceived government policy support increases.

This extends research showing that policy incentives and institutional conditions influence green consumption and pro-environmental behavior (Shen and Wang, 2022; Pham et al., 2023; Hua and Pang, 2024) by treating policy support as a boundary condition rather than only an antecedent.

The finding suggests that consumer motivation operates within an institutional environment shaped by information, incentives, standards, and regulation. Stronger perceived policy support may make sustainable choices appear more feasible, legitimate, and supported.

The interaction effect is small ($f^2 = 0.026$), so the result should be interpreted as incremental contextual reinforcement rather than evidence that policy support overwhelms psychological motivation.

Together with the mediation findings, the moderation result indicates that sustainable consumption depends on both consumer-level value appraisal and contextual conditions surrounding the consumption decision.

5.5 Theoretical and practical implications

The study makes three theoretical contributions. First, it extends ecological-anxiety research by demonstrating its association with sustainable consumption while recognizing that the modest direct effect makes it one component of a broader behavioral process. Second, it extends TCV by showing differentiated consequences of functional, ecological, and personal value: all are associated with ecological anxiety, but only functional and personal value provide significant indirect pathways. Third, it identifies perceived government policy support as a contextual boundary condition linking psychological motivation with sustainable consumption.

Second, the study extends the Theory of Consumption Values by demonstrating that green product value has differentiated behavioral consequences. Ecological anxiety was positively associated with functional, ecological, and personal value, but only functional and personal value generated significant indirect pathways to sustainable consumption. This distinction suggests that aggregating different forms of green product value into a single construct can obscure meaningful differences in how consumers translate environmental motivation into behavior.

Third, the study introduces perceived government policy support as a contextual boundary condition linking individual psychological motivation with sustainable consumption. The significant interaction between ecological anxiety and PGPS suggests that consumer behavior cannot be understood solely from internal psychological states or product evaluations. The perceived institutional environment also matters because it can strengthen or weaken the behavioral relevance of environmental motivation.

For practice, green-product communication should not rely exclusively on environmental claims. Because functional and personal value generated significant mediating pathways, marketers should pair environmental benefits with credible information about usefulness, performance, quality, convenience, and personally relevant benefits.

Consumers experiencing ecological anxiety should not necessarily be targeted with stronger threat-oriented messaging. A more useful approach is to provide credible, attainable ways to act on existing concern through clear product information, transparent value propositions and reduced uncertainty.

The moderation finding also highlights the institutional environment. Government communication, incentives, standards and other policy support can complement consumer- and market-level mechanisms by making sustainable choices more visible, credible and feasible.

For Chinese consumers, the findings suggest that environmental concern alone should not be assumed to produce sustainable consumption. A more effective approach connects environmental motivation with directly evaluable product value and a policy environment perceived as supportive of sustainable choices.

6. Conclusion

This study examined ecological anxiety, three dimensions of green product value, and perceived government policy support as explanations of sustainable consumption behavior. Survey data from 385 consumers in the Beijing–Tianjin–Hebei region show that ecological anxiety positively predicts sustainable consumption and all three value dimensions.

Functional and personal value significantly mediate the ecological anxiety–sustainable consumption relationship, whereas ecological value does not. Perceived government policy support strengthens the ecological anxiety–sustainable consumption relationship. Overall, sustainable consumption reflects the interaction of environmental motivation, consumer value appraisal, and institutional context. Ecological anxiety may motivate sustainable action, but its behavioral translation is more evident when green products

provide meaningful functional and personal value and when policy conditions are perceived as supportive.

Several limitations should be considered. First, the cross-sectional design limits causal inference; longitudinal and experimental research could examine temporal and causal relationships among ecological anxiety, value appraisal, and sustainable consumption. Second, the regional sample limits generalizability beyond the Beijing–Tianjin–Hebei region and other institutional contexts. Third, future research could incorporate variables such as environmental self-efficacy, green trust, social norms, perceived behavioral control, price sensitivity, product availability, and environmental knowledge to explain heterogeneous responses to ecological anxiety. Finally, future studies could distinguish constructive from more distress-oriented forms of ecological anxiety because they may have different behavioral consequences.

Third, future research could incorporate additional psychological and contextual variables, such as environmental self-efficacy, green trust, social norms, perceived behavioral control, price sensitivity, product availability, and environmental knowledge. These variables may help explain why consumers experiencing similar levels of ecological anxiety respond differently. Finally, future studies could distinguish constructive forms of ecological anxiety from more distress-oriented dimensions because different forms of anxiety may have different consequences for consumer behavior.

Ethics Approval and Consent to Participate

Ethical principles for research involving human participants were followed. Participation was voluntary, informed consent was obtained, and responses were kept confidential and used solely for academic purposes.

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Conflict of Interest

The authors declare that there are no known financial, personal, or institutional conflicts of interest that could have influenced the conduct, analysis, or reporting of this research. The study was carried out independently, and all interpretations and conclusions presented are solely those of the authors.

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