

The Effects of Recreational Involvement in Urban Wetland Parks on Tourists' Environmentally Responsible Behavior: The Chain-Mediated Effects of Well-Being and Loyalty

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Abstract

Tourists' environmental responsibility behavior plays a crucial role in promoting the sustainable development of urban wetland parks. Focusing on the emotional management of tourists can enhance their proactive environmental actions. This study targets Yanghu National Wetland Park eco-tourists in Changsha, Hunan Province. Based on the theoretical framework of the Self-Regulation of Attitude Theory, this research introduces variables such as leisure involvement, well-being, and loyalty to construct a structural equation model that examines the influencing mechanisms of wetland tourists' environmental responsibility behavior. Utilizing statistical software SPSS 24.0 and AMOS 24.0, data from 532 questionnaires were analyzed, yielding the following conclusions: (1) In the context of wetland parks, tourists' leisure involvement has a significant direct impact on environmental responsibility behavior; (2) Well-being and loyalty both exert a direct positive influence on environmental responsibility behavior and serve as significant emotional mediators between leisure involvement and environmental responsibility behavior; (3) Leisure involvement exerts a chain-mediated positive influence on environmental responsibility behavior through both well-being and loyalty. The conclusions of this study contribute to a deeper understanding of the relationship between individual emotions and behaviors in tourism contexts. They provide theoretical insights for national wetland parks to inspire tourists to actively engage in responsible environmental behavior and achieve sustainable wetland ecosystem development.

Keywords: Environmental Responsibility Behaviour, Wetland Parks, Tourist Emotional Management, Leisure Involvement, Sustainable Tourism

INTRODUCTION

The concept of sustainable development in tourism has long been a point of contention among tourism practitioners, government officials, academia, and policymakers (Torkington et al., 2020). With the increasing desire for ecotourism and the growing demand for self-healing experiences, more tourists choose wetland parks. Serving as a bridge between humans and nature within urban areas, wetland parks are highly valued by the tourism industry for their critical roles in ecological recreation, scientific education, and leisure entertainment. However, excessive development and rapid tourist growth inevitably pose severe threats to these parks, making the conflict between ecological protection and tourism development a pressing issue (Zhang et al., 2022). For instance, reducing wetland areas and biodiversity, severe pollution, and other negative impacts have garnered significant attention. As the primary participants in tourism activities, tourists' irresponsible behaviors—such as trampling vegetation, littering, and damaging geological features—are fundamental factors contributing to the ecological challenges faced by these destinations.

In recent years, sustainable development has gained widespread recognition, and research on environmental responsibility behavior (ERB) has received increasing attention (Gao et al., 2021). Su, Swanson, Chen, and others (2018) conceptualized ERB as a mechanism for environmental protection, defining tourists' ERB as behaviors that reduce or avoid damage to ecological resources. Subsequently, Cheng et al. (2019) further argued that ERB's contribution to destinations is widely regarded as a crucial driver of sustainable tourism development. Guiding and inspiring tourists' ERB is a vital means of addressing environmental issues at tourist destinations and promoting sustainable tourism development. Understanding the influencing factors and

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formation mechanisms of tourists' ERB is fundamental and essential for this endeavor. Unfortunately, existing literature scarcely addresses the environmental responsibility behavior of wetland tourists.

In tourism and leisure, leisure involvement is frequently discussed in tourism and recreational activities. Numerous studies have demonstrated that leisure involvement can serve as a key indicator to explain tourists' future behavioral intentions, attracting significant scholarly interest in its potential effects. As an influential variable for market segmentation, most scholars consider leisure involvement an underlying motivation or interest when tourists engage in leisure travel activities (Terzić et al., 2021). It represents a unique psychological state characterized by pleasure and arousal, triggered by specific situations or stimuli, and has a driving effect on behavior. Meanwhile, the environmental issues caused by tourists' deviant behaviors urgently require more research on pro-environmental behavior. Understanding the factors and mechanisms behind tourists' pro-environmental behavior is crucial for the long-term success of tourist destinations. However, the existing literature almost entirely lacks studies on how leisure involvement influences the pro-environmental behavior of wetland park tourists, indicating a need for further research and exploration into the relationship between these two factors.

Reviewing previous studies, most scholars have primarily examined the impact of environmental knowledge and ecological values on tourist behavior while neglecting emotional factors, which are significant variables influencing tourists' responsible behavior. Well-being, a central area of psychological research, is a comprehensive psychological indicator of life quality and an overall evaluation of one's life satisfaction (Ruggeri et al., 2020). Chengjing et al. (2021) suggest that tourists' well-being is an outcome variable influenced by external factors and a critical predictor of their positive behaviors. Previous research has indicated that some scholars have started to recognize the driving role of positive emotions in environmental responsibility behavior. However, studies on how well-being affects tourist behavior remain scarce. The relationship between well-being and specific social behaviors remains unclear in particular contexts. Recent neurological and psychological research shows that well-being is crucial in decision-making processes (Pless et al., 2017). Moreover, although scholars have analyzed the impact of leisure involvement on tourists' well-being (TWB), it remains unclear whether TWB serves as a mediator between leisure involvement (DI) and environmental responsibility behavior (ERB).

Given the intense competition in the tourism industry, loyalty is considered a critical factor in enhancing destination competitiveness. It is widely regarded as a crucial market indicator, and the most effective marketing strategy for most businesses, including the tourism industry, is to build customer loyalty (Tasci et al., 2022). However, tourism scholars disagree on the relationship between leisure involvement and loyalty. Previous studies have shown that their influence varies in different contexts, necessitating further in-depth research to resolve this issue. Research on the relationship between tourist loyalty and environmental responsibility behavior is limited. Kwenye et al. (2016) pointed out that encouraging destination loyalty can foster long-term relationships between domestic tourists and local natural tourism environments. Unfortunately, the question of how wetland tourists' leisure involvement, well-being, and loyalty influence their environmental responsibility behavior has not been studied. This topic offers substantial research potential, and the roles of TWB and DL warrant further examination.

