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Behavioral responses of tourists in the era of climate crisis: A study on psychological resilience and destination choices

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Abstract

Purpose: This study investigates how psychological resilience, environmental awareness, and socio-demographic factors influence tourist behavior and destination loyalty in the era of climate crisis. Focusing on Skyros Island, a small island destination in Greece, it explores how climate-conscious attitudes and sustainability values shape tourists' willingness to return and support adaptation measures.

Methods: A structured questionnaire was administered to 248 tourists departing from Skyros Island during the summer of 2024. The instrument measured psychological resilience, environmental concern, pro-environmental behavior, and socio-demographic characteristics. Statistical analyses included Pearson correlations, one-way ANOVA, chi-square tests, multiple linear regression, and exploratory factor analysis (Principal Axis Factoring), performed using SPSS v29.

Results: Findings revealed a positive but moderate correlation between revisit intention and recommendation likelihood. Gender and age significantly influenced eco-behavioral patterns, with men showing more polarized eco-fee attitudes and age predicting variance in sustainable preferences. Regression analysis identified climate concern, behavioral importance, and income as significant predictors of willingness to pay an environmental fee, while "human responsibility" exhibited a small but negative effect. Exploratory factor analysis identified two psychological dimensions: Pro-environmental Engagement and Risk/Responsibility Perception, explaining over 60% of total variance. However, issues with factor convergence indicated limitations in the variable set.

Conclusions: Psychological and demographic variables significantly influence behavioral responses in climate-sensitive tourism contexts. While climate-conscious tourists are more willing to promote destinations and support eco-initiatives, their revisit intent may be tempered by critical sustainability assessments. These findings highlight the complexity of fostering loyalty in environmentally engaged travelers and the importance of designing adaptation strategies that balance ecological integrity with tourist expectations.

Introduction

Tourism is a multifaceted industry that relies heavily on the stability of climate and environmental conditions. Weather patterns influence not only tourists' physical comfort and activity planning—such as nature-based excursions, urban tours, or sports—but also operational demands like water availability, cooling needs, and irrigation [1]. Consequently, the tourism sector is considered highly vulnerable to the impacts of climate change—perhaps even more so than the general economy [2-5].

Climate change does not affect all destinations or populations equally. It disproportionately impacts marginalized and vulnerable groups, such as women, Indigenous communities, persons with disabilities, residents of small island nations, and socioeconomically disadvantaged populations [6]. These impacts manifest in diverse ways—affecting livelihoods, health, infrastructure, and social cohesion—depending on geographic and demographic factors [7].

Small island tourism destinations are among the most climate-sensitive regions globally [8]. With limited landmass, fragile ecosystems, and growing tourism pressures, islands are increasingly exposed to climate risks, such as sea-level rise, temperature extremes, and water scarcity [9]. Recent IPCC projections show a sharp decline in the percentage of land classified as climate refugia in the Aegean Islands under rising global temperatures, with less than 20% of land remaining climatically suitable in high-warming scenarios [10]. This makes urgent the need to explore sustainable adaptation strategies at the destination level [11].

Skyros Island, located in the heart of the Aegean Sea, acts as a strategic link between the northern and southern Aegean regions and connects mainland Greece to the Turkish coastline [12]. It represents a typical example of a small tourism-dependent island under increasing environmental stress. Environmental degradation, intense seasonality, and the threat of climate-related disruptions all challenge the long-term viability of Skyros as a tourist destination.

Rising public awareness of climate change has catalyzed a shift toward environmentally conscious tourism; travelers now increasingly prioritize sustainability in their choices—displaying willingness to pay environmental fees, opting for eco-certified accommodations, and favoring destinations that actively pursue adaptation measures. Understanding the motivations and behavioral patterns underlying such choices is critical for building resilient tourism systems [13].

At the same time, tourism—while vulnerable—is also a vehicle for resilience-building in local communities. As Zapanti and Skanavis [14] highlight, sustainable tourism can enhance community preparedness and promote adaptive behaviors, especially when guided by public awareness, environmental engagement, and psychological resilience.

In this context, psychological resilience emerges as a crucial yet underexplored concept in tourism research. It refers to tourists' ability to adapt, remain optimistic, and make informed decisions under uncertain and changing conditions. Such resilience is not only personal but also behavioral—shaping how individuals engage with sustainability, respond to environmental risks, and choose travel destinations [15].

This study investigates how psychological resilience, environmental awareness, and socio-demographic factors influence tourist behavior and destination loyalty in the era of climate crisis. Focusing on Skyros Island, it explores the extent to which sustainable values and climate-conscious attitudes shape revisit intentions and support for adaptive practices in small island tourism.

