Journal of Research Administration
Society of Research Administrators International

THE IMPACT OF SOCIAL CAPITAL AND ENVIRONMENTAL ATTITUDE ON PRO-ENVIRONMENTAL BEHAVIORS OF RESIDENTS AT TOURIST SITE IN CHINA

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Abstract: The growing environmental issues caused by the tourism sector have drawn significant attention to the eco-friendly actions of locals in tourist areas, becoming a focal point for numerous studies. However, there are few studies on Chinese tourist communities as a case study. Social capital affects the attitudes and behaviors of social members through interpersonal networks, group norms and social trust. However, despite its significance, the impact of social capital on the eco-friendly attitudes and actions of those living in tourist destinations is not well understood. This study focuses on the inhabitants of Guilin Scenic Area in Guangxi. Using AMOS software to analyze 372 valid questionnaires, the study reveals that aspects of social capital such as social networks, social trust and group norms directly affect residents' pro-environmental behavior. Furthermore, group norm can influence pro-environmental behavior through the intermediary role of environmental attitudes, which in turn directly and notably impact pro-environmental behavior. Therefore, in order to improve the environmental protection behavior of residents in scenic spots, the government needs to strengthen residents' environmental communication, formulate and improve environmental protection regulations, and create a social atmosphere in which everyone is responsible for environmental protection. At the same time, it also needs to work hard to help residents establish a positive environmental attitude.

Keywords: Pro-environmental behavior; Residents of tourist destination; Social capital; China

Introduction

The economic growth of tourist communities is deeply intertwined with the development of their local tourism industry. This progress is key in boosting the economic wellbeing of communities reliant on tourism. (Manzoor et al., 2019). The positive impact of tourism is seen in various ways, such as increasing employment opportunities and income levels for community members, improving their quality of life and social capital, and upgrading the basic living facilities within these communities. Local residents are integral to the tourism industry, not just as beneficiaries but as active participants. Their involvement is crucial in the environmental protection of tourist attractions (Hwang & Kim, 2020). The environmental quality of eco-tourism destinations is significantly influenced by the eco-environmental behaviors of residents in these areas. The daily behaviors, attitudes, knowledge about the environment, and economic activities of the residents directly and significantly impact their surrounding environment (Wang & Zhang, 2021).

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However, the rapid development of tourism and increasing occurrences of natural disasters pose challenges. These factors disturb the ecological environment of many tourist destinations, influenced by both human and natural activities (Tang et al., 2022). The environmental quality of eco-tourism sites is affected not only by tourist behaviors but also by the eco-environmental practices of local residents (Yang, 2020). These residents are a crucial interest group in the development of eco-tourism, with their engagement and behaviors being vital in maintaining a balance between tourism development and environmental sustainability. Pro-environmental behavior is a key catalyst in advancing the "green" tourism economy, is increasingly gaining attention from researchers and policymakers (Han et al., 2016). It is believed that various environmental issues stemming from tourism activities can be mitigated through the encouragement of such behavior (Dornhoff et al., 2019). Pro-environmental behavior refers to actions focused on conserving natural resources and safeguarding ecosystems in a sustainable manner(Kharat et al., 2017). This behavior can effectively reduce environmental degradation (Balundė et al., 2019) and foster the robust and sustainable growth of the tourism industry.

An examination of existing literature reveals a scarcity of research investigating the disparity in environmental consciousness between urban and rural dwellers from socio-economic viewpoints. This gap contributes to the limited relevance and efficacy of China's environmental and health policies (Tian et al., 2022). In addition, the Chinese government has realized that environmental protection will not only not hinder the economy, but also promote enduring and environmentally responsible economic growth. The “14th Five-Year Plan (2021-2025)” includes green development as one of the five key drivers of development. However, despite the seriousness of objective levels of environmental pollution, research assessing the attitudes of Chinese residents toward the health effects of environmental pollution is very limited (Yang, 2020). Therefore, from the perspective of social capital, this study aims to explore the factors and motivating mechanisms that shape the pro-environmental actions of residents in tourist destinations, to increase public support for green tourism development and environmental protection in China's scenic spots.