In response to the issues mentioned above, this study aims to address gaps in the existing literature by examining the factors influencing responsible environmental behavior (ERB) among Chinese wetland tourists. This research uses Structural Equation Modeling (SEM) to explore the relationship between leisure involvement (LI) and ERB. Additionally, we investigate the potential mediating roles of specific value mechanisms, specifically tourists' well-being (TWB) and destination loyalty (DL). A better understanding of these relationships can give wetland park managers valuable insights, enabling them to adjust their services and strategies to meet tourists' needs. This, in turn, will enhance the functionality of wetlands and maximize their economic and ecological value.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

Wetland Park

Wetland has significant ecological and economic benefits as one of the world's most productive and diverse ecosystems. It is listed as the three significant ecosystems together with the ocean and the forest and is known as the "kidney of the Earth"(Chen & Zhang, 2018). Due to their rich biological species and ecological landscape diversity, as well as unique environmental service functions, the wetlands have become an essential place for people to conduct tourism activities and plays and play an important role in tourism and entertainment (Alikhani et al., 2021). Wetland park is an integral part of the national wetland protection system, and it is also the balance between the essence of wetland ecosystem characteristics and the needs and behavioral characteristics of tourists(Zhang et al., 2022).

In 1971, multiple countries signed the International Convention on Wetlands, which defines wetland parks as areas with distinctive ecological aesthetics and biodiversity, serving as significant functional wetland regions (Alikhani et al., 2021). Consequently, many scholars argue that ecotourism focused on wetlands helps protect wetland ecosystems while providing socio-economic benefits to local communities (Christopoulou & Tsachaldom, 2004; Wang, Chen, Fan, & Lu, 2012).

China is a significant country in terms of wetland resources, ranking first in Asia and fourth globally in total wetland area. As of January 8, 2022, China has 899 national wetland parks. There are 901 national wetland parks in China, covering a total area of 3.6 million hectares(Chen et al., 2023). Approximately 230 million tourists annually visit these wetlands for outdoor recreation and sightseeing, generating over 53 billion RMB in revenue (Li, 2021). As wetland parks expand, research on these areas has increased significantly. Due to the rapid urbanization in China, visitor numbers to wetland parks have surged, potentially causing negative impacts on wetland resources. Consequently, wetland park operators must find optimal solutions for regulating and fostering environmental responsibility behavior (ERB) among tourists to alleviate existing challenges(Li et al., 2022). Addressing this issue is crucial for improving management efficiency and achieving sustainable development in wetland parks.

Leisure Involvement, Happiness, and Environmental Responsibility Behavior

Leisure involvement is a crucial determinant of sustainable tourism. In consumer behavior research, involvement is a significant theoretical framework for explaining consumption behavior and has been proven to be one of the most important determinants of consumer actions(Samad & Alharthi, 2022). The concept was first introduced by Sherif and Cantril (1947) in psychology and later applied to the leisure and entertainment fields by Selin and Howard (1988). It is described as the level of enjoyment and self-expression an individual gains from engaging in leisure activities. The integration of intangible cultural heritage into educational settings, such as the efforts to revitalize Guangxi's traditional music, highlights the role of cultural involvement in enhancing personal well-being and community engagement (Bing et al., 2024).

There is no consensus in the academic community regarding the definition of tourism involvement. Havitz et al. (2013) suggest that leisure involvement represents the relationship between an individual and external stimuli or the extent of participation in leisure activities. (Ruggeri et al., 2020) argues that leisure involvement is a particular psychological state characterized by pleasure and arousal experienced by tourists when engaging in leisure travel activities. Specific situations or stimuli trigger this state and drives behavior.

In leisure research, involvement is commonly divided into three dimensions: Attraction, self-expression, and Centrality. Attraction refers to the pleasure and interest derived from the activity; Centrality denotes the value and status of the activity in an individual's life, and self-expression involves the sense of self-recognition achieved through the activity.

As material living standards improve, people increasingly seek self-fulfillment and satisfaction in their spiritual lives, with tourism playing a significant role in enhancing personal well-being. Research on tourist happiness can be traced back to Lounsbury and Hoopes (1986), who studied tourists' life satisfaction. Happiness is an

intangible, complex, and multidimensional social phenomenon (Firouzi et al., 2018). The study of happiness originated in philosophy and later attracted empirical psychological attention (Compton & Hoffman, 2019). Currently, psychological research on happiness primarily stems from two perspectives: the hedonistic view, which focuses on subjective well-being and individual pleasure, and the eudaimonic view, which emphasizes personal growth and the realization of life values. Neal et al. (2004) called for more research on happiness in the tourism field. They argue that happiness is a subjective experience arising from interactions between individuals and their social and natural environments. It not only underpins personal emotional balance but also serves as an essential condition for improving interactions between individuals and their environments.

Although research on the relationship between leisure involvement and environmental responsibility behavior is not extensive, it has increasingly attracted the interest of tourism scholars. Tian et al. (2020) conducted an empirical study of mountaineers, revealing that leisure involvement has a significant positive effect on leisure benefits and subjective well-being, with leisure benefits as a mediating variable between leisure involvement and subjective well-being. Ming-Ju Lee (2019) explored the relationship between leisure involvement and happiness among family tourists in Penghu, finding that higher levels of leisure involvement are associated with greater happiness. Wang Zhending and Luo Peicong (2020) studied leisure involvement's impact on place attachment and happiness in Fuzhou, demonstrating a significant positive effect. Liyang (2021) found that urban residents' involvement in sports and leisure activities significantly positively affects leisure satisfaction, subjective well-being, and positive emotions. Lixinya (2023) investigated the relationships among leisure involvement, leisure experience, and happiness among residents of Haikou, showing that leisure involvement positively affects happiness. Liu Qiaoyun (2023) studied agricultural leisure tourists, finding that higher involvement levels are associated with higher personal happiness.

H1: Leisure involvement in the National Wetland Park would have a positive impact on their well-being.

Environmental Responsibility Behavior (ERB) originated from research on environmental conflicts and was applied to tourism studies in the early 21st century. It refers to individuals' environmentally friendly actions in their daily practices that positively impact the environment and are directly related to it. Although there has been extensive discussion on defining and characterizing ERB—such as environmental responsibility behavior (Li Wenming et al., 2019), environmental behavior, and environmentally friendly behavior (Wang Hua et al., 2019)—its essence remains consistent. Chiueta (2014) notes that tourists exhibiting ERB can prevent ecological damage and engage in responsible environmental actions, thus contributing to the sustainable protection and utilization of ecological destinations. Cheng and Wu, Lee et al. (2015) describe ERB as voluntary participation and efforts to prevent or address environmental issues while assisting destination management organizations in balancing economic feasibility and environmental responsibility. Su, Swanson, and Chen (2018) view ERB as an environmental protection mechanism where tourists' ERB involves reducing or avoiding actions that significantly damage environmental resources, especially impacting nature-based destinations. Cultivating ERB among tourists to mitigate environmental deterioration has become a widely accepted consensus among tourism scholars.

