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Applying the Theory of Planned Behavior to Understand Ecotourism Behavior: The Role of Human–Land Coordination and Self-Mastery

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Abstract: Ecotourism, which promotes environmental conservation and brings social and economic benefits through conscious and harmonious interactions between humans and nature, has become a principal tool for achieving these objectives. Sustainable tourism can only be supported with tourists realizing the elements of attraction toward ecotourism. This study analyzes the roots of ecotourism behavior using the Theory of Planned Behavior (TPB), specifically determining the roles of ecotourism tendency, attitude, human–land coordination stress, and sense of self-control in influencing tourists' intention and behavior toward ecotourism. This study used a cross-sectional design, requiring 847 participants to complete a standardized questionnaire assessing their behavior toward ecotourism, attitudes, and perceptions. Reliability testing, descriptive statistics, regression analysis, and factor analysis were used to analyze the datasets to discover major factors relating to ecotourism intention behavior. A consequent outcome is that ecotourism attitude and self-determination are the significant drivers of ecotourism desire, while behavioral norms only impact ecotourism attitude and selflessness. The study concluded that the subjective perception of tourists and their behavior control ability are the ones that affect their ecotourism behavior more than other factors. The findings suggest that enhancing tourists' ecotourism attitude, sense of self-control, and awareness of human–place coordination can significantly promote ecotourism behaviors. These results highlight the importance of comprehensive regional ecotourism analysis, robust environmental education, and promoting normative behaviors to foster sustainable tourism practices. To validate these findings, further research should focus on longitudinal studies and clinical trials to standardize integrated ecotourism strategies and explore the underlying mechanisms influencing ecotourism behavior.

Keywords: ecotourism; ecotourism tendency; ecotourism behavior; human–land coordination view; theory of planned behavior

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Citation: Fu, Y.; Zhao, J. Applying the Theory of Planned Behavior to Understand Ecotourism Behavior: The Role of Human–Land Coordination and Self-Mastery. *Sustainability* **2024**, *16*, 9248. https://doi.org/10.3390/su16219248

Academic Editor: Tsung Hung Lee

Received: 6 September 2024
Revised: 15 October 2024
Accepted: 18 October 2024
Published: 24 October 2024

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1. Introduction

The report to the 20th National Congress of the Communist Party of China emphasized the importance of respecting, accommodating, and protecting nature as a fundamental aspect of building a modern socialist country. The concept of "promoting harmonious coexistence between man and nature" was highlighted as a key requirement for Chinese modernization, with a strong focus on green development [1]. Ecotourism, which promotes environmental protection and advocates for the harmonious relationship between humans and nature, has emerged as a significant avenue for realizing these goals. As a practical embodiment of the principle that "clear waters and lush mountains are as valuable as gold and silver mountains," ecotourism has shown promising growth trends [2]. Sustainable development, essential for the future of humanity, positions high-quality ecotourism development as a crucial driver in accelerating modernization efforts [3].

China's diverse ecological environments, rich in tourist resources, history, and cultural heritage—including national, ecological, and red culture—offer unique opportunities for ecotourism. The development of ecotourism in these areas provides tourists with enriching experiences. It contributes to regional economic development, cultural preservation, and the strengthening of an ecological consciousness among tourists and local communities. These efforts are vital for maintaining ecosystems and protecting cultural diversity [4].

Ecotourism as a concept was first introduced by the International Union for Conservation of Nature (IUCN) in 1983 [5]. Since then, extensive international research has developed theoretical models and frameworks, revealing the impact of tourist behavior on both the ecological environment and the tourism economy through various case studies and quantitative analyses [6]. However, domestic research in China has been relatively limited, often focusing on single case studies, theoretical discussions, or interdisciplinary integration, with challenges in data collection and investigation [7]. Most research has been region-specific, concentrated in central and eastern China, and lacks a nationwide scope. Moreover, there has been a disconnect between research findings and their application in policy formulation and practical implementation, highlighting the need for strengthened theoretical discussions, methodological innovations, and research into tourists' subjective choices [8]. Sustainable tourism promotes tourism that prioritizes environmental conservation and economic justice for society. Doing this limits the destructive impacts of tourism on natural surroundings. As a result, biodiversity is preserved, ecosystems are protected, and animal habitats are maintained by eco-friendly practices encouraged among tourists and operators. On the economic side, ecotourism in the communities can boost job creation and promote economic income. The tourism monies from ecotourism, invested in conservation and community development projects, bring important economic stability and new expansion to the region [9]. The unique feature of ecotourism in protecting local cultures is that it facilitates the retention of traditional practices and culture, thus historically safeguarding the sites and cultural landscapes. Tourism ecology also serves as an educator regarding environmental protection and cultural issues through educational programs and guided tours. Such a promotion elevates conservation and promotes eco-friendly behavior during travel tours and activities. Furthermore, community life marking is boosted by providing education, health services, infrastructure, and informed and empowered participation. This ensures equitable distribution of tourism benefits and fosters social cohesion. Ecotourism integrates environmental conservation, economic growth, and social equity by supporting sustainable development [10,11]. Ecotourism promotes the responsible use of natural resources and the development of eco-friendly practices and infrastructure. Overall, it fosters environmental stewardship, economic prosperity, cultural preservation, educational enrichment, social well-being, and sustainable development, positively impacting both natural and human communities.

Existing studies on ecotourism using the TPB overlook the impact of human–land coordination and self-mastery on behavioral intentions. Research in this area is particularly limited in the Chinese context, where unique cultural and environmental factors play a crucial role. This study aims to fill the gap by incorporating human–land coordination and self-mastery into the TPB framework, providing a deeper understanding of ecotourism behaviors in China and offering insights for promoting sustainable tourism practices.

The primary objective of this study is to analyze the factors influencing ecotourism behavior intentions using the TPB as the theoretical framework. Specifically, the study aims to achieve the following:

- To identify the key factors influencing tourists' intentions to engage in ecotourism activities, focusing on their attitudes, subjective norms, and perceived behavioral control as outlined in the TPB.
- To examine how tourists' attitudes towards ecotourism influence their intentions to participate in ecotourism activities and explore how environmental education and awareness levels shape these attitudes.

- To assess the impact of human–place coordination stress on tourists' attitudes towards ecotourism and their sense of self-control, particularly in social pressures and values related to sustainable development.
- To analyze the relationship between tourists' sense of self-mastery and their ecotourism behavior intentions, determining how confidence in their ability to engage in eco-friendly travel behaviors affects their actual behavior.
- To quantify tourists' actual ecotourism behaviors and link these behaviors to their stated intentions, identifying the consistency between what tourists intend to do and what they do in practice.
- To offer practical recommendations for enhancing ecotourism development, focusing on strategies to improve environmental education, raise awareness, and foster sustainable tourism practices among tourists.

By achieving these objectives, the study seeks to provide a comprehensive understanding of the factors that drive ecotourism behavior, offering valuable insights for policymakers, tourism operators, and educators aiming to promote sustainable tourism practices.

The theoretical focus of our paper is centered on extending the Theory of Planned Behavior (TPB) by incorporating two additional variables: human–land coordination and self-mastery. These variables provide a deeper understanding of how social and environmental factors influence tourists' ecotourism behaviors.

The contributions of this study include advancing the TPB framework by integrating these unique dimensions, which highlight the interplay between subjective norms, perceived control, and environmental values. This extension offers fresh insights into sustainable tourism behavior, particularly in the context of China, filling a gap in existing ecotourism research.

This study is organized into several key sections. The introduction provides context and outlines the objectives. Section 2 reviews the existing literature. The research methods section details the theoretical framework, data collection process, and statistical techniques. The results and analysis section presents the findings from the questionnaire survey of 847 participants, highlighting relationships between key variables and their impact on ecotourism behavior intentions. The discussion interprets the results, offering practical recommendations for promoting sustainable tourism practices. The conclusion summarizes the key findings.