Methods

This study employed a quantitative research design using a structured questionnaire to investigate the behavioral responses of tourists in the context of climate change. The data collection was conducted during the summer tourist season of 2024 on Skyros Island, Greece.

To reach a representative sample of visitors, questionnaires were distributed digitally using QR codes placed strategically at key departure points from the island. These included the port of Linaria, the interior of the departing ferry (Achileas), the local airport, and bus stops connecting Skyros to the mainland. This method was selected to ensure that participants had completed their stay on the island and could reflect on their full travel experience while responding.

A total of 248 valid responses were collected during the data collection period. All participants were tourists who had visited Skyros Island for leisure purposes. The questionnaire aimed to capture various aspects of tourist behavior, including perceptions of climate change, environmental awareness, psychological resilience, willingness to adopt sustainable practices, and intentions to revisit the destination. It also included socio-demographic variables such as age, gender, education level, and income, which were used to explore correlations and potential predictors of environmentally responsible behaviors.

Participation in the survey was anonymous and voluntary. Respondents accessed the questionnaire via mobile devices and submitted their answers through an online survey platform. No personal identifying data were collected, and participants were informed of the purpose and scope of the study prior to participation.

The questionnaire aimed to capture various aspects of tourist behavior, including perceptions of climate change, environmental awareness, psychological resilience, willingness to adopt sustainable practices, and intentions to revisit the destination. It also included socio-demographic variables to explore correlations and potential predictors of behavior.

Data were processed using IBM SPSS Statistics Version 29. The following statistical methods were applied:

- Descriptive statistics to summarize socio-demographic variables and general patterns of behavior.
- Pearson correlation analysis to examine relationships between destination loyalty and psychological/environmental variables.
- One-way ANOVA to explore differences across age groups in relation to pro-environmental intentions.
- Chi-square tests to investigate associations between categorical variables, such as gender and eco-fee willingness.
- Multiple linear regression to identify predictors of willingness to financially support climate adaptation measures.
- Exploratory factor analysis (Principal Axis Factoring) to uncover latent dimensions of environmental behavior.

All variables were tested for reliability and distributional assumptions prior to analysis. The findings provide insights into the psychological and behavioral mechanisms underpinning tourist decision-making under climate stress, with a focus on small island destinations.

Results

A total of 248 valid responses were collected during the summer of 2024, primarily from tourists departing the island of Skyros. The sample was balanced in terms of gender (52% female, 48% male), and included diverse age groups, with the majority falling between 25 and 44 years old. Most respondents had a university-level education, and a significant share reported prior visits to Skyros, suggesting some degree of destination familiarity.

Psychological resilience and destination loyalty

A Pearson correlation analysis revealed a statistically significant positive relationship between tourists' intention to revisit Skyros and their likelihood of recommending the destination to others (r=.255, p<.001). This suggests that visitors with higher loyalty are more inclined to engage in positive word-of-mouth, reinforcing the social value of repeat visitation (Table 1).

Table 1: Correlation between revisit intention and recommendation likelihood.

Revisit Intention	1.00	.255**
Recommendation Likelihood	.255**	1.00

Note: *N = 248. Pearson correlation coefficients are reported. *p<.01 (2-tailed).

Psychological resilience and destination loyalty

A one-way ANOVA was conducted to examine the effect of age group on various dimensions of environmental awareness and sustainability-related behavior. The analysis revealed statistically significant differences among age groups for several dependent variables:

- Fire prevention intent: F(5, 242) = 4.110, *p*=.001
- Eco-usage intent: F(5, 242) = 3.372, *p*=.006
- Behavior importance: F(5, 242) = 2.497, *p*=.032
- Eco island choice: F(5, 242) = 4.137, *p*=.001
- Eco accommodation choice: F(5, 242) = 6.198, *p*<.001
- Willingness to pay eco fee: F(5, 242) = 4.859, *p*<.001

No statistically significant differences were found for:

- Climate concern: F(5, 242) = 1.504, *p*=.189
- Adaptation measure importance: F(5, 242) = 1.425, *p*=.216

As shown in Table 2, significant age-related differences were observed in fire prevention intent, eco-usage behaviors, and accommodation choices. These findings suggest that age plays a significant role in shaping specific environmental attitudes and behavioral intentions among tourists.

Table 2: Results of one-way ANOVA examining the effect of age group on environmental awareness and sustainable tourism behaviors.