Based on the behavioral model proposed by American social psychologist Kurt Lewin in the 20th century, which reveals the objective laws underlying complex behavioral phenomena, he stated that "individual behavior is a product of the interaction between the individual and the environment." Involvement is thus generated through an individual's interaction with their environment. Research by Wang Hua et al. (2018) found a significant positive correlation between ecotourism leisure involvement and the intention to engage in environmentally friendly behaviors. Additionally, Fan Xianghua et al. (2019) study indicates that leisure involvement in tourism has a significant positive effect on tourists' environmental responsibility behavior. Zeng Xiaoqing (2023) explored how different dimensions of leisure involvement affect tourists' environmental responsibility behavior. The findings reveal that leisure involvement positively influences environmental responsibility behavior among tourists, with varying degrees of involvement affecting this behavior. Specifically, the centrality dimension of involvement significantly impacts tourists' environmental responsibility behavior compared to Attraction and self-expression. Tourists with higher levels of involvement are more likely to engage in ecological responsibility behaviors (ERB).

H2: Tourists' leisure involvement in urban wetland parks has a positive effect on environmentally responsible behavior.

The academic community has significantly emphasized the relationship between tourism and happiness in recent years. From a social psychology perspective, happiness and environmental responsibility behavior are increasingly recognized for their social attributes (Zelenski & Nisbet, 2014). Furthermore, the emotion-behavior theory posits that individual behavior is often closely related to corresponding psychological emotions, providing a theoretical foundation for explaining complex individual behaviors. Liang Xuecheng (2017) suggests that tourism happiness is a collective sense of well-being shared among various stakeholders, including residents and tourism professionals, based on tourist satisfaction. Xu Yun et al. (2020) argue that life satisfaction and happiness are relatively stable cognitive evaluations and emotional experiences regarding one's life status over time, representing a subjective psychological response. Okely et al. (2019) propose that happiness provides individuals with emotional experiences that influence their daily behaviors, including prosocial and organizational behaviors. Research by Gao Yang and Bai Kai (2020) indicates that the components of happiness, such as satisfaction and positive emotions, significantly impact tourists' environmental responsibility behaviors. Su Zhen and Yuan Jianping (2023) found that variations in tourists' happiness levels affect environmental responsibility behavior differently. Specifically, hedonistic subjective happiness does not have a direct significant effect on ecological responsibility behavior. In contrast, psychological happiness, focused on personal growth, substantially directly impacts environmental responsibility behavior.

H3: Tourists' well-being in urban wetland parks significantly influences environmentally responsible behavior.

Although the mediating role of happiness between tourists' leisure involvement and environmental responsibility behavior has not been empirically confirmed, existing literature indicates that tourists' leisure involvement significantly predicts happiness, and happiness, as an emotional factor, can effectively drive environmental responsibility behavior.

According to the Spillover Theory, which suggests that individuals' emotions and behaviors possess transferability and continuity, allowing them to spill over from one domain to another (Verfuert, 2019), happiness can mediate spillover effect. Leisure involvement in national wetland parks (a specific context) can influence tourists' happiness, affecting their environmental responsibility behavior within that context. Wang Xuejiao (2022) examined the impact of perceived tourism effects on residents' willingness for tourism development, finding that subjective happiness mediates the relationship between both positive and negative perceptions of tourism effects and residents' willingness for tourism development. Wu Shaotong and Cheng Xiangyang et al. (2023) explored the impact of proactive personality traits on pro-environmental behavior, revealing that proactive personality positively influences pro-environmental behavior, with happiness mediating the relationship between proactive personality and pro-environmental behavior.

H4: Tourist well-being mediates the relationship between recreational participation and environmentally responsible behavior in urban wetland parks.

Leisure Involvement, Loyalty, And Pro-Environmental Behavior

The concept of loyalty emerged in the 1990s and is rooted in marketing research. As a critical topic in tourism studies, loyalty has significantly influenced decision-making by tourism managers at destinations and attractions. Scholars have maintained a high level of interest in this area for decades (Chen et al., 2023). In tourism research, loyalty is a critical indicator for assessing the success of marketing strategies (Al Muala, 2012). Tourist loyalty is typically characterized by behavioral loyalty (a strong preference for engaging in specific tourism activities) and attitudinal loyalty (positive evaluations and recommendations of a destination) (Lv & McCabe, 2020). Research on loyalty remains crucial in tourism studies because highly loyal tourists are more likely to revisit a destination and recommend it to friends and family, which is vital for the sustainable development of tourist destinations.

While there is no consensus on the relationship between leisure involvement and loyalty, studies have provided insights into this dynamic. For instance, Meng Dan et al. (2017) found a significant positive correlation between leisure involvement's importance, entertainment value, and symbolic aspects and the intention to revisit and

word-of-mouth recommendations. Lu Fenglin et al. (2018) explored this relationship in rural tourism, identifying three dimensions of leisure involvement—attractiveness, self-expression, and Centrality—and found that higher levels of leisure involvement were associated with a greater willingness to revisit or recommend the destination. Li Sijia et al. (2020) confirmed this relationship in the context of cultural heritage tourism, showing that tourists with higher levels of involvement were more likely to revisit and recommend the site.

Qiu Xiaoyan (2022) demonstrated that the involvement of the new generation of tourists has a significant positive impact on cultural identity and loyalty toward red tourism. Liu Jiaman et al. (2023), using Zengcheng Greenway as a case study, found that the dimensions of "centrality" and "self-expression" in leisure involvement significantly impact tourist loyalty, while the "attractiveness" dimension does not have a significant effect.

H5: Tourists' leisure involvement in urban wetland parks has a significant impact on loyalty.

Loyalty is a concept that has garnered significant attention across various fields and is often considered an outcome variable in related research. However, as a form of emotional expression—such as pleasure and satisfaction—it can facilitate actions triggered by environmental stimuli and forces. While the literature on the relationship between loyalty and environmental responsibility behavior (ERB) is limited, some scholars have explored this connection. Nor'Aini Yusof (2016) found that resort environmental practices have a more substantial impact on the loyalty of visitors who exhibit higher levels of environmental concern, with their behavior being directly or indirectly more eco-friendly. Tai-Yi Yu (2017) posited that consumer loyalty is an essential indicator of pro-environmental behavior. Coetzee Pourfakhimi, Ramkissoon Sowamber, and colleagues (2020) noted that loyal tourists exhibit positive attitudes toward a destination, demonstrate revisitation and recommendation behaviors, and support sustainable tourism development, benefiting local communities through sustainability goals. Connor et al. (2021) suggested that loyalty represents a moral, emotional response rather than merely a behavior, invoking responsible actions towards individuals or entities. There remains considerable research potential regarding loyalty in the context of ERB, with a notable lack of theoretical validation for the causal relationship between DL and ERB.