2. Literature Review

2.1. Ecotourism

Ecotourism is recognized as a form of sustainable tourism that emphasizes environmental conservation, cultural preservation, and the promotion of socio-economic benefits for local communities. The concept of ecotourism was first introduced by the International Union for Conservation of Nature (IUCN) in 1983, and it has since evolved into a critical component of global tourism strategies aimed at minimizing the environmental impact of travel while maximizing cultural and economic benefits for host regions [12]. Studies have shown that ecotourism can significantly contribute to biodiversity conservation and environmental awareness among tourists [13]. However, challenges remain in balancing the economic goals of tourism with the need for environmental protection, particularly in developing countries where tourism often plays a pivotal role in the local economy [14].

2.2. Ecotourism Tendency

Ecotourism tendency refers to the inclination or willingness of tourists to engage in ecotourism activities. Several factors influence this tendency, including demographic characteristics, environmental knowledge, previous experiences, and personal values [15]. Research indicates that individuals with higher environmental awareness and a strong connection to nature are more likely to participate in ecotourism [16]. Additionally, socio-demographic factors such as age, education level, and income significantly shape eco-

tourism tendencies [17]. Understanding these tendencies is crucial for developing targeted marketing strategies that effectively promote ecotourism to diverse tourist segments.

2.3. Ecotourism Behavior

Ecotourism behavior is the actual participation in ecotourism activities, which often reflects the tourist's attitudes, beliefs, and intentions. The gap between intention and behavior in ecotourism has been widely studied, with researchers pointing out that while many tourists express interest in eco-friendly practices, fewer follow through with actions that align with these values during their travels [18]. Factors that influence ecotourism behavior include perceived behavioral control, subjective norms, and the availability of eco-friendly options [19]. Recent studies have also highlighted the role of education in bridging the gap between intention and action, suggesting that enhanced environmental education can lead to more consistent eco-friendly behaviors [20].

2.4. Human–Land Coordination View

Human–land coordination emphasizes the harmonious relationship between human activities and the natural environment. This view is particularly relevant in ecotourism, where the sustainable use of natural resources is paramount. The human–land coordination view stresses the importance of aligning tourism development with the ecological carrying capacity of a region, ensuring that tourism activities do not compromise the health of ecosystems [21]. In China, this concept has been integrated into national tourism policies, promoting a balanced approach to tourism development that considers both environmental and social factors [22]. The human–land coordination view also supports the idea that sustainable tourism can contribute to the long-term preservation of cultural and natural heritage [23].

2.5. Theory of Planned Behavior

The TPB provides a robust framework for understanding the factors influencing ecotourism behavior. According to the TPB, individual behavior is driven by behavioral intentions, which are, in turn, influenced by attitudes, subjective norms, and perceived behavioral control [24]. The TPB has been widely applied in ecotourism to predict tourists' intentions to engage in eco-friendly practices. Studies have shown that positive attitudes towards the environment, strong social pressure to act sustainably, and a high degree of perceived control over one's actions are significant predictors of ecotourism behavior [25]. The TPB also highlights the importance of perceived barriers and facilitators in determining whether tourists will follow through with their intentions, making it a valuable tool for designing interventions to promote sustainable tourism practices [26]. To further strengthen the literature review and address concerns about the research gap, it is important to acknowledge that numerous studies have applied the TPB to examine ecotourist behaviors, particularly in assessing attitudes, subjective norms, and intentions toward ecotourism activities. For example, [27] extended the TPB to explain environmentally responsible behavior in nature-based tourism, while [28] examined the dimensions and mechanisms of tourists' environmental behavior using the TPB framework. Similarly, [29] explored how personal values and environmental consciousness shape tourists' visiting intentions toward eco-friendly destinations, and [30] evaluated students' behavioral intentions toward ecotourism from an extended TPB perspective. Given the breadth of existing research, it is essential to articulate the unique contribution of this study clearly. While the TPB has been widely used, our research extends this framework by integrating additional variables such as ecotourism tendency, coordinated stress, and sense of self-control. These variables are crucial for understanding the context of ecotourism in China, where the rapid growth of tourism presents unique environmental and social challenges. By focusing on these factors, our study aims to provide deeper insights into how tourists' behaviors are shaped by these additional dimensions, offering a more comprehensive understanding that is not fully captured by existing TPB applications. This extension of the TPB framework helps address

a literature gap by considering the broader context and unique influences on ecotourism behavior.

Prior literature has examined the core theoretical TPB variables, including perceived control, perceived behavioral control, attitude, and subjective norm while ignoring variables like human–land coordination and self-mastery. The current study fills this gap by incorporating these elements into the TPB model to understand ecotourism behaviors better. Consequently, it provides a new perspective for understanding the associations between environmental values and the control of intentions of ecotourism, thereby addressing a research gap in sustainable tourism. This study addresses the gap by incorporating these elements into the TPB framework, providing a more comprehensive understanding of ecotourism behaviors. Doing so offers a novel approach to analyzing how environmental values and individual control influence ecotourism intentions, filling a critical gap in sustainable tourism research.

3. Research Methods

This study is based on the TPB, combined with quantitative and qualitative analysis for systematic research shown in Figure 1. The TPB involves the process of behavior tendency and behavior generation. It holds that people's planned behavior results from careful planning, and various influencing factors regulate its generation process. These factors indirectly affect individual attitudes, subjective norms, and self-control by influencing beliefs, ultimately influencing individual behavior tendencies and actual behavior [31].

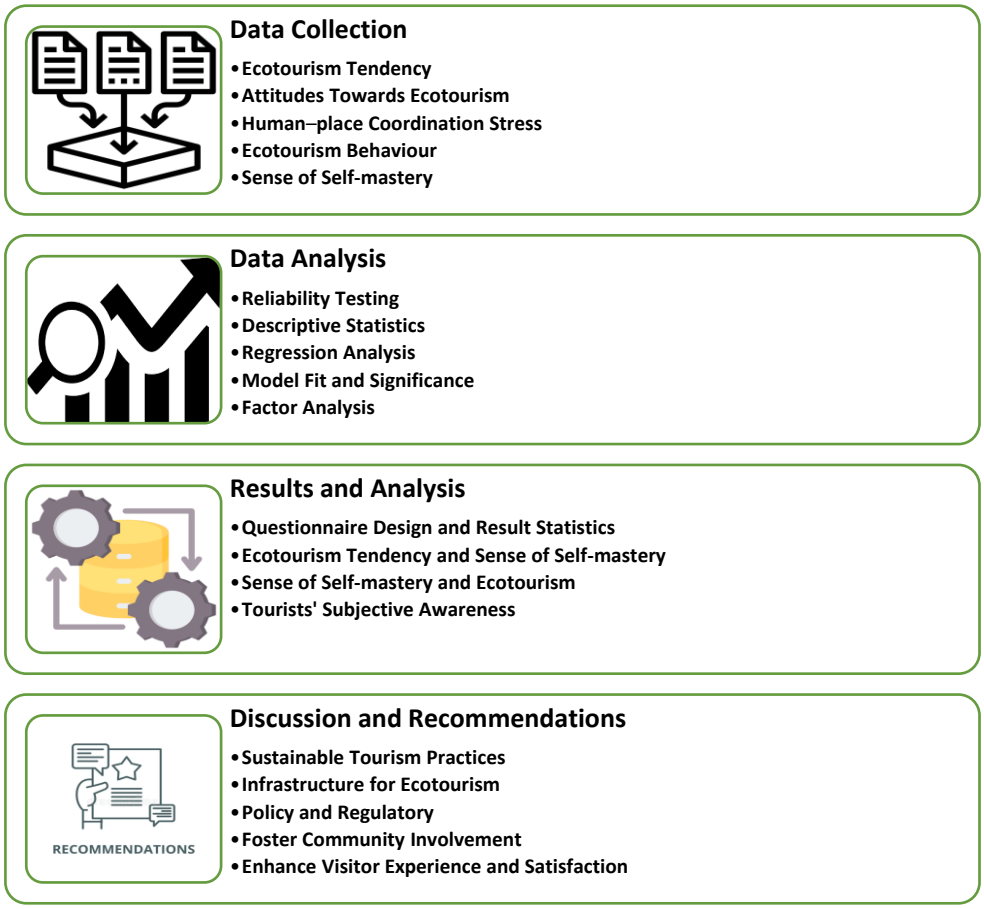


Figure 1. Research workflow on the influence of ecotourism.