1 Theory and hypothesis

1.1 Social capital theory

Social capital theory, as conceptualized by prominent scholars like Putnam (2000), Coleman (1988), and Bourdieu (1986), focuses on the value and utility derived from social networks and interactions. Putnam emphasized the role of trust, norms, and networks in forming social capital and its impact on communities and democratic engagement (Putnam, 2000). Coleman's framework considered social capital as a resource within social structures, aiding in the achievement of certain actions that would not be possible in its absence (Coleman, 1988). Bourdieu's perspective highlighted the forms of capital (economic, cultural, social) and their interplay, viewing social capital as a collection of potential resources linked to a durable network of relationships (Bourdieu, 1986).

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Numerous researchers have identified social capital as a pivotal factor influencing environmental outcomes, with studies by Li and Wu (2019),Chen et al. (2022) and Baloch et al. (2022) highlighting its significance. They suggest that the role of social capital in environmental contexts varies, indicating a complex interplay between social networks, trust, and environmental stewardship (Jin, 2013). Consequently, when social capital theory is applied to the analysis of residents' environmental behaviors, it not only deepens our understanding of the theory itself but also broadens its logical scope and applicability(Ahmed et al., 2021).

The article integrates social capital theory into the examination of pro-environmental behavior among residents. It develops a model linking social capital—encompassing social networks, group norms, and social trust—with the pro-environmental attitudes and actions of residents in Chinese tourist areas. This model aims to elucidate the influence and operational mechanisms of social capital on PEB.

1.2 Pro-environmental behaviors (PEB)

PEB is variously termed in literature, including environmentally responsible behavior (Blamey, 1998), environmentally salient behavior(Stern, 2000), sustainable behavior (Steg & Vlek, 2009), environmentally friendly behavior(Ferguson et al., 2011), and green behavior(Norton et al., 2016).This concept is defined as an individual's deliberate actions aimed at minimizing negative impacts on the natural ecosystem (Kollmuss & Agyeman, 2002). Within tourism research, it specifically refers to tourists' responsible actions towards the environment during their travels (Li et al.).

Since its introduction, the notion of PEB has garnered interest across multiple scholarly domains, including tourism management, environmental geography, environmental psychology, and consumer behavior studies. This multidisciplinary interest has resulted in a substantial body of research related to the topic. Previous studies have recognized that pro-environmental behavior is susceptible to influence and intervention. Researchers have explored various personal factors that predict environmental behavior. These include attitudes(Cho et al., 2013), norms(Ajzen, 1991; Bamberg & Möser, 2007; Wang et al., 2019), emotions (Qiu, 2016), values (Chan, 2020), etc., examining how these internal elements influence individual environmental actions. Additionally, there has been research on external factors affecting environmental behavior. These research efforts have concentrated on objective environmental factors, encompassing aspects like the presence and accessibility of recycling facilities, the efficiency and quality of public transportation options, the introduction and growth of new eco-friendly technologies, and the availability of environmentally sustainable products in the consumer market. Such research underscores the multifaceted nature of influences on pro-environmental behavior, encompassing both internal motivators and external environmental conditions(Ertz et al., 2016).

1.4 Research hypotheses and model construction

1.4.1 Group norm and PEB

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Recent research increasingly acknowledges the importance of group norms in environmental policy matters (Li & Wu, 2020). Studies have shown subjective norms can influence PEB decisions, even in individuals far from their home environment (Han et al., 2018; Li & Wu, 2020; Li & Wu, 2019; Wu et al., 2021). Such as Han et al. (2018) demonstrated that normative factors could positively impact vacationers' intentions regarding waste reduction and recycling. Juvan and Dolnicar (2017) highlighted that social norms could motivate tourists to either reduce their number of vacations or choose more environmentally sustainable transportation options. Li and Wu (2020) discovered a significant link between social interaction elements like in-group norms and tourists' intentions for both low-effort and high-effort environmental behaviors at destinations. Additionally, Wu et al. (2021) explored how social norms could moderate the relationship between group norm and PEB. In light of these findings, the study proposes the following hypothesis:

H1. There is a positive relationship between group norms and pro-environmental behaviours.

