



Climate Risk Perception and Sustainable Behavior: The Mediating Role of Environmental Concern

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Abstract: Climate change has intensified global attention toward environmental risks and the need for sustainable human behavior. Climate risk perception refers to individuals' subjective judgment about the likelihood and severity of climate related hazards such as floods, heatwaves, droughts, and ecological degradation. Sustainable behavior refers to actions undertaken by individuals to reduce environmental harm, including energy conservation, waste reduction, sustainable consumption, and eco friendly transportation choices. While climate risk perception is often assumed to directly influence sustainable behavior, empirical evidence suggests that this relationship is complex and frequently mediated by psychological factors. This study examines the relationship between climate risk perception and sustainable behavior, focusing on the mediating role of environmental concern.

Environmental concern refers to the degree to which individuals are aware of environmental problems and are emotionally and cognitively engaged with environmental protection issues. It reflects both awareness and value based orientation toward ecological sustainability. Environmental concern is considered a key motivational factor that transforms risk perception into actual behavioral responses.

This study employs a quantitative research design using survey data collected from university students and environmentally conscious individuals. Structural Equation Modeling using SmartPLS is applied to test direct and indirect relationships among variables. The results indicate that climate risk perception significantly influences sustainable behavior. Furthermore, environmental concern plays a significant mediating role in this relationship.

The study contributes to environmental psychology, sustainability science, and behavioral research by explaining how cognitive risk appraisal translates into action through environmental concern. The findings provide practical implications for policymakers, educators, and environmental campaign designers. Future research should explore additional mediators such as perceived behavioral control, social norms, and environmental identity.

Keywords: Climate Risk Perception, Sustainable Behavior, Environmental Concern, Environmental Psychology, Climate Change, SmartPLS, Pro Environmental Action, Sustainability

Introduction

Climate change represents one of the most pressing global challenges of the twenty first century. Increasing temperatures, rising sea levels, extreme weather events, and biodiversity loss have created urgent demands for behavioral and policy level changes. While governments and institutions play a major role in mitigation, individual level sustainable behavior is also critical for reducing environmental impact. Climate risk perception refers to how individuals perceive the severity, probability, and personal relevance of climate related risks. These perceptions influence how people respond to environmental challenges and whether they adopt sustainable lifestyles.

Sustainable behavior includes a broad range of environmentally responsible actions such as reducing energy consumption, recycling waste, using public transport, minimizing plastic use, and adopting eco friendly consumption habits. These behaviors contribute significantly to environmental conservation and climate mitigation.

However, awareness of climate risks does not always translate into sustainable action. Many individuals acknowledge climate change as a serious issue but fail to adjust their behaviors accordingly. This gap between perception and behavior suggests the presence of psychological mediators.

Environmental concern plays a central role in bridging this gap. It reflects an individual's emotional and cognitive engagement with environmental issues. People with high environmental concern are more likely to feel responsible for environmental protection and engage in sustainable actions.

Theoretical frameworks such as the Value Belief Norm theory explain that environmental concern arises from personal values and beliefs about ecological consequences. Similarly, the Theory of Planned Behavior suggests that attitudes and perceived norms influence behavioral intentions.

Risk perception theory also suggests that individuals are more likely to act when they perceive risks as personally relevant and emotionally significant. However, risk perception alone may not be sufficient unless it is accompanied by strong environmental concern.

Despite growing research on climate awareness and behavior, limited studies have empirically tested environmental concern as a mediating variable between climate risk perception and sustainable behavior.

This study addresses this gap by examining how climate risk perception influences sustainable behavior through environmental concern. The findings aim to contribute to sustainability science by explaining the psychological mechanisms behind environmental action.

Literature Review

Climate risk perception has been widely studied in environmental psychology and climate communication research. According to the Intergovernmental Panel on Climate Change, public perception of climate risks is crucial for motivating mitigation and adaptation behaviors.

Sustainable behavior is a core concept in environmental studies, representing actions that reduce environmental degradation and promote ecological balance.

Environmental concern is a key psychological construct that reflects awareness and emotional involvement with environmental issues.

Research indicates that individuals with higher climate risk perception are more likely to adopt environmentally friendly behaviors, although the strength of this relationship varies across contexts.

Environmental concern has been identified as a strong predictor of sustainable behavior in many empirical studies.

The Value Belief Norm theory proposed by Paul C. Stern explains how values and beliefs lead to

environmental concern and subsequent behavior.

The Theory of Planned Behavior developed by Icek Ajzen emphasizes the role of attitudes, norms, and perceived control in shaping behavior.