In the quantitative analysis part of the paper, the principles of systematic, scientific, rational, and data availability for index selection are followed. Based on the requirements for high-quality tourism development in the new era, the questionnaire survey is designed

based on five variables, referring to the existing relevant research. The regression analysis in statistics is used to analyze the factors influencing ecotourism and the influence of human–land coordination on ecotourism. This study points out that to effectively balance ecosystem protection and local economic development, ecotourism activities must ensure that tourists respect the natural environment.

Regression analysis, as a calculation method and theory, is used to study the relationship between dependent variables and independent variables, assess the strength of the influence of multiple independent variables on a dependent variable, explore the interaction of variables of different scales, and reveal the significant relationship between independent variables and dependent variables. In the qualitative analysis part, according to the collected 847 questionnaire feedback, the internal reasons and external forms of people's choice of ecotourism are compared, and then the development status of domestic ecotourism and tourists' satisfaction are analyzed.

We employed a combination of random sampling and targeted outreach via online platforms, including social media and email lists. The survey was distributed over three months, with reminders to maximize participation. Inclusion criteria ensured that participants were over 18 years old and had some awareness or experience with ecotourism. Random sampling was conducted through online platforms, including social media, travel forums, and email lists, ensuring a broad geographic reach across Northeast China (Heilongjiang, Jilin, Liaoning), North China (Beijing, Tianjin, Hebei, Inner Mongolia), East China (Jiangsu, Zhejiang, Shanghai), South Central China (Guangdong, Hunan, Hubei), Southwest China (Sichuan, Yunnan, Guangxi), and Northwest China (Shaanxi, Gansu, Xinjiang). This approach helped us gather responses from individuals with varying backgrounds, ensuring that the sample was not biased toward any particular demographic group. Targeted outreach was also employed to engage specific groups with a strong interest in ecotourism, such as members of environmental organizations, participants in ecotourism-related activities, and students in environmental science programs. This ensured that the study captured the perspectives of individuals likely to have informed opinions about the factors influencing their ecotourism intentions and behaviors.

By employing these strategies, we aimed to ensure that the sample was diverse and relevant to the study's objectives. Thus, we provided robust data to fill the identified gap in understanding how additional variables, such as human–place coordination and sense of self-mastery, influence ecotourism behavior intentions.

In this paper, the quantitative analysis variables of "5,4,3,2,1" from very satisfied/agree/willing to dissatisfied/agree/willing are assigned to five levels. Regarding people's subjective cognition and attitude, data collected with the Likert scale are more suitable for in-depth analysis of difficult-to-observe variables [8].

3.1. Studying the Definition and Measurement of Variables

Due to its uncertainty, subjective and objective factors such as season and time quickly affect the tourism industry. Here, tourists' subjective attitude choice is selected to measure the development of ecotourism, and the influence of human–place coordination on ecotourism behavior intention is explored. Based on the TPB, the following factors are selected as research variables: ecotourism tendency, attitude, human–land coordination view pressure, ecotourism behavior, and sense of self-mastery. The concept of ecotourism tendency is based on behavioral tendencies toward sustainable practices, as discussed by [32]. Similarly, attitudes towards ecotourism are grounded in the TPB [33], with additional insights from [34]. The concept of human–land coordination stress draws from Ajzen's [35] work on subjective norms and is contextualized within ecotourism. The section on ecotourism behavior incorporates findings from Lee and Moscard [36]. The sense of self-mastery is linked to perceived behavioral control, as highlighted in Ajzen's framework.

3.1.1. Ecotourism Tendency

Ecotourism tendencies refer to tourists' tendency to engage in ecotourism activities. Survey participants evaluated their willingness or plan to participate in ecotourism based on actual situations. They used thirteen questions to measure this, including a 5-level Likert scale ranging from "strongly agree/willing" to "disagree/willing."

3.1.2. Attitudes towards Ecotourism

Ecotourism attitude refers to tourists' attitude towards ecotourism and evaluation of tourism behavior. Eleven questions were set for this variable, using 5-level Likert options to evaluate tourists' satisfaction and feelings on ecotourism participation.

3.1.3. Human–Place Coordination Stress

Human–land coordination stress is the social pressure brought by the values of socially sustainable development based on human–land coordination when tourists practice ecotourism, and it is the core subjective norm of ecotourism. Four questions are designed to evaluate tourists' perception of other people's and society's expectations of their ecotourism activities. A 5-level Likert option was used to evaluate each question.

3.1.4. Ecotourism Behavior

Ecotourism behavior refers to the activities tourists carry out according to their personal needs and sustainable development values. To evaluate the tourists' experience degree and satisfaction degree of ecotourism, four questions were designed and quantified with 5-level Likert options.

3.1.5. Sense of Self-Mastery

The sense of self-mastery refers to understanding whether tourists feel they can control the choice of ecotourism behavior under the influence of human–place coordination values when practicing ecotourism behavior and the evaluation of this feeling. Five questions were designed to evaluate tourists' perceptions and evaluation of their sense of self-mastery. Each question was evaluated using a 5-level Likert option.

3.2. Data Analysis Techniques

The data analysis techniques employed in this study are designed to systematically evaluate the relationships between various factors influencing ecotourism behavior intentions. The analysis is grounded in applying statistical methods, including reliability testing, descriptive statistics, and regression analysis, using SPSS Statistics V21.0. The following outlines the key steps and mathematical approaches used in the data analysis:

3.2.1. Reliability Testing

The internal consistency and reliability of the survey instrument are assessed using Cronbach's alpha (α). Cronbach's alpha is calculated as follows:

$$\alpha = \frac{N \cdot \overline{c}}{\overline{v} + (N-1) \cdot \overline{c}} \quad (1)$$

where:

- N is the number of items.
- $\overline{c}$ is the average inter-item covariance among the items.
- $\overline{v}$ is the average variance of each item.

The testing was employed to ensure the internal consistency of the questionnaire items, with Cronbach's alpha used to assess the reliability of the scales. A threshold of 0.7 was set as the minimum acceptable value, indicating good reliability.

3.2.2. Descriptive Statistics

Descriptive statistics are computed to summarize the demographic characteristics of respondents and the distribution of key variables. These statistics include measures such as mean (μ), standard deviation (σ), frequency (f), and percentage (%).

- Mean (μ):

$$\mu = \sum_{i=1}^{N} \frac{x_i}{N} \tag{2}$$

where x_i represents each score and N is the total number of observations.

- Standard Deviation (σ):

$$\sigma = \sqrt{\sum_{i=1}^{N} \frac{(x_i - -\mu)^2}{N}} \tag{3}$$

where x_i represents each individual score, μ is the mean of the scores, and N is the total number of observations, the demographic characteristics of the participants and the distribution of key variables. This helps to provide context for the sample and assess the generalizability of the findings.

3.2.3. Regression Analysis

Multiple regression analysis is used to evaluate the influence of independent variables on the dependent variable, ecotourism behavior intention. The general form of the multiple regression model is the following:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_n X_n + \epsilon \tag{4}$$

where:

- Y is the dependent variable (ecotourism behavior intention).
- β_0 is the intercept.
- $\beta_1, \beta_2, \beta_3, \ldots \beta_n$ are the regression coefficients for each independent variable X_1, X_2, $X_3, \ldots, X_n$.
- ϵ is the error term.

The significance of each predictor is evaluated using t-tests, where the null hypothesis (H0 : $\beta_i = 0$) is tested against the alternative hypothesis (H1 : $\beta_i \neq 0$). The t-value is computed as follows:

$$t = \frac{\beta_i}{SE(\beta_i)} \tag{5}$$

where $SE(\beta_i)$ is the standard error of the coefficient β_i, the relationships between independent and dependent variables in the context of our hypotheses. Specifically, multiple regression analysis allowed us to assess the impact of various predictors (e.g., ecotourism tendencies, sense of self-mastery) on ecotourism behavior intentions.