Variable	F	df (Between, Within)	Sig. (p)	Variable	F
Climate concern	1.504	(5, 242)	.189	Climate concern	1.504
Fire prevention intent	4.110	(5, 242)	.001	Fire prevention intent	4.110
Eco-usage intent	3.372	(5, 242)	.006	Eco-usage intent	3.372
Behavior importance	2.497	(5, 242)	.032	Behavior importance	2.497
Adaptation measure importance	1.425	(5, 242)	.216	Adaptation measure importance	1.425
Eco island choice	4.137	(5, 242)	.001	Eco island choice	4.137
Eco accommodation choice	6.198	(5, 242)	<.001	Eco accommodation choice	6.198
Willingness to pay eco fee	4.859	(5, 242)	<.001	Willingness to pay eco fee	4.859

Gender and willingness to support eco-initiatives

A chi-square test of independence was conducted to examine the relationship between gender and willingness to pay an environmental fee (eco_fee_willingness). The results revealed a statistically significant association between the two variables, $\chi^2(4, N = 248) = 32.87$, $p<.001$. As shown in Table 3, a higher proportion of male respondents indicated a greater willingness to pay the fee (47.0% selected "5 – very willing"), compared to females (only 18.8% selected "5"). Conversely, 48.9% of female respondents chose the mid-point response ("3"), compared to only 19.1% of males.

Table 3: Gender and willingness to pay an eco-fee.

	1 (Not willing)	2	3	4	5 (Very willing)	Total
Male	12.2%	3.5%	19.1%	18.3%	**47.0%**	100%
Female	9.0%	6.8%	**48.9%**	16.5%	18.8%	100%
Total	10.5%	5.2%	35.1%	17.3%	31.9%	100%

Note: Pearson Chi-square = 32.87, df = 4, p<.001.

Environmental awareness and tourist loyalty

Pearson correlation analysis was conducted to explore the relationships between tourists' environmental awareness and their preference for Skyros Island, expressed through their intention to revisit the island and the likelihood of recommending it to others.

As shown in Table 4, statistically significant but weak negative correlations were observed between several environmental attitude indicators and revisit intent, including:

- eco_fee_willingness (r = –0.256, p<.001)
- eco_accommodation_choice (r = –0.288, p<.001)
- eco_island_choice (r = –0.169, p=.008)

Conversely, positive correlations were observed between environmental consciousness and recommendation likelihood, although the strength of association was generally weak:

- behavior_importance (r = 0.268, p<.001)
- eco_fee_willingness (r = 0.236, p<.001)
- eco_accommodation_choice (r = 0.165, p=.009)

These findings suggest that environmentally conscious individuals are more likely to recommend Skyros to others, but not necessarily more inclined to revisit the destination themselves.

Table 4: Pearson correlation matrix between environmental awareness variables and tourist loyalty indicators.

Variable	revisit intent	recommendation likelihood
Climate concern	–0.324**	0.127*
Fire prevention intent	–0.151*	0.131*
Eco usage intent	–0.134	0.165**
Behavior importance	0.169**	0.268**
Adaptation measure importance	0.011	0.245**
Eco island choice	–0.169**	0.195**
Eco accommodation choice	–0.288**	0.165**
Human responsibility	–0.134	0.112
Eco fee willingness	–0.256**	0.236**

Note: p<.05, p < .01 (2-tailed).

Predictors of eco-fee willingness

A multiple linear regression analysis was conducted to examine the extent to which psychological and demographic factors predict tourists' willingness to pay an eco-fee (*eco_fee_willingness*). The predictors included climate concern, behavior importance, eco-usage intent, human responsibility, and income category. The overall model was statistically significant, F(5, 242)=35.127, p<.001, with an R^2 of 0.421, indicating that approximately 42.1% of the variance in eco-fee willingness is explained by the model.

As shown in Table 5, significant positive predictors of eco-fee willingness were climate concern (β=.472, t=8.089, p<.001), behavior importance (β=.360, t=6.231, p<.001), and income category (β=.211, t = 4.226, p<.001). Notably, human responsibility exhibited a small but statistically significant negative effect (β=–.175, t=–2.807, p=.005), while eco-usage intent did not significantly contribute to the model (β=–.030, t=–0.486, p=.628).

Collinearity diagnostics indicated no multicollinearity issues, as all Variance Inflation Factor (VIF) values were well below the threshold of 2.0.

Table 5: Multiple linear regression analysis predicting tourists' willingness to pay an eco-fee based on psychological and demographic variables.