H6: Tourist loyalty in urban wetland parks can have a significant impact on environmentally responsible behavior.

Involvement theory is closely linked to an individual's psychological state, allowing for predictions and explanations regarding their mental condition (Brown, 1996). The level of involvement in a particular leisure activity can affect an individual's loyalty to that activity; higher involvement is likely to result in greater loyalty to the leisure activity (Chang & Gibson, 2015). Self-perception theory, which assigns meaning to past behaviors through attitudes, can better predict behavior and explain the relationship between loyalty and environmental responsibility behavior (ERB). Zhang Qian et al. (2020) discovered that loyalty mediates the relationship between perceived value and ERB. Homer et al. (2022) found that the S-O-R model effectively explains the emergence of environmentally responsible behavior among nature-based tourists. The attractiveness of a tourism destination significantly influences tourists' attitudinal and behavioral loyalty, which in turn drives ERB. Wu Zhicai and Wang Bowen (2023) reported that the dimensions of "centrality" and "self-expression" in leisure involvement positively impact "specific environmental responsibility behaviors" during greenway recreation by affecting individuals' "willingness loyalty" and "attitudinal loyalty." However, these dimensions only influence "daily environmental responsibility behaviors" through "attitudinal loyalty."

H7: Loyalty mediates the effect of recreational involvement in urban wetland parks on environmentally responsible behavior.

Tourist loyalty to a destination is fundamental to the development of the tourism industry, while tourism happiness represents the meaning of achieving travel value for tourists (Pai et al., 2020). As a potential attraction in the tourism market, the study of loyalty is crucial for the sustained development of tourism destinations. Li Zhaohua (2015) found that happiness effectively predicts loyalty. Research by Zhou Xihua (2014) and Yang Hong (2013) has demonstrated a significant correlation between loyalty and happiness. The stronger the happiness tourists experience at a destination, the more pronounced their tendency to revisit and recommend

the destination. Zhang Kun (2018), using the renowned scenic spot Fenghuang Ancient City in Hunan Province as a case study, found that tourism happiness positively impacts tourist loyalty. Shu-Pei Tsai (2020) revealed that joy and happiness, which encompass different characteristics of happiness and are embedded in the overall travel experience, independently drive loyalty. Yi-Ling Yen (2021) studied tourists in the Greater Tamsui area to understand the relationships between tourist enthusiasm, happiness, destination loyalty, place attachment, and satisfaction. The study found that tourists' enthusiasm and happiness positively impact loyalty to the Tamsui destination. Fatemeh Bagheri (2023), focusing on tourists vacationing in Algarve, Portugal, identified a three-dimensional scale of happiness, including a sense of meaning, positive pleasure, and release. The study also showed that four tourist experience areas significantly influence happiness. Finally, a positive correlation was confirmed between happiness, tourist satisfaction, and loyalty.

H8: Well-being of urban wetland park visitors has a significant effect on loyalty..

Based on the theories of leisure involvement and spillover, loyalty can be viewed as a tendency for tourists when selecting travel destinations, which their sense of happiness may positively influence (Almeida-Santana & Moreno-Gil, 2018). In other words, happiness might enhance tourists' positive perceptions of a destination, thereby increasing their loyalty. Additionally, tourists who are more loyal to a destination may show more significant concern for it, leading to more proactive environmental responsibility behaviors (Su et al., 2020).

Zhang Sun Bowen (2023) explored the mechanisms influencing tourists' environmental responsibility behaviors in natural reserves. The study revealed that awe and place attachment play a chain mediation role in the relationship between perceived authenticity and environmental responsibility behaviors. Wu Zhonghong and Lin Lijuan (2019), examining tourists in Kinmen Island, found that place dependence and place attachment mediate the influence of nostalgia on environmental responsibility behaviors in a chain manner. Zhang Xin and Zhang Hongmei (2023) studied urban natural park visitors and found that the direct effect of nature connection on place dependence was insignificant. However, nature connection affected place dependence indirectly through restorative perception. Similarly, nature connection did not directly impact place identity but influenced place identity through restorative perception and place dependence, with chain mediation effects being more potent. Wang Ping and Zhang Dongliang (2022), using Sanping Village in Jing'an County, Jiangxi Province, as a case study, showed that happiness mediates the relationship between environmental cognition and vacationers' loyalty.

This study proposes that the leisure involvement of wetland park visitors may directly lead to more proactive environmental responsibility behaviors. Additionally, enhancing happiness and destination loyalty can indirectly influence behaviors of ecological responsibility.

H9: Tourist well-being and destination loyalty have knock-on mediating effects on leisure involvement and environmentally responsible behavior.

THEORETICAL BASIS AND THEORETICAL MODEL

Involvement Theory (IT)

The involvement theory originates from social judgment theory, initially introduced by American scholars Sherif and Cantril in 1947 (Nadler, 1983). They defined self-involvement as the attitude exhibited by an individual when facing opposing views, constrained by their social status or role. Subsequently, in 1965, Krugman extended this concept to marketing studies, using the notion of involvement to explain the impact of media information, such as television advertisements, on consumer behavior (Harris, 1987). It was not until the late 1980s that involvement theory was introduced into the fields of leisure and tourism studies by scholars Havitz and Dimanche. They defined leisure involvement as the psychological state triggered by an individual's experience with leisure activities, the leisure environments they occupy, and the leisure products they encounter, encompassing latent motivations, awakenings, or interests.

In the context of tourism, the application of involvement theory is primarily evident in tourists' decision-making process. The degree of involvement influences tourists' choices of destinations, participation in tourism

activities, and evaluation of tourism experiences (Lu et al., 2015). According to involvement theory, leisure involvement represents the psychological state of leisure participants. This state reflects the level of pleasure, self-expression, and life relevance individuals exhibit in specific leisure and tourism contexts based on their personal preferences and values (Lochrie et al., 2019). Additionally, research by Havitz and Dimanche (1997) demonstrates that when the characteristics of a destination align with the values and interests of leisure participants, there is a more vital psychological perception of the destination, thereby increasing the degree of leisure involvement. Furthermore, in service-oriented industries, the involvement theory has significant implications for theoretical research and managerial practice. It has been widely applied in leisure, sports, and tourism studies.