3.2.4. Model Fit and Significance

The overall fit of the regression model is assessed using the coefficient of determination (R^2) and the F-test. The R^2 value indicates the proportion of variance in the dependent variable explained by the independent variables:

$$R^2 = 1 - \frac{\sum_{i=1}^{N} \left(Y_i - \hat{Y}_i\right)^2}{\sum_{i=1}^{N} \left(Y_i - \overline{Y}_i\right)^2} \tag{6}$$

where Y_i is the observed value, $\hat{Y}_i$ is the predicted value, and $\overline{Y}_i$ is the mean of observed values.

The F-test evaluates the overall significance of the model:

$$F = \frac{(SSR/k)}{(SSE/(N-k-1))} \tag{7}$$

where SSR is the regression sum of squares, SSE is the error sum of squares, k is the number of predictors, and N is the total number of observations.

3.2.5. Factor Analysis

Factor analysis is conducted to identify underlying relationships between observed variables. The Kaiser–Meyer–Olkin (*KMO*) measure and Bartlett's test of sphericity are used to assess the suitability of the data for factor analysis. The *KMO* statistic is calculated as follows:

$$KMO = \frac{\sum\sum {r_{ij}}^2}{\sum\sum {r_{ij}}^2 + \sum\sum {u_{ij}}^2} \tag{8}$$

where r_{ij} is the correlation between variables and u_{ij} is the partial correlation between variables.

The Bartlett's test evaluates the null hypothesis that the correlation matrix is an identity matrix:

$$\chi 2 = -(N - 1 - \frac{2p+5}{6})\ln \mid R \mid \tag{9}$$

where p is the number of variables and R is the correlation matrix.

These mathematical and statistical techniques analyze the survey data, ensuring a rigorous and robust evaluation of the factors influencing ecotourism behavior intentions.

4. Results and Analysis

This section presents the findings from the 847-participant survey, including the statistical analysis of the relationships between ecotourism tendency, attitudes, human–place coordination stress, ecotourism behavior, and sense of self-mastery and their impacts on ecotourism behavior intentions.

4.1. Questionnaire Design and Result Statistics

With the help of the questionnaire design platform of Juanxing, an electronic questionnaire was designed, and anonymous questionnaires were randomly distributed to people through the network platform. Only valid questionnaires were collected, and 847 valid questionnaires were finally collected. The data collection was conducted using an online questionnaire, distributed via social media, travel forums, and email lists. SPSS Statistics V21.0 was used to test the internal consistency and reliability of 847 questionnaires. The Cronbach α coefficient value was 0.972, indicating good reliability and a reasonable questionnaire settings. The 847 valid samples were from 253 cities in 31 provincial-level administrative regions, with various sources, including 434 males and 413 females, involving various people (Table 1).

Among the 847 questionnaires, only one person showed that they had not received environmental education; most of them (64.82%) received environmental education in school when they were teenagers, and others received environmental education in different ways (such as classical environmental education, environmental training that can be passed on to you, visiting natural parks or reserves, and family education), with similar proportions (Figures 2 and 3). Most people who filled out the questionnaire had a particular understanding of ecotourism and human–land coordination (Figures 4 and 5), which was representative.

Table 1. Distribution and proportion of different groups of survey objects.

Gender	Male	Female				
	434 (51.24%)	413 (48.76%)				
Age	Under 18	Ages 18–25	Ages 26–35	Ages 36–45	Ages 46–55	Age 56+
	27 (3.19%)	126 (14.88%)	313 (36.95%)	231 (27.27%)	119 (14.05%)	31 (3.66%)
Occupations	Student	Full-Time Workers	Part-Time Workers	Freelancers	Retirement	
	55 (6.49%)	430 (50.77%)	125 (14.76%)	206 (24.32%)	31 (3.66%)	
Education	Junior High School Education or Less	High School/Technical/ Technical School	Junior College	Undergraduate	Graduate and Above	
	91 (10.74%)	86 (10.15%)	299 (35.3%)	254 (29.99%)	117 (13.81%)	

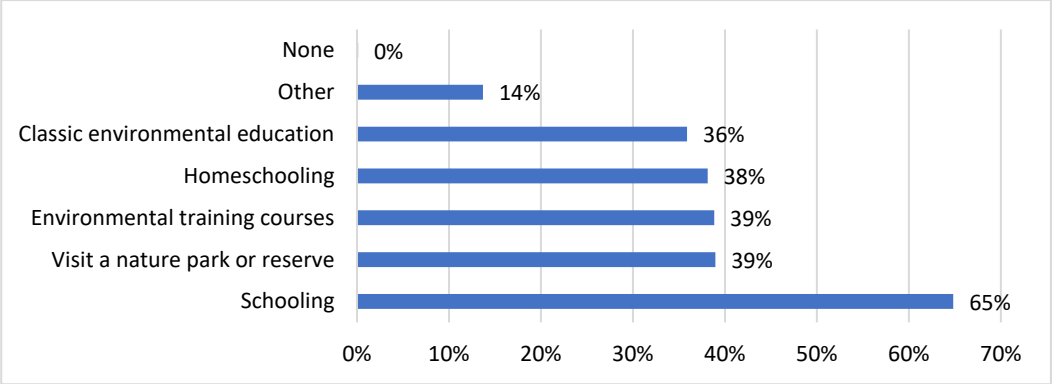


Figure 2. Approach to environmental education.

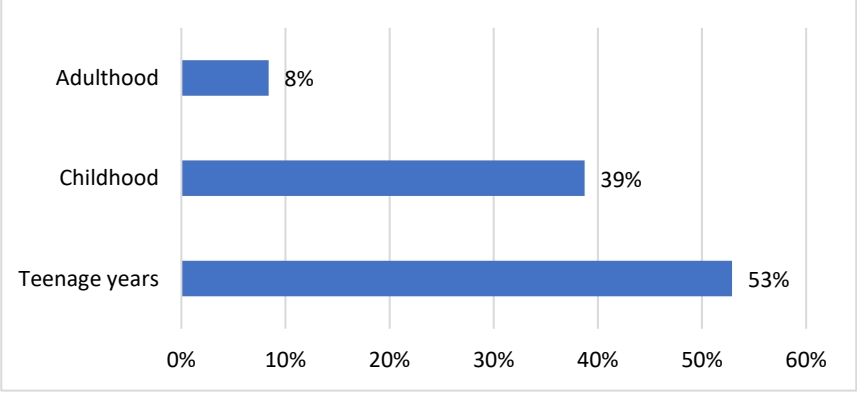


Figure 3. Period of receiving environmental education.

The *KMO* and Bartlett tests were used to analyze the correlation between the variables. The results showed that the *KMO* value of the ecotourism propensity survey was 0.977; the *KMO* value of the ecotourism attitude survey was 0.971; the *KMO* value was 0.809 for the stress survey on human–land coordination view; the *KMO* value of the ecotourism behavior survey was 0.815; and the *KMO* value of the survey question measuring the sense of self-mastery was 0.881. The *KMO* values were all greater than 0.8, and the significance was less than 0.05. The data obtained from the questionnaire were suitable for factor analysis.