Predictor	Beta	t	p	Interpretation
Climate concern	0.472	8.089	<.001	Strong positive predictor
Behavior importance	0.360	6.231	<.001	Positive and significant
Income category	0.211	4.226	<.001	Higher income → more willing to pay
Human responsibility	-0.175	-2.807	.005	Surprisingly negative effect
Eco usage intent	-0.030	-0.486	.628	Not statistically significant

Underlying dimensions of environmental behavior

To further explore the underlying structure of variables related to tourists' environmentally responsible behavior, a Principal Axis Factoring (PAF) analysis was conducted. The communalities table (Table 3) indicates acceptable shared variance among most variables, with values above the suggested minimum threshold of 0.4 (e.g., *behavior_importance*=0.649, *eco_island_choice*=0.672, *eco_accomodation_choice*=0.717). One variable (*pool_necessity*) showed an extremely low communality (0.081), suggesting poor representation in the extracted factors.

The total variance explained indicates that two factors were extracted with eigenvalues greater than 1. The first factor accounted for 49.66% of the variance, while the second added 11.38%, resulting in a cumulative explained variance of 61.03%, which is satisfactory for social sciences research (Table 6).

However, during the extraction process, the algorithm terminated at iteration 25 due to a communality value exceeding 1.0. This issue suggests potential multicollinearity or overextraction, possibly driven by strong inter-correlations among specific items.

Table 6: Communalities and variance explained in principal axis factoring.

Variable	Communality
Climate concern	0.449
Fire prevention intent	0.593
Eco usage intent	0.488
Pool necessity	0.081
Eco fee willingness	0.456
Human responsibility	0.529
Eco island choice	0.672
Eco accomodation choice	0.717
Behavior importance	0.649

Note: Two factors were extracted explaining a cumulative 61.03% of variance. The extraction was terminated at iteration 25 due to communality exceeding 1.0.

Discussion

This study aimed to explore the interplay between psychological resilience, environmental awareness, and tourist behavior in the context of climate change, with Skyros Island serving as a representative small island destination. The findings contribute to a growing body of literature emphasizing the multifaceted nature of sustainable tourism behavior and the complex factors that influence destination loyalty and support for adaptation measures [1,4,5].

The observed positive correlation between revisit intention and recommendation likelihood highlights the interconnected nature of tourist loyalty dimensions. These findings resonate with prior research that defines loyalty as encompassing both attitudinal (intent to revisit) and behavioral (word-of-mouth promotion) components [5]. In the case of Skyros, this dual loyalty may indicate a deeper emotional or cognitive attachment to the destination, stemming from positive experiences. However, the moderate strength of the relationship also suggests that other variables—such as environmental management, cultural uniqueness, or perceived value—may independently influence each loyalty dimension [11].

Gender differences also emerged as a significant factor in shaping willingness to pay an environmental fee, with male participants displaying more polarized attitudes [13]. This finding aligns with prior literature suggesting that men and women may differ in their risk perceptions and trust in institutional environmental policies. Such insights emphasize the need for targeted communication strategies that consider gender-specific concerns and motivational drivers when designing sustainability-related policies [6].

Perhaps one of the most intriguing findings concerns the relationship between environmental awareness and revisit intentions. While a general pro-environmental attitude was positively associated with word-of-mouth promotion, it exhibited a negative relationship with revisit intent. This result may reflect a behavioral tendency among environmentally conscious tourists to seek novelty in destinations or to evaluate each destination critically for its eco-performance before considering a return. This aligns with previous research noting that environmentally engaged tourists may prefer variety in their travel behavior and hold destinations to high sustainability standards [4,12,15].

The regression analysis underscored the importance of psychological variables—particularly climate concern and the perceived importance of environmental behavior—as key predictors of tourists' willingness to financially support sustainable tourism. These results suggest that emotional and cognitive engagement with climate change plays a critical role in motivating pro-environmental action. Interestingly, however, the variable "human responsibility" showed a negative association with eco-fee willingness, a finding that may be interpreted through the lens of psychological reactance theory. Individuals who feel personally responsible for environmental degradation might resist externally imposed solutions, perceiving them as moral impositions rather than autonomous decisions.

Further, the factor analysis revealed two coherent dimensions: *Pro-environmental Engagement* and *Risk/Responsibility Perception*. This supports the theoretical premise that sustainable tourist behavior involves both affective and cognitive components. The structure suggests that psychological resilience in tourism contexts manifests as a combination of proactive engagement and risk-oriented reflection. Nonetheless, methodological limitations—such as high communalities and poor convergence—point to the need for improved variable construction in future studies.

Finally, the weak associations between eco-fee willingness and destination loyalty suggest that behavioral intentions in tourism are not driven solely by environmental concern. Factors such as socioeconomic status, novelty-seeking tendencies, and general travel motivation likely modulate the strength of such associations, echoing the well-documented attitude–behavior gap in environmental psychology.