1.4.2 Social trust and Pro-environmental behaviours

Social trust is increasingly acknowledged as a key driver of both prosocial and PEB (Andersson et al., 2018; Cho & Kang, 2017). This concept enhances residents' sense of belonging and trust within their communities, which in turn fosters pro-environmental behavior (PEB). Research examining the connection between social capital and PEB, such as the study by Macias and Williams (2016), identified social trust among residents as a crucial motivator for PEB. Using an international dataset, Additionally, an international study by Tam and Chan (2018) revealed a more pronounced link between social trust and PEB in societies characterized by higher levels of trust. Caferra et al. (2021) found that social trust could strongly influences energy-saving behaviours of European people. Irawan et al. (2022) found that when individuals expected that other tourists would work hard to maintain the ecological environment of the place, they would be more likely to realize that they should adopt behaviours to positively affect the environmental quality of that area. Li and Wu (2020) believed that if some tourists thought that most people would not protect the scenic environment, it would be very difficult for him or her to be aware of and feel guilty about the negative impact of personal behaviours on the scenic environment. Therefore, based on these premises, the following hypothesis has been proposed in this study:

H2. There is a positive relationship between social trust and PEB

1.4.3 Social network and Pro-environmental behaviour

Various articles have highlighted the critical role of social networks in shaping environmental behaviors and attitudes. Yamazaki et al. (2018) examined Indonesian fishermen to understand how their interactions within the community influence their environmental practices. Severo et al. (2019) investigated the link between social networks and environmental awareness and behavior in a globalized context, finding a strong correlation. Su's research revealed that social networks act as a catalyst for environmental protection behaviors among rural residents. Dean et al. (2016) noted the significant influence of social networks on Australian adults' perspectives regarding

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rainwater harvesting, desalination, and water recycling. Gou (2019) studied the sorting of domestic waste in Beijing and observed a substantial positive impact of community social networks on this process. Similarly, Peng found that social networks effectively encourage e-waste recycling(Peng et al., 2017). Further, studies by Sílvia et al. (2020) in Ecuador and Portugal, respectively, demonstrated how engagement with social organizations can significantly boost the reuse efficiency of plastic bags among residents. These findings collectively underscore the importance of social networks, a component of social capital, in promoting PEB in tourism communities. Consequently, this study puts forth the following hypotheses based on these observations:

H3. There is a positive relationship between social network and Pro-environmental behaviour.

1.4.4 Group norm and Environmental Attitude

Many researchers have found that individual group norms can also have a positive impact on their behavioural attitudes. Ajzen (1991) established the assumption that subjective norms affect behavioural attitudes. The empirical data test found that the model has good explanatory power, and subjective behavioural attitudes are significantly positive to personal norms. Han et al. (2010) found that individuals' attitudes towards green hotels are influenced by social norms, and the added path can significantly improve the model fitting degree and enhance the explanatory ability. Ahmed et al. (2021)’s results showed statistically supportive associations between group norms and attitudes and peer influence. Hasan, He, & Lu (2020) conducted research on China's market lending industry and found that group norms has an important influence on economic attitudes and results. When Castillo and his colleagues (2021) studied the willingness and behaviour of farmers to adopt irrigation technology, they found that the higher the group norms of social capital, the better the farmers' perception of results (attitudes). Li (2015), Based on the research conducted by Li and Wu (2020), which revealed that the group norms aspect of social capital significantly and positively influences the environmental protection attitudes of Chinese tourists, this study builds upon these findings and proposes the following hypotheses.

H4. There is a positive relationship between social network and environmental Attitude.

1.4.5 Environmental Attitude and PEB

The concept of environmental attitude, as defined by Ajzen(Ajzen, 1985), relates to an individual's negative or positive perception of engaging in tourist sites. This influence of environmental attitudes on behaviors has been substantiated in various studies. Do Valle indicated that the disparity between those who recycle and those who do not could be due to differing attitudes towards recycling(Do Valle et al., 2004). Mohamed identified environmental attitude as a crucial determinant in consumer participation in green purchasing(Mohamed, 2007). Blok found that a positive attitude towards recycling is a significant explanatory factor for individual recycling behaviors, more so than other variables(Blok et al., 2015). Furthermore, the Planned Behavior Theory (TPB), a cornerstone in environmental behavior research, recognizes the attitude towards behavior as a key influencer of environmental actions. In the context of tourism, Han et al. (2015)

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applied the TPB model and discovered that the environmental attitudes of guests at green hotels in the US had a significant positive impact on tourists' pro-environmental behaviors. This model was also found to effectively explain tourists' pro-environmental actions(Han, 2015). Based on these findings, the study proposes the following hypotheses:

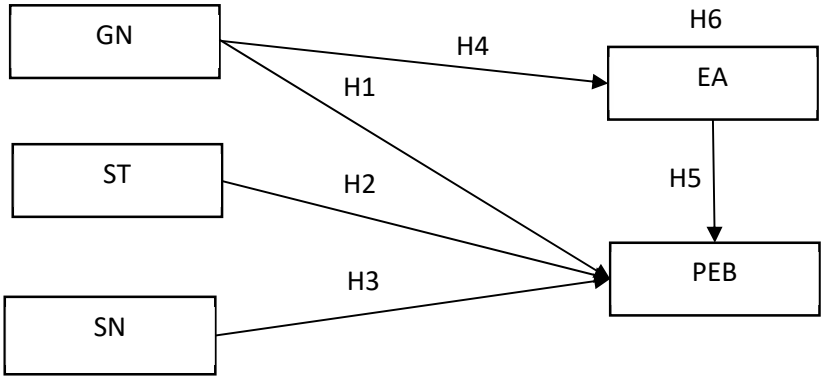
H5: There is a positive relationship between environmental attitude and Pro-environmental behaviour.

1.4.6 The mediating role of environmental attitudes

Research has shown that social interactions can trigger specific attitudes, thereby influencing individuals' intentions toward pro-environmental behavior (PEB) (Han, 2015; Raymond et al., 2011; Stern, 2000; Ünal et al., 2018). Group norms, as a vital component of social interaction, play a role in shaping individual attitudes, which in turn impact PEB (Halpenny, 2010). The relationship between attitudes and environmental behaviors is further moderated by various situational factors. The Attitude-Behaviour-Context theory posits that behavior is a joint outcome of personal attitudinal factors and contextual influences, suggesting that attitudes can mediate the relationship between behavior and social pressures in the context. Cho's research indicates that environmental attitudes are positively influenced by perceived group norms, leading to pro-environmental intentions (Cho et al., 2013). Similarly, some scholars demonstrated that the effect of contextual factors like group norms on PEB is mediated through attitude. Considering these insights, this study formulates the following hypotheses:

H6: Environmental attitude act as a mediator between group norm and Pro-environmental behaviour.

So, the framework of this artice is as follows：



2. Collection and Study Design

2.1 Study area

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Guilin, known for its unique karst landscape and is one of China's major tourist destinations. As a national 5A scenic spots, Guilin boasts stunning natural scenery, particularly along the Li River, which is celebrated as a "Hundred Mile Gallery". The Li River Scenic Area is the most iconic spot in Guilin, famous for its crystal-clear waters and the peculiar peaks along its banks. Guilin also possesses a wealth of cultural resources. Famous attractions in the area include the iconic Elephant Trunk Hill, the mesmerizing Reed Flute Cave, the picturesque Seven Stars Park, and the vibrant West Street in Yangshuo.. Elephant Trunk Hill is named for its unique shape that resembles a giant elephant drinking from the river. Yangshuo West Street is known for its ancient streets and multicultural blend, attracting visitors from around the world.In addition, Guilin is rich in historical relics and cultural heritage. Ancient poets like Li Bai and Du Fu have praised Guilin's landscapes, leaving behind many memorable poems. The region is also home to numerous historical sites and ancient structures, such as Solitary Beauty Peak and the Ancient East Waterfall, which are not only beautiful but also hold significant cultural and historical value. As a travel destination combining natural beauty and cultural depth, Guilin has always been a magnet for tourists from both China and abroad. Therefore, residents living near Guilin scenic spots can directly observe or enjoy Guilin’s natural beauty and cultural influence, and then engage in pro-environmental behaviors. Therefore, this study considers the area as a case study of social capital and PEB to be of typical significance.

2.2. Questionnaire Design

For dissertation questionnaires, a research instrument can often be adopted, adapted, or developed. The research tools used in this article are those adopted and adapted from. This study's survey is structured into five distinct parts. The initial section examines group norms, the second section measures social trust, the third section assesses social networks, the fourth section evaluates environmental attitudes, and the final, fifth section determines pro-environmental behaviors. Respondents must choose from given answers, with responses evaluated on a 5-point Likert scale, where 1 signifies 'strongly disagree' and 5 indicates 'strongly agree'. In addition to these closed-ended questions, the questionnaire includes open-ended items to gather personal information from respondents and their views and suggestions on environmental protection behaviors. Given that the target demographic is residents of China, the questionnaire is prepared in Chinese.