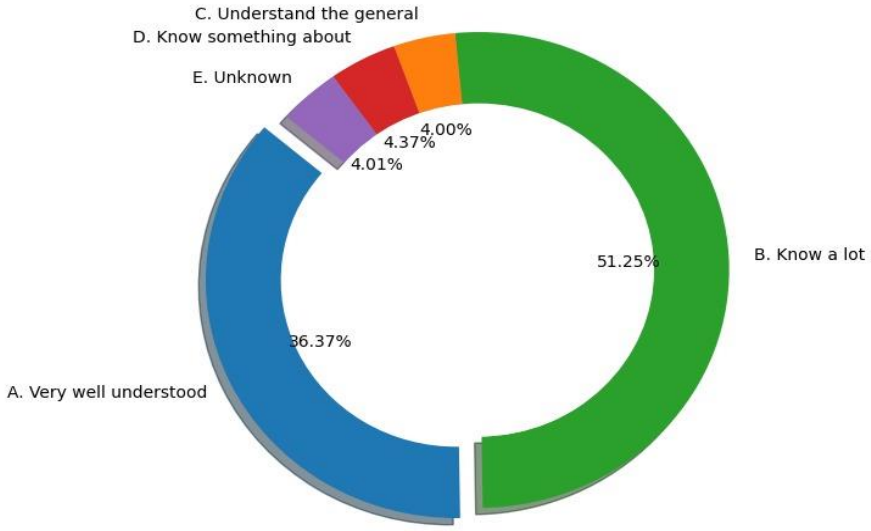


Figure 4. Understanding level of human–earth coordination view.

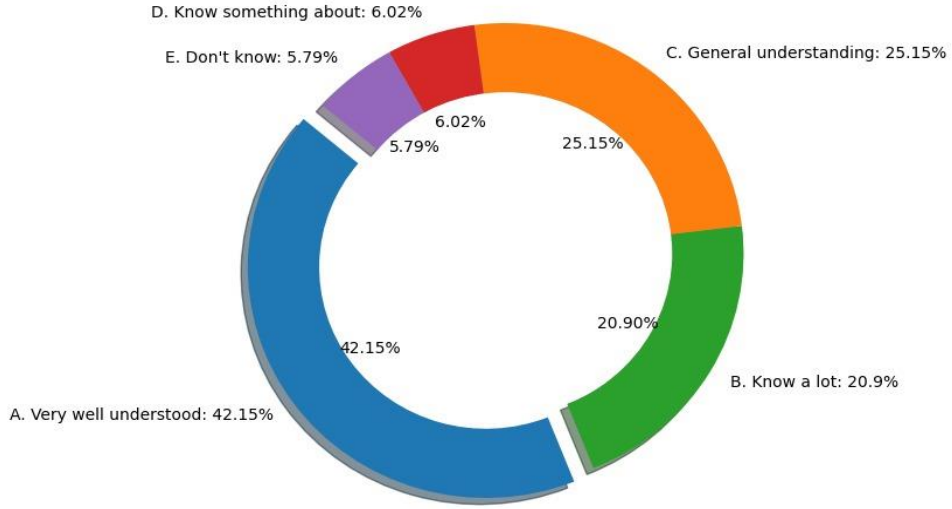


Figure 5. Understanding of ecotourism.

IBM SPSS Statistics 21 was used for the regression analysis of the sample data to test the influencing factors of ecotourism and the impact of human–land coordination on ecotourism.

The results are shown in Table 2. The R^2 values of the regression models demonstrate varying degrees of explanatory power for ecotourism behavior intentions. Model 1, focusing on ecotourism tendency, explains approximately 78.5% of the variance, while Model 2, which examines self-control, accounts for 73.1%. Model 3, combining both predictors, increases the explanatory power to 80.0%. The strongest model, Model 4, which includes ecotourism attitude, explains 89.5% of the variance, highlighting its significant role in shaping intentions. Lastly, Model 5, incorporating human–land coordination view pressure, accounts for 75.2% of the variance, emphasizing the importance of external social norms. These findings underscore the complex interplay of factors influencing tourists' ecotourism behavior intentions and the need for targeted interventions.

Table 2. Regression model of ecotourism behavioral intention factors.

	Dependent Variable	Independent Variable	Non-Standardized Coefficient	T	*p* Value	F	*p* Value	R^2
Model 1	Ecotourism behavior	(Constant)	0.139	3.630	0.000	3085.848 ***	0.000	0.785
		Ecotourism tendencies	0.951 ***	55.550	0.000			
Model 2	Ecotourism behavior	(Constant)	0.284	6.866	0.000	2299.200 ***	0.000	0.731
		Sense of self-control	0.914 ***	49.950	0.000			
Model 3	Ecotourism behavior	(Constant)	0.104	2.804	0.005	1689.292 ***	0.000	0.800
		Feeling in control	0.311 ***	7.982	0.000			
		Ecotourism inclination	0.668 ***	17.053	0.000			
Model 4	Ecotourism tendencies	(Constant)	0.086	3.400	0.001	3607.087 ***	0.000	0.895
		Feeling in control	0.342 ***	13.356	0.000			
		Ecotourism attitude	0.610 ***	24.296	0.000			
Model 5	Ecotourism attitude	(Constant)	0.253	6.335	0.000	2565.044 ***	0.000	0.752
		Human–environment coordination view pressure	0.821 ***	50.646	0.000			
Model 6	Feeling in control	(Constant)	0.218	5.038	0.000	1966.403 ***	0.000	0.699
		Human–environment coordination view pressure	0.776 ***	44.344	0.000			
Model 7	Ecotourism behavior	(Constant)	0.034	0.915	0.360	911.532 ***	0.000	0.812
		Human–environment coordination views stress	0.135 ***	4.237	0.000			
		Ecotourism inclination	0.415 ***	8.056	0.000			
		Ecotourism attitude	0.236 ***	4.874	0.000			
		Sense of self-mastery	0.200 ***	4.896	0.000			

Note: *** represents significance level of 0.001.

4.2. Ecotourism Tendency and Sense of Self-Mastery Are Important Factors Influencing Ecotourism Behavior

Model 1 shows that the relationship between ecotourism tendency and ecotourism behavior is significantly established as follows : $Y = 0.951X + 0.139$, where Y is ecotourism behavior and X is ecotourism tendency. The explanation rate (R^2) of Model 1 of ecotourism tendency on ecotourism behavior is 78.5%, and only about one-fifth of the variance of ecotourism behavior cannot be explained. It can be seen that ecotourism tendencies are the main influencing factor. According to the planned behavior theory, perceived behavior control is a condition of reality control, and sometimes, it can directly affect interpretative behavior [37]. The explanatory rate (R^2) of Model 2 is 73.1%, indicating that tourists' sense of self-control significantly impacts ecotourism behavior. In Model 3, ecotourism inclination and sense of self-control are taken as independent variables, showing the significant influence on ecotourism behavior. According to Model 1, 2, and 3 analysis, ecotourism behavior is mainly affected by ecotourism inclination and sense of self-control, indicating that ecotourism inclination and sense of self-control can explain ecotourism behavior well.

4.3. The Sense of Self-Mastery and Ecotourism Attitude Will Affect the Tourists' Ecotourism Inclination

According to Model 4, tourists' sense of self-mastery and attitude towards ecotourism can largely explain the difference in ecotourism tendency (R^2 = 89.5%), and the relationship among variables is as follows: $X = 0.342Z_1 + 0.61Z_2 + 0.086$, where X is ecotourism tendency, Z_1 is sense of self-mastery, and Z_2 is ecotourism attitude. The unexplained part of the

model (R^2 = 10.5%) may include the intermediary variables between behavioral intention and behavior [38], such as tourists' executive ability and other internal factors.

4.4. Human–Place Coordination View Is the Basis for Tourists to Choose Ecotourism

As can be seen from Model 5 and Model 6, tourists' human–place coordination concept affects their ecotourism attitude and sense of self-mastery. The explanatory rates of Model 5 (R^2 = 75.2%) and Model 6 (R^2 = 69.9%) reflect the influence of subjective norms. Although they play a major role, they are not the only ones.

4.5. Tourists' Subjective Awareness Is the Main Influencing Factor of Ecotourism Behavior

According to Model 7, tourists' human–place coordination view, ecotourism inclination, ecotourism attitude, and sense of self-control jointly affect tourists' choice of ecotourism behavior. The explanatory rate (R^2) of Model 7 is 81.2%, indicating that tourists' subjective consciousness is the main factor affecting their ecotourism behavior. According to the qualitative analysis, it can be found that tourists' living habits, peers, and other internal and external factors will also affect their choice of ecotourism behavior.

