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Research Paper

Visitor satisfaction and behavioral intentions in nature-based tourism during the COVID-19 pandemic: A case study from Zhangjiajie National Forest Park, China

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Nature-based tourism (NBT) has become a popular tool for developing countries to achieve economic growth by the non-destructive use of their natural resources. COVID-19 has caused severe financial impacts on tourism-dependent areas. Revitalizing NBT is needed for economic recovery in those regions and can also help deal with mental health issues worldwide. Zhangjiajie National Forest Park (ZNFP), the first national park created in China, was selected to examine the important factors that influence visitor satisfaction during the COVID-19 pandemic and the relationship between satisfaction and visitors’ environmentally responsible behavior (ERB) intention. The authors collected 788 onsite and online questionnaires from visitors to ZNFP during June–September 2020. This paper reveals previously underestimated factors and offers practical applications for park development at ZNFP and other NBT destinations. Visitors had a high level of satisfaction with the natural scenery of the park but were relatively dissatisfied with price reasonableness, park services, activities and events, and artificial attractions. Younger visitors, especially students, and well-educated visitors looking for environmental education opportunities tended to have lower satisfaction rates. Visitor satisfaction may have a positive but limited influence on promoting visitors’ ERB intentions. We propose group-specific strategies for national park managers to attract more visitors and increase their length of stay.

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1. Introduction

Nature-based tourism (NBT) refers to travel that allows people to enjoy relatively undeveloped natural areas, where natural elements provide the background for tourist activities (Grenier, 2004). National parks and other protected areas are increasingly being developed as popular NBT destinations (Eagles, 2002; ICEM, 2003; Spenceley & Goodwin, 2007), attracting billions of visitors annually. They have become a popular destination for mental and physical relaxation, and social wellbeing, particularly after the travel and tourism restrictions were posed to the public during the COVID-19 pandemic for more than 18 months in China.
Tourism could be an effective tool in conservation and national park management by generating social and economic benefits, such as funding for conservation programs and income generation for local people (Ballantyne, Packer, & Hughes, 2009; Balmford et al., 2009; Bookbinder, Dinerstein, Rijal, Cauley, & Rajouria, 1998). Tourism development could also negatively influence the natural resources and wildlife within the parks by bringing a large number of tourists and stimulating land-use change (Steven, Pickering, & Guy Castley, 2011). NBT has experienced rapid growth in many countries and regions in recent years, especially in developing countries where it has become a strategy to balance nature conservation and socio-economic development (Balmford et al., 2009). There are at least 1033 protected areas in China that have developed nature-based tourism activities (Zeng & Zhong, 2020). Nature reserves and national parks in China are the most popular places for developing NBT (Gu et al., 2021), as they provide visitors with valuable opportunities to experience the country’s natural resources and improve their ecological awareness (Liu, Li, & Pechacek, 2013).

In a global economy where competition for all lands is becoming increasingly fierce, visitors can provide essential societal support for protected areas (Leung, Spenceley, Hvenegaard, & Buckley, 2018; Mulholland & Eagles, 2002; Slabbert & Preez, 2021). To achieve the dual goal of conservation and economic development, national park managers must ensure high-quality visitor experiences without compromising ecological protection (Thapa & Lee, 2017; Tonge & Moore, 2007). Visitor satisfaction is often used as an indicator of the quality of a visitor’s experience (Rodger, Taplin, & Moore, 2015). Visitor satisfaction refers to a visitor’s cognitive-emotional state after experiencing the services, facilities, or other attributes provided by a destination (Bigné, Andreu, & Gnoth, 2005; Rodger, Moore, & Taplin, 2012; Woodside, Frey, & Daly, 1989). High visitor satisfaction can contribute to visitor loyalty, tourism sustainability, brand promotion, and community support (Amin, Chan, & Omar, 2014; Baker & Crompton, 2000; Rodger, Moore, & Taplin, 2012). There are three common models used to conceptualize and measure visitor satisfaction: the “expectation-performance” paradigm (the level of satisfaction is determined by the discrepancy between initial expectations and actual performance) (Oliver, 1980), the “perceived-performance only” model (satisfaction is influenced mainly by visitor perceptions of the experience of the destination) (Churchill & Surprenant, 1982), and the “importance-performance” model (attribute importance is measured in the satisfaction analysis by weighing performance ratings by importance scores) (Barsky, 1992). The performance-only approach is regarded by some researchers as the most reliable and valid measure of satisfaction (Fallon & Schofield, 2013; Fick & Brent Ritchie, 1991).