Spillover Theory (ST)

Spillover theory, originating from Western economics in the 1960s and introduced by Wilensky, posits that an individual's perceptions, attitudes, and behaviors in one social environment can manifest in another, reflecting the individual's skills and experiences (Lee et al., 2003). In tourism research, spillover theory is widely applied, suggesting that satisfaction or well-being in one life domain or tourism experience can influence satisfaction or well-being in other life domains (Kruger, 2011). Li Rong (2011) conducted a study on the spillover effects of job satisfaction and life happiness, demonstrating that job satisfaction significantly impacts tourist well-being.

In the field of tourism studies, the application of spillover theory has primarily focused on the economic and spatial spillover effects of tourism. Dionisi et al. (2015) define "spillover" as the process through which emotions, attitudes, and behaviors experienced in one domain transfer to another domain. Similarly, Sirgy (2006) notes that well-being is contingent upon satisfaction in subordinate domains, implying that well-being is influenced by satisfaction across all life domains and subdomains.

Yazdanpanah and Shokouhi (2019) applied the bottom-up spillover theory to study the impact of urban tourism on the subjective well-being of city residents. Their research indicates that the positive effects of tourism development influence city residents' subjective well-being through satisfaction with various life domains. From the perspective of this study, spillover theory effectively explains how tourist leisure involvement can enhance leisure participants' positive perceptions of life, thereby fostering tourist well-being and loyalty.

Self-regulation of Attitude Theory (SAT)

Based on traditional theories such as the Theory of Planned Behavior and the Theory of Reasoned Action, Bagozzi (1992) proposed the Self-Regulation of Attitude Theory to address the limitations of these classic theories. Traditional theories suggest that individuals make decisions based on subjective norms, attitudes, perceptions, behavioral control, and emotions (Bagozzi et al., 2004). By integrating the strengths and weaknesses of these traditional theories, Bagozzi developed a self-regulation attitude process model comprising "appraisal processes — emotional reactions — coping responses." According to this model, when a goal is achieved, or a positive and enjoyable experience occurs, individuals generate "emotional reactions" based on the "appraisal process," displaying either positive or negative emotions. Subsequently, "coping responses" emerge as the feelings evolve.

The Self-Regulation of Attitude Theory has been widely applied in management and sociology to explain the mechanisms underlying individual behavior. Recently, scholars have begun using this theory to interpret specific behaviors in the tourism domain. Jia Yanju and Lin Derong (2016) expanded the applicability of the Self-Regulation of Attitude Theory to destination management by constructing a conceptual framework of "tourist service perception — place attachment — loyalty." Zhang Anmin and Zhao Lei (2020) incorporated the Self-Regulation of Attitude Theory into research on tourism benefit perception and resident participation. Their study, focusing on 130 characteristic towns in Zhejiang Province, analyzed the pathways through which internal factors of tourism benefit perception influence resident participation.

Theoretical Model

This study is grounded in Involvement Theory and Spillover Theory and introduces the Self-Regulation of Attitude Theory as its framework. Utilizing the self-regulation attitude process, which involves individual appraisal (antecedent variables) leading to emotional responses (mediator variables) and coping responses (outcome variables), this research constructs a model of the relationships among "leisure involvement (individual appraisal) — well-being and loyalty (emotional responses) — environmental responsibility behavior (coping responses)." The aim is to elucidate the mechanisms underlying environmental responsibility behavior, thereby improving its explanation, prediction, and control and further enhancing the applicability of this theory in tourism.

METHODOLOGY

List of Cases

Changsha Yanghu Wetland Park is a National 4A-level scenic area located in the northern part of Yanghu Avenue, west of Xiaoxiang South Avenue East Line, and bounded by Jinjiang River to the south and east, in Changsha City, Hunan Province. According to its planning, Yanghu Wetland Park is divided into four main functional zones: the Wetland Leisure Zone, the Wetland Biodiversity Exhibition Zone, the Wetland Ecological



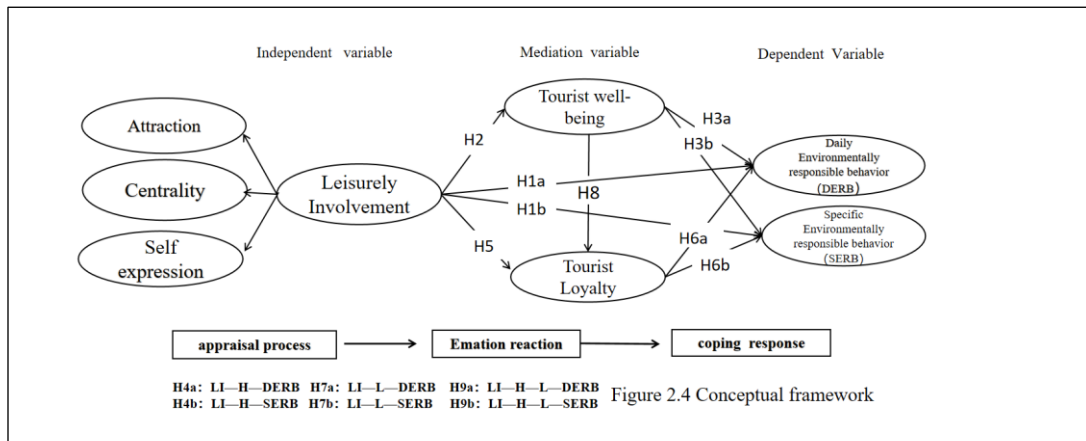
Conservation Zone, and the Wetland Science Education Zone(Li et al., 2022).

The park boasts rich ecological resources and picturesque natural scenery, featuring various wetland types such as lakes, shallow bays, and over 3,000 species of plants and animals. Covering an area of 5.2 square kilometers, it is the largest wetland park in Changsha and integrates multiple functions, including ecology, culture, leisure, and education. The park plays an irreplaceable role in maintaining the urban ecological system and promoting ecological science popularization in city parks.