With the rapid economic growth, people's values and pursuit of spiritual satisfaction have been strengthened, leading to more complex cognition and behavior choices about travel. Although most people have received the message of sustainable development and gradually realized its importance, forming the idea of human–land coordination, spiritual growth is a gradual and cumulative process. There is a particular gap between the speed of spiritual growth and the rapid growth of economic power, which leads to the phenomenon that the level of thought cannot adapt to the behavior.

Based on this background, this paper combines qualitative and quantitative methods to analyze the factors influencing ecotourism based on the human–land coordination view. According to the research findings, like previous studies [39], ecotourism inclination and sense of self-control significantly affect tourists' ecotourism behavior [40]. Tourists' perception of ecotourism and belief that they can control and influence ecotourism behavior significantly impact ecotourism inclination. The pressure of human–land coordination impacts their ecotourism attitude and sense of self-control. The pressure of human–place coordination, their subjective attitude tendency, and their ability to control their behavior greatly determine the choice of ecotourism behavior. To some extent, it shows that other people's expectations and social pressure play an important role in shaping an individual's attitude towards ecotourism. The tendency and attitude of ecotourism directly impact the actual ecotourism behavior of individuals. The higher one's attitude and inclination towards ecotourism, the more likely one is to choose and implement ecotourism behavior. Human–land coordination plays an important role in the attitude towards ecotourism and the sense of self-control. Education and guidance help people understand and recognize the relationship between human beings and nature, paying more attention to the issues of nature protection and sustainable development and participating more actively in ecotourism activities to promote the high-quality development of ecotourism.

4.6. Discussion and Recommendations

Given the impact analysis of tourists' ecotourism behavior and considering the complexity of reality, this paper discusses the relationship between ecotourism cognition and choice from three perspectives: comprehensive analysis of regional ecotourism, environmental education, and strengthening tourists' awareness of normative words and actions.

4.6.1. Comprehensive Analysis of Regional Ecotourism

According to the results of the collected questionnaire, tourists will comprehensively consider factors such as nature, culture, environment, activities, climate, transportation, cost, and educational value when choosing tourist destinations. Their satisfaction with ecotourism activities mainly comes from the experience of contacting the natural environment, relaxing their body and mind, broadening their horizons, and experiencing culture. There-

fore, to provide a better tourism experience and more abundant ecotourism choices, regions should strengthen comprehensive analysis of regional ecotourism, including in-depth research on resource endowment conditions, tourism development conditions, ecological environment conditions, ecotourism demand, preference, and predictive factors [41]. Combining quantitative and qualitative data, this can systematically analyze tourists' needs and preferences and understand their attitudes and expectations towards ecotourism activities and destinations. At the same time, the future trend of regional ecotourism development is predicted and analyzed, taking into account predictive factors such as natural environment, demographic structure, and tourism market trends [42–44].

The reason behind the choice to participate in ecotourism is depicted in Figure 6. The natural landscape ranks highest at 40%, while activity experience and ecological environment are 36% and 35%, respectively. Other priorities are education (value = 30%), culture (value = 29%), climate (value = 29%), and transportation and cost (value = 28%). Other emerged as the least influential factor taking only 8% of the participants' feedback.

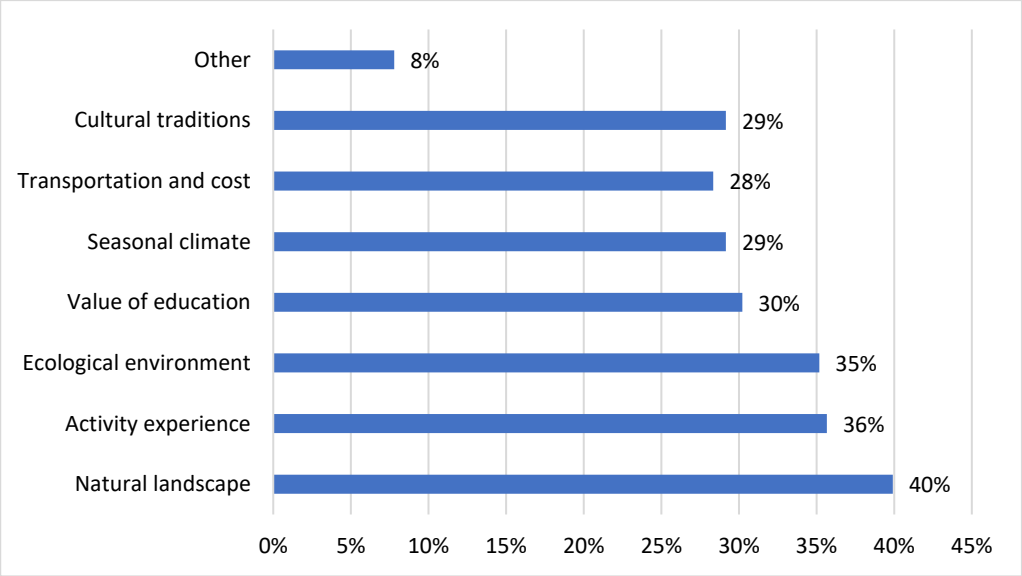


Figure 6. Concerns of tourists when choosing ecotourism destinations.

Figure 7 illustrates the following, explaining why tourists participate in ecotourism: The most significant percentage of respondents, 54%, cited leisure and recreation as a reason for visiting urban woods and natural environment exposure; 47% cited de-stressing; 46% cited breathing fresh air. Acquiring new knowledge and knowledge are the same in importance; local customs and traditions also matter, at 34%, and other concerns amount to 12%.

In the process of tourism, tourists are very willing to participate in eco-related activities such as hiking, cycling, water sports, fishing, and agricultural experience (Figure 8). Therefore, conducting a comprehensive assessment and classification of the relevant regions' spatial patterns and environmental resources is particularly important. This assessment should include a comprehensive assessment of the region's ecosystem status, biodiversity, natural landscape, and cultural heritage [45–48]. To this end, appropriate assessment tools and indicators such as ecological footprint analysis, environmental sensitivity assessment, and landscape assessment can be used to quantify and describe the state of environmental resources in a region. Based on the assessment results, regions are classified to clarify the characteristics and advantages of each region and provide guidance for the formulation of differentiated ecotourism development strategies in different regions [48].

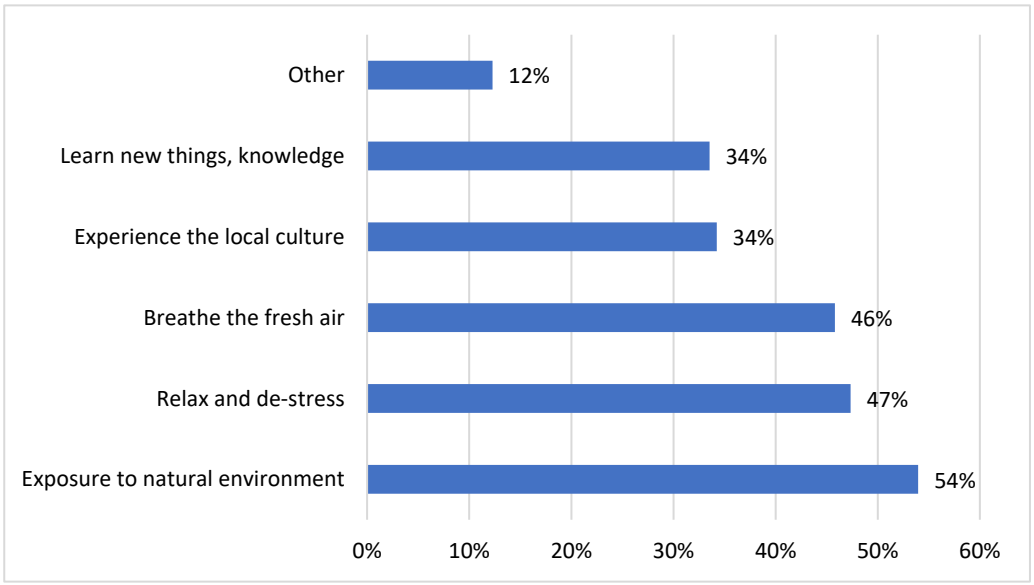


Figure 7. Reasons why tourists choose ecotourism.