Conclusion

The findings of this study underscore the importance of psychological resilience and environmental awareness in shaping tourist behavior in the era of climate change. Tourists who demonstrate higher climate concern and place greater importance on sustainability are more likely to engage in supportive behaviors such as endorsing eco-fees and promoting sustainable destinations. However, this environmental consciousness does not uniformly translate into loyalty or repeat visitation, suggesting a need for destination managers to balance sustainability with other experiential and infrastructural qualities that retain visitors.

Skyros Island, as a small island destination, exemplifies both the challenges and opportunities associated with tourism resilience. The insights from this study can inform targeted adaptation strategies that enhance climate-conscious tourism while preserving local livelihoods and ecological integrity.

Limitations of the study

Several limitations must be acknowledged in this study:

1. **Sampling bias:** The survey was distributed only at exit points, potentially excluding tourists who departed outside the designated data collection period or who lacked digital access.
2. **Self-reported data:** Behavioral intentions and attitudes were self-reported, which may not always translate into real-world actions due to the well-documented intention–behavior gap [13].
3. **Cross-sectional design:** The study reflects a snapshot in time and cannot infer causal relationships or behavioral changes over time.
4. **Geographic limitation:** The findings are specific to Skyros Island and may not be generalizable to other destinations with different socio-environmental dynamics.
5. **Instrument limitations:** The failure of factor convergence and the presence of multicollinearity in some variables indicate the need for future instrument refinement and validation.

Future research should adopt longitudinal designs, integrate behavioral tracking or observational methods, and validate findings across diverse geographic contexts to strengthen the external validity and policy relevance of behavioral models in climate-sensitive tourism.

References

1. Scott D, Lemieux C. Weather and climate information for tourism. Procedia Environ Sci. 2010; 1: 146–83.
2. Dogru T, Marchio EA, Bulut U, Suess C. Climate change: vulnerability and resilience of tourism and the entire economy. Tour Manag. 2019; 72: 292–305.
3. Gómez-Martín MB, Matos-Pupo F, Bada-Díaz R, Escalante-Pérez D. Assessing present and future climate conditions for beach tourism in Jardines del Rey (Cuba). Atmosphere. 2020; 11: 1295.
4. Scott D, Gössling S. A review of research into tourism and climate change—launching the annals of tourism research curated collection on tourism and climate change. Ann Tour Res. 2022; 95: 103409.
5. León CJ, Giannakis E, Zittis G, Serghides D, Lam-González YE, García C. Tourists' preferences for adaptation measures to build climate resilience at coastal destinations: evidence from Cyprus. Tour Plan Dev. 2021; 20: 973–99.
6. Basu R. High ambient temperature and mortality: a review of epidemiologic studies from 2001 to 2008. Environ Health. 2009; 8: 40.
7. One Planet Sustainable Tourism Programme. Glasgow Declaration: a commitment to a decade of climate action. 2021.
8. Pathirana A. Small islands: living laboratories revealing global climate and sustainable development challenges. Front Clim.

2025; 6: 1445378.

9. Roy P, Pal SC, Chakrabortty R, Chowdhuri I, Saha A, Shit M. Effects of climate change and sea-level rise on coastal habitat: vulnerability assessment, adaptation strategies and policy recommendations. J Environ Manag. 2023; 330: 117187.

10. Intergovernmental Panel on Climate Change (IPCC). Climate change 2022: impacts, adaptation and vulnerability. Working Group II contribution to the Sixth Assessment Report of the IPCC (Chapter 15). Cambridge (UK): Cambridge University Press. 2022.

11. d'Angella F, Maccioni S, De Carlo M. Exploring destination sustainable development strategies: triggers and levels of maturity. Sustain Futures. 2025; 9: 100515.

12. Zapanti GT, Theodoulou I, Antonopoulos K, Skanavis C. Environment and blue tourism: moving towards sustainability—6th maritime tourism observatory for Skyros Island. Smart Tour. 2024; 5: 2908.

13. Ezeh PC. Willingness to pay in tourism and its influence on sustainability. Sustainability. 2024; 16: 10630.

14. Zapanti GT, Skanavis C. Thriving in the Anthropocene: building community resilience to combat climate change. In: 4th World Conference on Climate Change and Global Warming. 2024.

15. Gajić T, Minasyan LA, Petrović MD, Bakhtin VA, Kaneeva AV, Wiegel NL. Travelers' (in)resilience to environmental risks emphasized in the media and their redirecting to medical destinations: enhancing sustainability. Sustainability. 2023; 15: 15297.