With 2.2 million visitors receiving wetland ecological and cultural science education annually and an annual visitor capacity of up to 4 million, Yanghu Wetland Park is an ideal destination for tourists and residents to connect with nature, relieve stress, and engage in leisure activities. The park serves as a model for the harmonious development of urban, wetland, and residential environments by restoring wetland ecosystems, maintaining biodiversity, and enhancing water purification functions(Li et al., 2020).

Questionnaire Design

This study's questionnaire is divided into two main sections: the first section includes the main body of the questionnaire with scales for various variables, and the second section collects tourists' personal information. The measurement items for the variables in the hypothesized model are derived from widely used and established scales in the literature and have been adapted to the specific context of Yanghu International Wetland Park. To ensure the reliability of the scales, the English versions were translated and back-translated into Chinese. All scales utilize a 7-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).



The measurement of leisure involvement is based on scales developed by McIntyre et al. (1992) and Kyle et al. (2003), covering three dimensions and nine items. The happiness scale is adapted from Huta and Ryan (2010) and includes six items. Loyalty is measured using a scale modified from the works of Lee (2007), Feng Bin (2011), and Wang Hengyan (2019), consisting of six items. Environmental responsibility behavior for tourists is measured using a scale adapted from Smith (1995) and Hong Xue-Ting (2019), with six items.

After designing the questionnaire based on existing established scales, it was reviewed by three master's advisors in tourism management for its validity. Following a pilot survey, modifications were made to clarify ambiguous or unclear items, and items with factor loadings below 0.6 were removed, resulting in the final version of the survey questionnaire.

Data Sources

Between March 2, 2024, and May 8, 2024, the research team surveyed Changsha Yanghu Wetland Park by randomly distributing questionnaires. Given the park's opening hours and the volume of visitors, the surveys were primarily conducted on weekends from 8:30 AM to 5:30 PM. The survey locations were concentrated in critical areas and nodes with dense tourist activities. After eight rounds of questionnaire distribution across different park sections, 551 questionnaires were collected. After removing 19 incomplete questionnaires or those with identical responses for all items, 532 valid questionnaires were obtained, yielding an effective response rate of 93.58%.

During the questionnaire survey, if elderly individuals were familiar with the park and willing to share their views, unstructured interviews were conducted to supplement the quantitative analysis with qualitative insights. This study employed SPSS 26.0 and AMOS 25.0 for data analysis. SPSS was used mainly for descriptive statistical analysis, while AMOS was employed for confirmatory factor analysis and path analysis to explore the relationships among variables and test the research hypotheses.

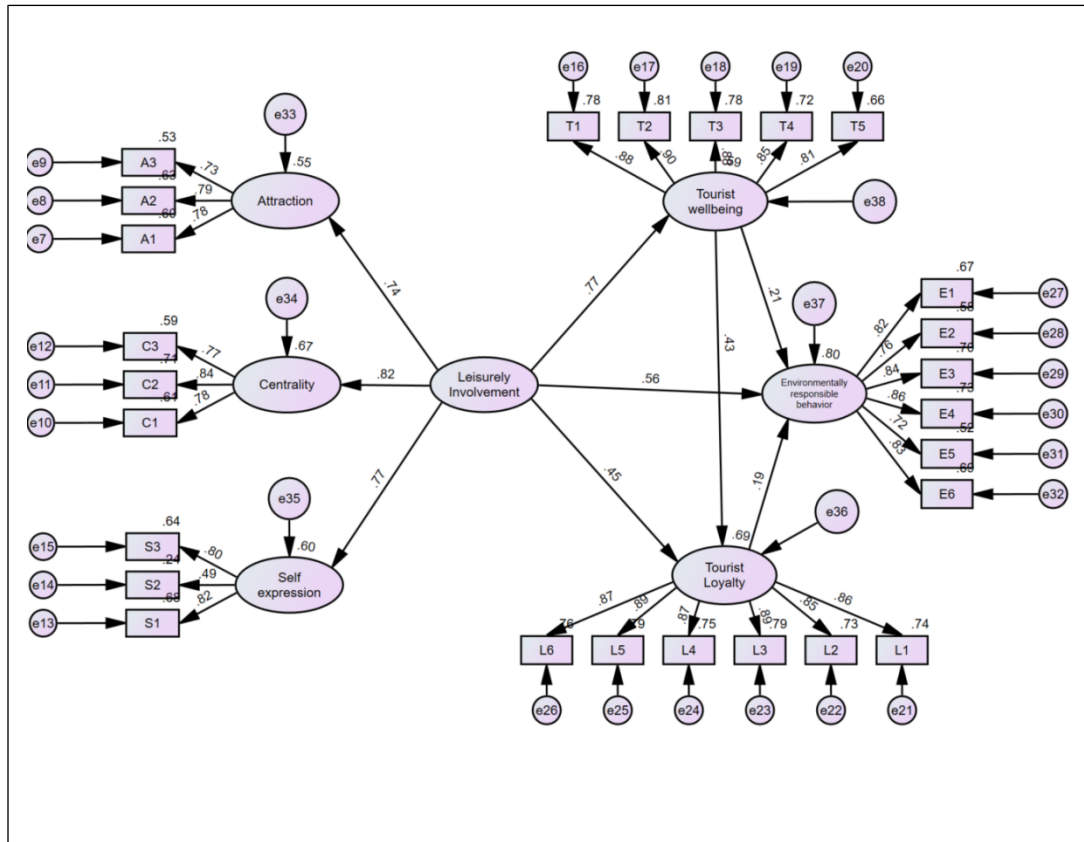
Data Analysis

Descriptive Statistics

Using SPSS software, a descriptive analysis of the demographic characteristics of the respondents was conducted based on the valid questionnaires. The findings are as follows: the gender distribution was relatively balanced, with females accounting for 56%, slightly higher than males at 40%. Regarding age, most respondents were below 70 (81%), with those above 70 years old making up 19%. Regarding educational attainment, the majority had a college or undergraduate degree (63.9%). Regarding pension income, 58% of the respondents reported around 6000 yuan. The primary employment types were civil service, enterprise positions, and public institutions, accounting for 84%. Most respondents lived with a spouse or children (77%), while 8% lived alone. Additionally, 83% of the respondents had traveled more than three times. The analysis results aligned with observations made during the survey period, indicating that the sample characteristics closely resemble the overall population characteristics, demonstrating the sample's strong representativeness.