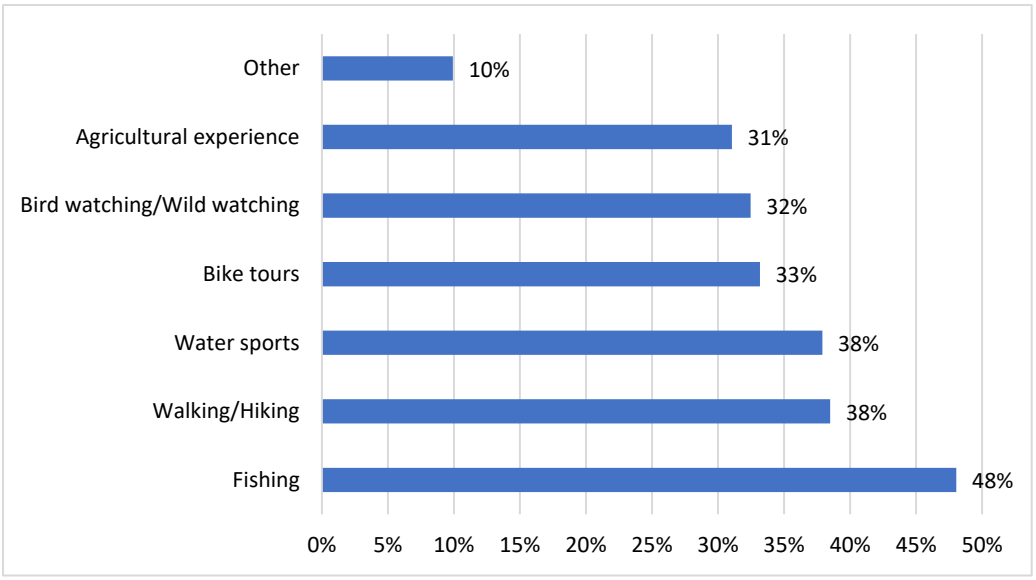


Figure 8. Tourist participation in ecological activities.

Comprehensive dynamic analyses are used to perform ecological activities in ecologically fragile areas. The region may be well studied with the help of system dynamics models or other adequate analytical methods. The impacts and potential risks of ecotourism activities that may result will be better understood [49]. In addition, this issue examines this region's entire ecosystem capacity and picks the most beneficial activity. This condition is practiced by applying expertise in ecological assessment, suitability examination, and conservation value assessment [50–52].

Concern acts as the last part of the research: first of all, the creation of an ecological compensation mechanism is so essential for driving ecological construction, and secondly, it better protects and utilizes resources in ecologically fragile areas and leads to natural resource tourism going big with sustainable development in this area. With this being so, these options should be the subject of the investigation as they may differ in different settings [53]. This includes exploring in depth the relationship between ecotourism and conservation, education, community engagement, etc., to ensure that tourism activities have a positive economic, social, and environmental impact on local communities [54].

When establishing an ecological compensation mechanism, consideration may be given to developing an ecological tax, setting up an ecological compensation fund, or implementing other incentives [55].

4.6.2. Ecotourism Environmental Education

Environmental education is one of the important differences between ecotourism and traditional mass tourism and plays a vital role. In the process of ecotourism, environmental education should become the main concern of tourists. Tourists will feel the pressure of socially sustainable development from family, friends, public opinion, policy publicity, school education, and the workplace (Figure 9). We should study how to carry out the core issue of environmental education, that is, how to enable tourists to live in harmony with the natural environment and scenic spots through learning in tourism activities and accepting the influence of ecological civilization subtly to achieve the goal of sustainable development [56].

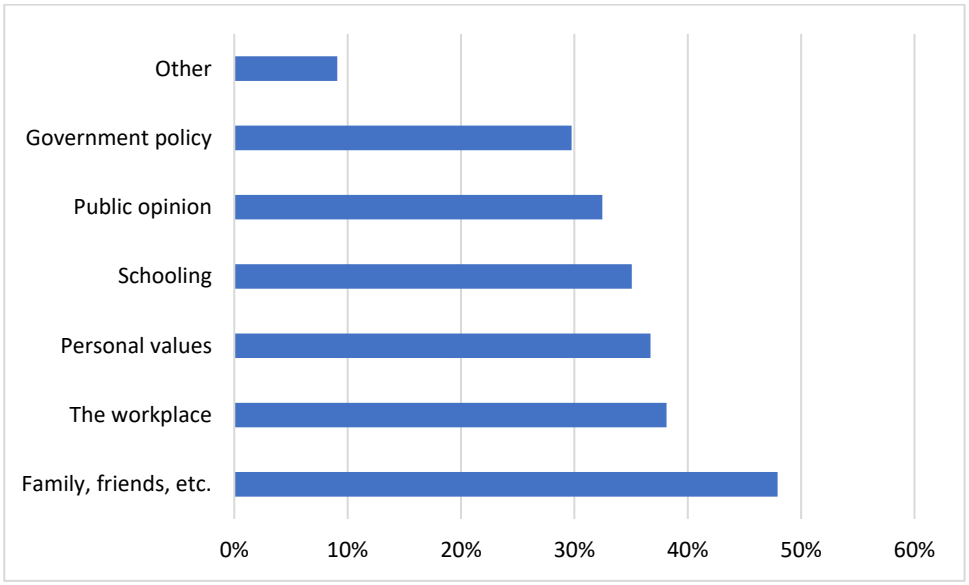


Figure 9. Sources of tourists' pressure on the concept of social sustainable development.

Environmental education in the process of ecotourism helps tourists to correctly view the mutual influence of geographical environment and human activities, make them realize that they should respect the laws of nature in the process of utilizing and transforming nature, and deeply understand and agree with the importance of human–land coordination for sustainable development. At the same time, environmental education also improves tourists' cultural literacy, enhances their ability to respect local culture, and strengthens their sense of social responsibility. Such environmental education guides tourists to follow the principle of sustainable development in tourism activities and actively participate in the sustainable development of tourism [57].

4.6.3. Strengthening Tourists' Awareness of Normative Words and Deeds

In daily life, tourists are influenced by the harmony between people and places, so they adopt environmentally friendly behaviors (Figure 10). A topic worthy of study is how to shape tourists' social cognitive factors, guide them to form correct attitudes and codes of conduct, and strengthen their awareness of normative words and deeds. To enhance tourists' awareness of normative words and deeds, social media platforms can disseminate environmental protection information and sustainable tourism concepts to guide tourists in establishing correct ecotourism attitudes and cultivating positive attitudes [58]. Social media platforms are a wide and influential communication channel that can remind tourists to be aware of the impact of their behavior on the tourism environment by publishing

content related to environmental protection, resource conservation, and cultural respect. At the same time, tourists are more likely to imitate others' behavior, and when they see others taking environmentally friendly measures, they will also be more conscious of taking similar actions. Sharing cases of tourists' environmental behavior on social media can inspire other tourists to follow suit and form a positive social influence. Through vivid and intuitive multimedia forms, tourists can deeply realize the importance and severe harm of environmental problems to human society. Such publicity and education can stimulate tourists' emotional resonance and strengthen their awareness and attention to environmental issues [59].