2.3 Data collection

The communities near Elephant Trunk Hill Park and Yangshuo West Street in Guilin were selected as our research locations, and the survey was conducted in two setps. The first setps survey is a questionnaire pre-survey conducted in December 2021 to test the validity of the questionnaire and make necessary adjustments. After pre-survey, we officially distributed 500 questionnaires in communities near these two scenic spots. In the end, we recovered and sorted out 372 valid questionnaires, with an effective recovery rate of 74.4%. Through these two surveys, we aimed to obtain the environmental attitudes of residents near Elephant Trunk Hill Park and Yangshuo West Street in Guilin City and their opinions on local environmental protection behaviors.

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2.4 Sample description

In the pool of 372 valid responses collected for the study, the gender distribution shows 56% of the survey participants are female, and 44% are male. Most of these respondents are aged between 31 and 40 years, accounting for 36.7% and the smallest is over 60, accounting for 8.35%. All of them are from China, 44.62% are single. As for the educational background, the majority have an undergraduate degree or below, accounting for 48%. As for occupation, the respondents who work in companies account for the largest proportion (52.91%). 3.6% have retired (the lowest). Most of the respondents' monthly income is between RMB 10000~15000, with a percentage of 36.2%.

Table 1 Reliability and validity analysis

Variable	Coding	Loading	CR	AVE	P	Cronbach's α	KMO
SN	SN2	0.624	0.814	0.527	0.000	0.811	0.780
	SN3	0.756			0.000		
	SN4	0.859			0.000		
	SN5	0.640			0.000		
ST	ST1	0.644	0.871	0.577	0.000	0.868	0.859
	ST2	0.861			0.000		
	ST3	0.809			0.000		
	ST4	0.754			0.000		
	ST5	0.71			0.000		
GN	GN1	0.756	0.852	0.536	0.000	0.852	0.857
	GN2	0.677			0.000		
	GN3	0.74			0.000		
	GN4	0.767			0.000		
	GN5	0.718			0.000		
EA	EA1	0.737	0.857	0.601	0.000	0.857	0.782
	EA3	0.714			0.000		
	EA5	0.836			0.000		

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	EA7	0.808			0.000		
	PEB1	0.721			0.000		
	PEB2	0.734			0.000		
PEB			0.806	0.511		0.803	0.786
	PEB3	0.77			0.000		
	PEB6	0.626			0.000		

3. Results

3.1 Reliability and validity analysis

The article primarily utilizes SPSS 22.0 and AMOS 23.0 software for its analysis. Initially, SPSS 23.0 is employed to evaluate the reliability and validity of the survey items. The scale's reliability is assessed using Cronbach's alpha coefficient, where values closer to 1 signify higher reliability. Typically, a Cronbach's α above 0.7 is deemed acceptably reliable, while a value above 0.8 is considered excellent. The findings reveal that the overall KMO measure is 0.943, Bartlett's test of sphericity is significant at less than 0.001, and the Cronbach's alpha for dimensions such as Group Norm, Social Trust, Social Network, Environmental Attitude, and Pro-environmental Behavior all exceed 0.7. These results suggest that the data is highly reliable and exhibits strong internal consistency.

Furthermore, the study performed an extensive analysis to validate the data. The results showed that the factor loadings for each item in the questionnaire varied between 0.626 and 0.7, exceeding the minimum benchmark of 0.5 (Tracey et al., 1999), reached statistical significance at the 0.001 level, suggesting that each questionnaire item effectively represents the underlying latent variables. To assess convergent validity, Construct Reliability (CR) and Average Variance Extracted (AVE) were used. In this research, the CR for each latent variable surpassed 0.7, and the AVE values were greater than 0.5, indicating solid convergent validity. As shown in Table 2, the AVE values for all variables exceeded the squared correlation coefficients between each variable and others, pointing to strong discriminant validity (Fornell & Larcker, 1981), clearly differentiating between the variables.