Reliability Analysis

Reliability analysis was conducted to verify the internal consistency of the items by calculating Cronbach's



Alpha. When Cronbach's Alpha exceeds 0.7, it indicates acceptable internal consistency among the items, with values approaching 1 indicating higher reliability of the questionnaire data. In this study, reliability tests were performed for the variables involved, yielding the following Cronbach's Alpha values: Leisure Involvement dimensions ($\alpha = 0.95$), Well-being ($\alpha = 0.924$), Loyalty ($\alpha = 0.88$), and Environmental Responsibility Behavior ($\alpha = 0.851$). These results indicate that the scales designed for this study exhibit high reliability and are acceptable.

Analysis of Validity

Validity analysis was performed using the KMO test and Bartlett's sphericity test to determine the sample data's adequacy. A KMO value greater than 0.7 indicates good data adequacy, with values approaching 1 suggesting better validity. The results of this study showed a KMO value of 0.966, which is greater than 0.7 and close to 1, indicating high data validity. Furthermore, Bartlett's test of sphericity yielded a significance level of less than 0.05, confirming that the sample data possess good validity.

Using AMOS 25.0 for confirmatory factor analysis, we assessed convergent validity by examining factor loadings, composite reliability (CR), and average variance extracted (AVE). All item factor loadings exceeded 0.5, and CR values ranged from 0.757 to 0.937. Specifically, the CR values were Attraction (CR = 0.810), Centrality (CR = 0.840), Self-expression (CR = 0.757), Tourist Well-being (CR = 0.937), Tourist Loyalty (CR = 0.950), and ERB (CR = 0.917). All CR values were above the minimum threshold of 0.6. The AVE values ranged from 0.521 to 0.762, with specific values being Attraction (AVE = 0.588), Centrality (AVE = 0.637), Self-expression (AVE = 0.521), Tourist Loyalty (AVE = 0.762), and ERB (AVE = 0.648). Each AVE value

exceeded the standard threshold of 0.5. With all six factors having AVE values greater than 0.5 and CR values higher than 0.7, the analysis indicates that the data exhibit good convergent validity.

Results of the model AVE and CR measures		
Factor	Mean variance-extracted AVE values	Combined reliability CR value
Attraction	0.588	0.810
Centrality	0.637	0.840
Self-expression	0.521	0.757
Tourist well_being	0.749	0.937
Tourist Loyalty	0.762	0.950
ERB	0.648	0.917

Differential Validity Analysis

It is generally accepted that the square root of the average variance extracted (AVE) for each construct (represented by the bolded diagonal values) should be greater than the correlations between that construct and any other constructs, indicating good discriminant validity among the latent variables. Attraction's AVE is 0.767, more significant than the highest absolute value of the inter-factor correlations (0.574), indicating good discriminant validity. For Centrality, its AVE is 0.798, more significant than the highest absolute value of the inter-factor correlations (0.624), indicating good discriminant validity. For self-expression, its AVE is 0.721, more significant than the highest absolute value of the inter-factor correlations (0.527), indicating good discriminant validity. For tourist well-being, its AVE is 0.865, more significant than the highest absolute value of the inter-factor correlations (0.736), indicating good discriminant validity. For tourist loyalty, its AVE is 0.873, more significant than the highest absolute value of the inter-factor correlations (0.741), indicating good discriminant validity. For Environmentally Responsible Behavior (ERB), its AVE is 0.805, more significant than the highest absolute value of the inter-factor correlations (0.741), indicating good discriminant validity.

Thus, each construct in this study demonstrates adequate discriminant validity, supporting the robustness of the measurement model.

	Attraction	Centrality	Self-expression	Tourist well_being	Tourist Loyalty	ERB
Attraction	0.767					
Centrality	0.484	0.798				
Self-expression	0.426	0.474	0.721			
Tourist well_being	0.467	0.557	0.490	0.865		
Tourist Loyalty	0.488	0.586	0.490	0.736	0.873	
ERB	0.574	0.624	0.527	0.728	0.741	0.805

Structural Equation Model Fitting Analysis

Model fit indices are a series of criteria used to evaluate the degree to which a statistical model aligns with the data. These indices help researchers determine whether the model adequately explains the data and whether the model is overly complex or simplistic. Below are specific explanations of the model fit indices: CMIN/DF (Chi-square/degrees of freedom ratio) = 1.196: This value is between 1 and 3, indicating a good fit. RMR (Root Mean Square Residual) = 0.024: This value is less than 0.05, indicating a good fit. GFI (Goodness of Fit Index) = 0.939: This value is more significant than 0.9, indicating a good fit. AGFI (Adjusted Goodness of Fit Index) = 0.927: This value is more significant than 0.9, indicating a good fit. NFI (Normed Fit Index) = 0.954: This value is more significant than 0.9, indicating a good fit. IFI (Incremental Fit Index) = 0.992: This value is more significant than 0.9, indicating a good fit. TLI (Tucker-Lewis Index) = 0.991: This value is more significant than 0.9, indicating a good fit. CFI (Comparative Fit Index) = 0.992: This value is more significant than 0.9, indicating a good fit.

a good fit. RMSEA (Root Mean Square Error of Approximation) = 0.02: This value is less than 0.08, indicating a good fit. In summary, all model fit indices meet the required thresholds, indicating that the model fits the data well.

Model Fit Indicators	CMIN	DF	CMIN/DF	RMR	GFI	AGFI	NFI	IF	TAG	CFI	RMSEA
Standard value	--	--	1-3	0.05	>=0.9	>=0.9	>=0.9	>=0.9	>=0.9	>=0.9	<=0.08
Statistical value	298.595	290	1.03	0.023	0.949	0.938	0.965	0.999	0.998	0.999	0.008

Regression Analysis

The results of testing hypotheses H1~H8 using Structural Equation Modeling (SEM) are presented in Table 3 and Figure 3. The details of these hypothesis tests are as follows: H1: The path from Leisure Involvement (LI) to Tourist Well-Being (TWB) shows a positive coefficient (B=1.463, Beta=0.767), with p=0, which is less than 0.01. Therefore, H1 is supported. H5: The path from Leisure Involvement (LI) to Tourist Loyalty (TL) shows a positive coefficient (B=0.857, Beta=0.449), with p=0, which is less than 0.001. Therefore, H5 is supported. H8: The path from Tourist Well-Being (TWB) to Tourist Loyalty (TL) shows a positive coefficient (B=0.433, Beta=0.433), with p=0, which is less than 0.001. Therefore, H8 is supported. H3: The path from Tourist Well-Being (TWB) to Environmental Responsible Behavior (ERB) shows a positive coefficient (B=0.129, Beta=0.212), with p=0.001, which is less than 0.01. Therefore, H3 is supported. H2: The path from Leisure Involvement (LI) to Environmental Responsible Behavior (ERB) shows a positive coefficient (B=0.648, Beta=0.557), with p=0, which is less than 0.001. Therefore, H2 is supported. H6: The path from Tourist Loyalty (TL) to Environmental Responsible Behavior (ERB) shows a positive coefficient (B=0.118, Beta=0.193), with p=0.005, which is less than 0.01. Therefore, H6 is supported. These results demonstrate that all the proposed hypotheses are supported, indicating significant relationships among the variables in the model.