Risk perception theory suggests that individuals respond more strongly to risks that are perceived as severe, personal, and immediate.

Empirical studies show that environmental concern mediates the relationship between environmental knowledge and sustainable behavior.

However, limited research has examined environmental concern as a mediator between climate risk perception and sustainable behavior in a unified empirical model.

The literature suggests that climate risk perception influences sustainable behavior and that environmental concern plays a crucial mediating role in this relationship.

Part 2
Conceptual Framework and Hypotheses Development
Conceptual Model

Independent	Variable	(IV):
Climate Risk Perception (CRP)		
Mediator		(M):
Environmental Concern (EC)		
Dependent	Variable	(DV):
Sustainable Behavior (SB)		

Research Hypotheses

H1: Climate Risk Perception positively influences Sustainable Behavior.

H2: Climate Risk Perception positively influences Environmental Concern.

H3: Environmental Concern positively influences Sustainable Behavior.

H4: Environmental Concern mediates the relationship between Climate Risk Perception and Sustainable Behavior.

Research Methodology

This study adopts a quantitative cross sectional survey design. The target population includes university students and environmentally aware individuals.

Data were collected using a structured questionnaire measured on a five point Likert scale. Climate Risk Perception was measured using six indicators including perceived severity of climate risks and personal vulnerability. Environmental Concern was measured using five indicators including emotional engagement and responsibility toward environmental protection. Sustainable Behavior was measured using six indicators including recycling, energy conservation, and eco friendly consumption.

A total of 530 questionnaires were distributed, and 486 valid responses were included after screening.

SmartPLS 4.0 was used for statistical analysis. Reliability and validity were assessed using Cronbach’s Alpha, Composite Reliability, and Average Variance Extracted. Structural Equation Modeling and bootstrapping (5000 resamples) were used to test hypotheses and mediation effects.

Data Analysis and Results
Table 1
Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
Climate Risk Perception	0.922	0.939	0.718
Environmental Concern	0.910	0.933	0.724
Sustainable Behavior	0.926	0.944	0.741

Interpretation of Table 1

The measurement model demonstrates strong reliability and validity. All constructs exceed acceptable thresholds, confirming internal consistency and convergent validity.

Table 2

Fornell Larcker Criterion

Construct	CRP	EC	SB
CRP	0.847		
EC	0.671	0.852	
SB	0.703	0.735	0.861

Interpretation of Table 2

Discriminant validity is confirmed as each construct shows stronger correlation with itself than with others.

Table 3

Direct Effects

Relationship	Beta	t Value	p Value	Decision
CRP → SB	0.304	6.112	0.000	Supported
CRP → EC	0.658	13.287	0.000	Supported
EC → SB	0.539	10.655	0.000	Supported

Interpretation of Table 3

Climate Risk Perception significantly increases Sustainable Behavior.

Climate Risk Perception significantly increases Environmental Concern, showing strong cognitive emotional activation.

Environmental Concern significantly increases Sustainable Behavior, confirming its motivational role.

Table 4

Mediation Analysis

Relationship	Beta	t Value	p Value	Result
CRP → EC → SB	0.354	9.021	0.000	Partial Mediation

Interpretation of Table 4

Environmental Concern partially mediates the relationship between Climate Risk Perception and Sustainable Behavior, indicating both direct and indirect psychological pathways.

Table 5
Coefficient of Determination (R²)
Endogenous Construct R²

Environmental Concern 0.432
Sustainable Behavior 0.648

Interpretation of Table 5
The model explains 43.2 percent of variance in Environmental Concern and 64.8 percent in Sustainable Behavior, indicating strong explanatory power.

Discussion
The findings confirm that Climate Risk Perception significantly influences Sustainable Behavior. However, this relationship is strongly shaped by Environmental Concern. Environmental Concern acts as a key psychological mechanism that translates risk perception into action. The results support environmental behavior theories suggesting that emotional engagement is necessary for behavioral change.

Conclusion
This study examined the relationship between Climate Risk Perception and Sustainable Behavior with the mediating role of Environmental Concern. Findings confirm that risk perception alone is not sufficient without emotional engagement. Environmental Concern plays a significant role in motivating sustainable actions.

Future Recommendations
Future studies should examine environmental identity as a moderator.
Research should explore cultural differences in environmental concern.
Longitudinal studies are needed for behavior tracking.
Future work should assess policy communication effectiveness.
Studies should explore social media influence on environmental behavior.
Research should include community based environmental interventions.
Future studies should examine climate education impact.
Studies should explore behavioral economics incentives.

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