Table 2 The Results of Discriminant validity test

Variables	AVE	SN	ST	GN	EA	PEB
SN	0.527	**0.726**				
ST	0.577	0.228	**0.760**			
GN	0.536	0.423	0.424	**0.732**		

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EA	0.601	0.435	0.491	0.708	**0.775**	
PEB	0.511	0.413	0.503	0.593	0.601	**0.715**

3.2 Structural Model Analysis

3.2.1 Hypothesis test results

The article employed AMOS 26.0 software to develop a structural equation model. The model's $\chi 2/df$ is 2.791, falling below the ideal threshold of 3. The RMSEA stands at 0.077, which is within the desirable range of 0.05 to 0.08. Additional fit indices include the CFI at 0.889, the IFI at 0.890, and the TLI at 0.873. All these values are close to the benchmark of 0.9, suggesting that the hypothetical model demonstrates a good fit and a sound structure. This validation allows for the proceeding to the next phase of structural equation testing. The test results of the proposed model are detailed in Table 3.

Table 3 Structural model fit test

Model	$\chi 2/df$	RMSEA	CFI	IFI	TLI
Value	2.791	0.077	0.889	0.890	0.873

Table 4 confirms the validity of the proposed hypotheses. It reveals that group norms have a notable impact on pro-environmental behavior, with a significant standardized path coefficient of 0.321 at the 0.05 level. This implies that individuals who prioritize group norms tend to participate more in pro-environmental activities, driven by their concern for the group's collective interests. Similarly, social trust has a substantial effect on pro-environmental behavior, evidenced by a standardized path coefficient of 0.308 at the 0.05 level. This indicates that individuals in high social trust communities are more inclined towards pro-environmental actions, influenced by a sense of collective responsibility. The role of social networks is also significant, showing a standardized path coefficient of 0.150 at the 0.05 level, suggesting that individuals with strong social network ties are more engaged in environmental initiatives, motivated by their network's collective interests.

Additionally, the study found a significant link between group norms and environmental attitudes, evidenced by a standardized path coefficient of 0.735 at the 0.05 significance level. This implies that individuals who strongly adhere to group norms are likely to hold more favorable environmental attitudes. Moreover, the relationship between environmental attitudes and pro-environmental behavior was also significant, with a path coefficient of 0.293 at the 0.05 level, indicating that those with positive environmental attitudes tend to be more inclined towards engaging in pro-environmental behaviors.

Table 4 Summary result for proposed hypotheses

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Hypothesis		Estimate	S.E.	C.R.	p	Result
H1	GN-->PEB	0.321	0.137	2.352	0.019	Supported
H2	ST-->PEB	0.308	0.081	3.789	0.000	Supported
H3	SN-->PEB	0.150	0.064	2.340	0.019	Supported
H4	GN-->EA	0.735	0.079	9.295	0.000	Supported
H5	EA-->PEB	0.293	0.119	2.468	0.014	Supported

3.2.2 Mediation effect

To delve deeper into whether environmental attitude acts as an intermediary in the connection between group norms and pro-environmental behavior, the study employed the Bootstrap sampling method in AMOS 22. This approach involved adjusting the number of resamples to 5,000 and setting the confidence interval at 95% to assess the mediating effect of attitude. Determining the mediation effect hinges on two criteria. Firstly, the significance of the total effect path is determined by the Critical Ratio (CR) value; if this value exceeds 1.96, the overall path effect is significant, indicating the potential presence of a mediation effect. If the CR value is below this threshold, a mediation effect is likely absent. Secondly, the existence of a partial mediation effect depends on both the indirect and direct effects having CR values greater than 1.96. Should only the direct effect meet this criterion, while the indirect effect does not, it suggests a complete mediation effect between the variables. These findings are detailed in Table 5 of the article.:

Table 5 Result for Mediation effect

H6	Effects	Estimate	S.E.	C.R.
GN-->EA-->PEB	Total Effect	0.536	0.115	4.661
	Direct Effect	0.321	0.144	2.229
	Indirect Effect	0.215	0.108	1.991

The relationship path between group norm and PEB in the study demonstrates significant total, direct, and indirect effects, with their respective Critical Ratio (CR) values all exceeding 1.96 (total effect CR=4.661, direct effect CR=2.229, and indirect effect CR=1.991). This indicates the presence of a partial mediating effect. Specifically, group norms indirectly influence PEB through environmental attitude, following the pathway of group norm → environmental attitude → PEB, with a standard error (SE) of 0.108. This finding underscores that environmental attitude partially mediates the relationship between group norm and PEB. In other words, while group norms

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directly affect pro-environmental behavior, they also exert an indirect impact through environmental attitudes.