latent variable	Observed variable	Non standardized coefficient (B)	Standardized Coefficient (Beta)	S.E	t_value	p
TWB	<--- LI	1.463	0.767	0.138	10.582	***
TL	<--- LI	0.857	0.449	0.153	5.617	***
TL	<--- TWB	0.433	0.433	0.069	6.287	***
ERB	<--- TWB	0.129	0.212	0.04	3.247	0.001
ERB	<--- LI	0.648	0.557	0.11	5.885	***
ERB	<--- TL	0.118	0.193	0.042	2.825	0.005

Intermediary Analysis

Further, using AMOS 23.0, the bias-corrected percentile Bootstrap method was employed to test the mediating roles of tourist fatigue and tourist experience. 5000 Bootstrap samples were drawn, with the confidence interval set at 95%. The mediating effect was tested using the Bias-corrected Percentile Bootstrap method, yielding the following results:

Hypothesis H4: In the path from Leisure Involvement (LI) to Environmental Responsible Behavior (ERB) mediated by Tourist Well-Being (TWB), the p-value is 0.014 (<0.05), and the 95% confidence interval (CI) is [0.044, 0.324], which does not include zero. This indicates that the mediating effect is significant. Hypothesis H7: In the path from Leisure Involvement (LI) to Environmental Responsible Behavior (ERB) mediated by Tourist Loyalty (TL), the p-value is 0.025 (<0.05), and the 95% CI is [0.018, 0.175], which does not include zero. This indicates that the mediating effect is significant. Hypothesis H9: In the path from Leisure Involvement (LI) to Environmental Responsible Behavior (ERB) sequentially mediated by Tourist Well-Being

(TWB) and Tourist Loyalty (TL), the p-value is 0.025 (<0.05), and the 95% CI is [0.008, 0.155], which does not include zero. This indicates that the mediating effect is significant.

These results confirm that tourist well-being and loyalty significantly mediate the proposed pathways, validating the hypothesized relationships in the study.

Bootstrap Mediation effect test					
Mediation pathway	effect value	SE	Bias-corrected 95%CI		P
			Lower	Upper	
LI_TWB_ERB	0.189	0.071	0.044	0.324	0.014
LI_TL_ERB	0.101	0.039	0.018	0.175	0.025
LI_TWB_TL_ERB	0.074	0.038	0.008	0.155	0.025

CONCLUSION

Using Yanghu Urban Wetland Park in Changsha, Hunan Province as a case study, this study is grounded in the self-regulation of attitude theory. By constructing a dual mediation model of "leisure involvement \rightarrow well-being/loyalty \rightarrow tourists' environmentally responsible behavior," the research aims to uncover the driving mechanisms behind tourists' environmentally responsible behaviors. Combining theoretical construction with empirical testing, this study investigates how leisure involvement influences tourists' environmentally responsible behaviors. The goal is to enhance the theoretical understanding and predictive power of tourists' environmentally responsible behaviors, enriching and expanding the research scope. This integrated approach provides a valuable reference for future studies aiming to develop comprehensive models or composite perspectives. Furthermore, the insights gained from this theoretical framework contribute to a deeper understanding of tourists' behavioral motivations and emotional experiences in natural environments, offering scientific guidance for wetland park management.

This study provides practical implications for the sustainable management of destination environments. Our findings reveal that emotional factors positively influence individuals' environmentally responsible behaviors. Based on this conclusion, destination managers should consider the role of tourists' emotions when formulating environmental protection strategies. For instance, they could employ methods that evoke positive emotions to encourage environmentally responsible behaviors among tourists. Additionally, optimizing tourism service details to enhance tourists' well-being and loyalty can have spillover effects, promoting their environmentally responsible behaviors.

From the analysis of the previous results, the main conclusions of this study are as follows:

First, tourists' leisure involvement directly and positively affects their well-being, loyalty, and environmentally responsible behaviors. This indicates that leisure involvement (LI) as an antecedent variable can effectively predict pro-environmental behaviors among tourists. Tourists with high LI are more likely to exhibit pro-environmental behaviors, reduce deviant behaviors, and mitigate negative impacts on the destination. Tourism operators and destination managers can use these findings to improve the tourism experience and increase tourists' leisure involvement. For example, by offering attractive activities, enhancing interactive participation, providing personalized services and experiences, and fostering emotional connections through the transmission of positive emotions, managers can effectively enhance tourists' leisure involvement, thereby increasing their well-being and loyalty.

Second, examining mediation pathways found that tourist loyalty and well-being mediate the relationship between leisure involvement and tourists' responsible behaviors. This has practical significance for wetland park managers, who can encourage tourists' environmentally responsible behaviors by leveraging methods that awaken positive emotions. The findings suggest that tourists' leisure involvement fosters loyalty and love for urban wetland parks, promoting environmentally responsible behaviors that extend into their daily lives, thereby enhancing their environmental responsibility awareness and triggering more proactive environmental

protection actions. Additionally, optimizing tourism service details to enhance tourists' well-being can have spillover effects that promote environmentally responsible behaviors. Therefore, establishing and strengthening emotional connections and loyalty between tourists and wetland parks may help achieve more positive environmental outcomes.

Third, well-being directly impacts loyalty, and leisure involvement indirectly affects environmentally responsible behaviors through well-being and loyalty, indicating a sequential mediation effect. This implies that leisure involvement enhances well-being, subsequently increasing loyalty, ultimately influencing environmentally responsible behaviors. Tourists who experience well-being are more likely to develop loyalty to the destination, care for, and protect the environment they enjoy, leading to environmentally responsible behaviors such as avoiding littering and participating in environmental protection activities. The study's conclusions contribute to a deeper understanding of tourists' behavioral motivations and emotional experiences in wetland parks, providing valuable insights for enhancing environmental behaviors and promoting sustainable tourism.

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