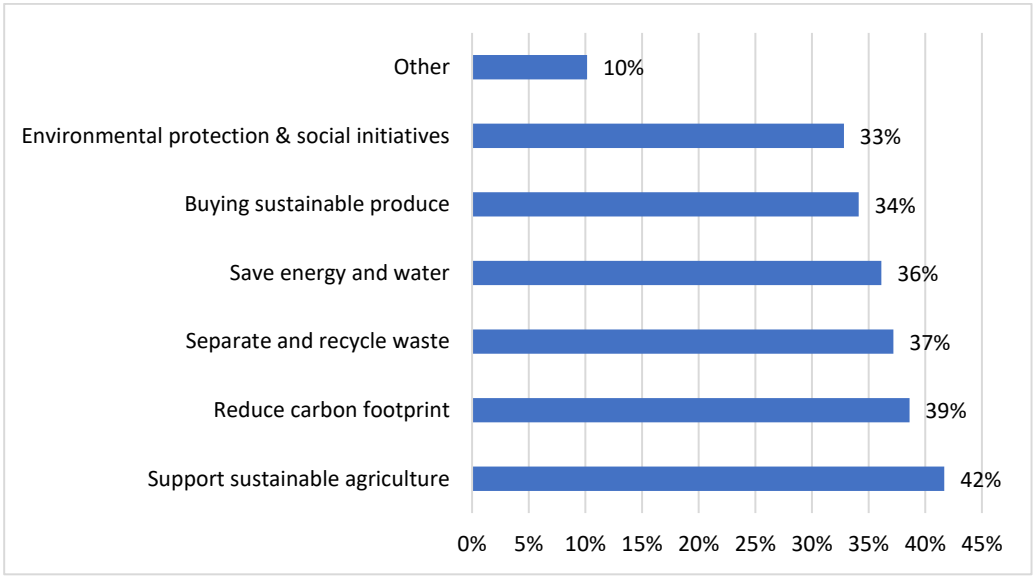


Figure 10. Tourists' environmental behavior.

Secondly, a series of measures can be taken to strengthen tourists' planning, control, and choice of their travel behaviors, including establishing clear norms and guidelines, providing corresponding incentives, and providing more specific guidance and suggestions, which are important means to strengthen tourists' awareness of regulating words and deeds [20]. For example, tourists can be guided to make detailed ecotourism plans, including choosing environmentally friendly transportation, accommodation, and dining places and complying with the code of conduct stipulated by the scenic spot. At the same time, by providing demonstration and inspiration for environmental behavior, such as reducing water use, saving energy, garbage sorting, etc., it can increase the motivation of tourists to abide by the norms and further consolidate their awareness of normative words and deeds. Clear norms and guidelines also provide clear behavioral references for tourists, enabling them to plan better and control their words and deeds [60].

In strengthening the universal education of the human–land coordination concept, it is necessary to emphasize the mutual relationship between man and nature and guide people to deeply understand the significance of how "clear water and green mountains are gold and silver mountains". By explaining the concept of ecosystem services and the limitation of environmental resources, tourists can be helped to realize the importance of respecting nature and protecting the environment for sustainable tourism development [39]. In addition, the economic, social, and environmental benefits brought by ecotourism can also be explained through relevant research results and cases to strengthen tourists' identification with ecotourism [61,62].

4.6.4. Recommendations

Based on the outcomes of this study, several recommendations might be offered to empower sustainable ecotourism's sustainable growth. First, in-depth regional ecotourism

research must ensure that ecotourism activities align with every region's diverse natural and cultural characteristics. It implies thoroughly evaluating the resources of nature, biodiversity, and cultural heritage and then applying region-specific strategies to restore the ecotourism's gains and minimize the impacts it generates. Hence, as another consideration, environmental education should be a key component of ecotourism plans. An educational environment where tourists are taught about environmental conservation, sustainable practices, and the human–land coordination view can create more sense of the natural environment and prompt responsible behavior. The education to be imparted shall be guided tours, workshops, and information materials. Another aspect of the campaign will involve using social media and other communication channels to share and promote eco-friendly habits and highlight the success stories of different community members. Setting out transparent rules and rewards for a sustainable lifestyle, for example, the limitation of waste, energy conservation, and support for local products, are other factors that may convince tourists to behave sustainably. Additionally, devising a well-thought-out ecological compensation mechanism can guarantee fair benefits distribution and engage the local population in conservation actions. This would include taxing ecology, compensating funds, and community-based conservation undertakings. Implementing these recommendations can make this industry more sustainable and inclusive. In this way, it will significantly impact the environment and society more significantly.

Theoretical Implications: This study contributes to the existing literature by applying the TPB specifically to ecotourism. It enhances the understanding of how attitudes, subjective norms, and perceived behavioral control influence ecotourism behavior. By incorporating the concept of human–land coordination, our research extends the TPB framework, offering a fresh perspective on the interaction between environmental values and social pressures in shaping tourists' behaviors. Furthermore, our identification of ecotourism tendency and sense of self-mastery as key drivers of behavioral intentions adds depth to the theoretical discussions on sustainable tourism.

Practical Implications: These findings provide actionable insights for policymakers, tourism operators, and educators focused on promoting sustainable tourism. The results indicate that improving tourists' environmental attitudes and perceived control can significantly enhance their participation in ecotourism activities. This highlights the need for effective environmental education and awareness initiatives to foster positive attitudes towards ecotourism. Moreover, understanding the importance of human–land coordination can inform the development of tourism strategies that support sustainable development, ensuring that tourism contributes to environmental conservation and local community benefits.

5. Conclusions and Future Work

5.1. Conclusions

The scale of this study enabled an understanding of the factors determining the tourists' intention to partake in ecotourism using behavioral theory as a theoretical foundation. The results demonstrate how ecotourism attitude, self-control, and stress in the human–place coordination influence the desired ecotourism behavior intentions. In addition to this, a positive attitude towards ecotourism and a stronger sense of self-control were determined as substantial external factors for ecotourism as they influence tourists to be more likely to participate in ecotourism. Additionally, participation in non-ecotourism-focused vacation activities may divert attention away from environmental education efforts, potentially reducing overall awareness and effectiveness of ecotourism initiatives.

On the other hand, the study reveals that the significant behaviors of ecotourism fluids are subjective consciousness and behavior control ability. Thus, belief systems, self-determination, and other factors are essential for sustainable travel decisions. Following the various results, some suggestions for improving the development and persistence of ecotourism have been put forward. The key strategies in promoting environmentally friendly practices are applying far-reaching regional studies, solid environmental educa-

tion, the rise of pro-environmental behaviors, and the establishment of environmental compensation mechanisms.

By implementing the highlighted suggestions, politicians, entrepreneurs, and educators will help achieve a mutually beneficial ecotourism sector that is environmentally friendly and socially inclusive. Long-term studies and field experiments are recommended as the focus of future research to validate the findings and develop standardized, integrated ecotourism strategies. A comprehensive approach to the ecotourism field can enhance conservation efforts and socio-economic benefits, ultimately promoting sustainable and equitable development.

5.2. Future Work

Despite its contributions to establishing the determinants of ecotourism behavior, this research has some weaknesses that suggest a future direction. First, data collection based on questionnaires can elicit social desirability bias because participants could not describe the real-level picture. To overcome this, future research can use only observational data or incorporate behavioral data to validate the self-reported data.

Further, as the study was framed within a particular geographical location, the results may require cross-geographical area extrapolation to other regions or cultures. Finally, it will be useful to continue to expand the study with communities from various cultural backgrounds from different geographical areas to increase the generalizability of the presented outcomes. Another type of sole research design could also provide more lengthy information by following up on the changes in ecotourism behaviors and attitudes to make different exploitations, find tactics, and the temporal consequences of interventions like environmental education.

Furthermore, the results of applying the developed model in different cultural environments can reveal the effect of cultural values and norms on ecotourism behavior. The use of large sample questionnaire surveys and small focus group interviews can provide additional layers of understanding of the desires and challenges governing ecotourism behaviors. Finally, given the growing application of information technologies in ecotourism research and data gathering, the subsequent studies should investigate the methods of enhancing cybersecurity regarding the collected data to promote safe and ethical research.

Author Contributions: Conceptualization, Y.F.; methodology, Y.F.; software, Y.F.; validation, Y.F.; formal analysis, Y.F.; investigation, Y.F.; writing—original draft preparation, Y.F.; writing—review and editing, Y.F. and J.Z; visualization, Y.F.; supervision, J.Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data is contained within the article.

Acknowledgments: We thank our families and colleagues who provided us with moral support.

Conflicts of Interest: The authors declare that we have no conflicts of interest regarding the publication of this article.

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