4 Conclusions

4.1 Research conclusions and implications

This article delves into the impact of social capital and environmental attitude on the pro-environmental behaviors of residents in Chinese tourist destinations. To facilitate this exploration, the study establishes a conceptual framework comprising five key constructs: Group Norms, Social Trust, Social Network, Environmental Attitude, and Pro-Environmental Behavior. By integrating these elements, the article enhances the understanding of social capital theory, particularly in relation to how it shapes residents' environmental behaviors. This approach not only offers a comprehensive view of the factors driving pro-environmental actions in these settings but also extends the application of social capital theory to the environmental behavior context, providing valuable insights for both theory and practice in environmental stewardship and sustainable tourism development:

First, the study reveals that the average scores for group norms, social trust, social networks, and environmental attitudes among residents are all above 3.6 points, indicating a general recognition of environmental importance and a proactive stance towards environmental issues. Residents display a tendency to prioritize collective interests and maintain a positive social image. However, the average score for pro-environmental behavior is notably lower at 3.2 points, suggesting a gap between environmental awareness and actual environmental actions. This highlights a need for improved pro-environmental practices among residents. Consequently, managers at tourist attractions should focus on addressing these gaps in environmental behavior. By enhancing the influence of group norms and social information, fostering stronger environmental attitudes, and implementing effective strategies for PEB, they can encourage more environmentally responsible actions among residents.

Secondly, this study uncovers that the three facets of social capital—group norms, social trust, and social networks—each exhibit a positive and significant influence on pro-environmental behavior. This influence manifests in several ways: 1. Residents with strong group norms are inclined to adhere to the accepted conduct and shared interests within their communities. Consequently, managers of tourist sites should focus on enforcing environmental protection policies more stringently, reinforcing a collective-level environmental discipline, and fostering an environmental governance model that is led by authorities but actively involves the public. 2. Heightened social trust among individuals fosters a positive "peer effect" in environmental behaviors, enhancing pro-environmental actions among residents. Therefore, eco-tourism site managers should efforts to communicate the significance of individual contributions to environmental protection. It's crucial to convey that each person's actions, including those of other tourists, significantly impact the ecological well-being of the site. 3. Strengthening social networks allows residents to access more

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social resources, heightening their awareness of environmental issues, willingness to protect the environment, and the enactment of PEB. Government officials can promote residents' environmental conduct by organizing activities centered on environmental preservation and collaborating with informal environmental organizations. By implementing these strategies, there's a potential to greatly enhance environmental stewardship among residents in tourist areas.

Finally, the study investigates the impact of environmental attitudes on their PEB. It finds that these attitudes not only directly affect residents' environmental actions but also mediate the relationship between group norms and PEB. Therefore, shaping environmental attitudes in tourist areas is crucial for boosting their environmental consciousness and actions. To achieve this, managers of scenic areas can organize regular environmental protection activities that resonate with residents. Integrating environmental themes into popular local festivals, such as the Osmanthus Festival, Earth Day, and Hanfu Cultural Festival, could effectively engage residents in environmental issues. These activities serve as platforms for fostering a deeper understanding and commitment to environmental stewardship. Given the transformative role of environmental attitudes in converting group norms into pro-environmental behaviors, the government should intensify its efforts in promoting and educating about sustainable practices. By raising awareness about the significance of environmental protection for a country's sustainable development, residents can develop more positive attitudes towards the environment. Such educational campaigns and initiatives are key to cultivating a culture of environmental responsibility among the community.

6. Limitation

To begin, regarding the scope of the research, this article focus was limited to collecting representative samples from residents in tourist areas of Guilin. This specificity in sample location may constrain the broader applicability of the findings to other regions across China. As a result, the sample coverage of subsequent studies must be expanded to include additional other parts of China in order to verify and encourage the application of the study findings in those regions. Secondly, in terms of research design, because of the restrictions imposed by the research time and the conditions of the study, this study evaluated the theoretical model and the hypothetical relationships using the statistical inference method of cross-sectional data. Given the difficulties in confirming a direct causal link among the studied variables, future studies might gain from employing a longitudinal methodology to explore the principal findings of this research more comprehensively. Additionally, regarding the research methodology, the study employed a quantitative approach, specifically utilizing self-administered questionnaires to gather data. Since the survey findings are derived on self-responded data, it is possible for some of these respondents to provide opinions that are inflated or frustrated. This may explain the incorrectly filled and invalid questionnaire in this article.

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