With the expansion of NBT in national parks, there are calls to improve the visitor experience by evaluating the quality of national park attributes that influence visitor satisfaction (Suanmali, 2014). Demographics and socio-economic backgrounds of visitors are important determinants of their satisfaction with national parks; some studies have found that visitors tend to differ in their degree of satisfaction and loyalty (Pinkus, Moore, Taplin, & Pearce, 2016) depending on their age (Ma, Chow, Cheung, & Liu, 2018), education level (Zhang, Xu, Su, & Ryan, 2009), occupation (Rahman & Shil, 2012), travel purpose (Luo & Deng, 2008; Ma, Chow, Cheung, Lee, & Liu, 2018), and length of stay (Scholtz, Kruger, & Saayman, 2015). More research is needed to verify these findings and develop park services that meet the needs of different sociodemographic groups. Since international travel restrictions were implemented to curb the spread of COVID-19, domestic tourists have started to dominate the tourism market (Hambira, Stone, & Pagia, 2021). The change in tourist composition indicates the urgent task for some National Parks to rethink their operation strategies to accommodate the needs of domestic tourists because they tend to have different expectations and preferences compared to international tourists (Maeda, Yoshida, Toriumi, & Ohashi, 2018; Yuksel, 2004). Not only do they value different things when travelling, but it is also harder to make domestic visitors satisfied with their tourism experiences than their international counterparts (Lee, Lee, & Wicks, 2004; Simpson, Siguaw, & Sheng, 2016). This could attribute to the higher hedonic values and deeper feeling of escapism international tourists can get when travelling abroad (Ponsignon, Lunardo, & Michrafy, 2021). The pandemic could also have an impact on visitors’ intention and motivation for travelling (Moya Calderón, Chavarria Esquivel, Arrieta Garcia, & Lozano, 2021). Therefore, it is critical to examine the factors that influence tourist satisfaction during the pandemic for National Parks to design strategies to adapt to the changes.

Visitor satisfaction may be a potential driver of environmentally responsible behavior (ERB) (Sahabuddin, Tan, Hossain, Alam, & Neokmahmad, 2021). ERB describes visitors’ behaviors during or after travel that is beneficial to environmental protection and the wellbeing of visited areas (Chiu, Lee, & Chen, 2014a; He, Hu, Swanson, Su, & Chen, 2018; Li, Liu, & Wei, 2021; Pan, Chou, Morrison, Huang, & Lin, 2018; Ramkissoon, Weiler, & Smith, 2012). ERB includes general ERB and site-specific ERB (Cottrell & Graefe, 1997; Halpenny, 2010). General ERB can be further classified into multiple categories. For example, Thapa (2010) identified five themes, including political activism, community activism, recycling, education, and green consumerism, and Lee (2011) constructed four themes, including civic action, persuasive action, education, and recycling. Self-reporting is often used to measure visitors’ personal ERB or ERB intention due to the difficulties associated with measuring actual ERB (Kil, Holland, & Stein, 2014; Lee, Jan, & Huang, 2015; Thapa, 1999).

The experience of visiting a protected area is likely to influence visitors’ intentions on adopting onsite and destination-related ERB (Lee & Jan, 2015), but there is still debate on the relationship between visitor experience and ERB intentions (Daryanto & Song, 2021; Kiatkawsin & Han, 2017; Ramkissoon, Graham Smith, & Weiler, 2013). Zeppel (2008) argues that onsite NBT experiences usually assist environmental learning and produce positive emotions in visitors, which would directly lead to increased ERB. Others point out that whether or not visitors adopt more ERB is complicated by destination-related variables, including destination image, place attachment, perceived value, and activity involvement (Cheng, Wu, & Huang, 2013; Chiu, Lee, & Chen, 2014b; Lee, 2011). Visitor satisfaction is a powerful indicator of those variables and can be measured quite easily (Cheng, Wang, Cao, Zhang, & Bai, 2018; Yuksel, Yuksel, & Bilim, 2010). Stedman (2002) suggested that when a visitor is less satisfied with the current situation, he/she is more motivated to try and improve it. Some more recent studies showed that visitors who are more satisfied with the place are more likely to care about the environment and adopt ERB (Ballantyne, Packer, & Sutherland, 2011; Davis, Le, &
Coy, 2011; Kafyri, Hovardas, & Poirazidis, 2012; López-Mosquera & Sánchez, 2011). Ramkissoon et al. (2013) further claim that only intentions for low-effort ERB (e.g., sign an environmental petition, learn about a National Park) can be influenced by visitor satisfaction, while the intentions for high-effort ERB (e.g., attend public meetings, volunteer for environmental projects) are likely to remain unchanged (Song & Soopramanien, 2019). Overall, the number of studies that have looked at the degree to which visitor satisfaction can contribute to a change in ERB intentions is very limited and the results contradictory.

Planning national parks in a way that stimulates visitors’ ERB intentions is crucial for achieving the educational mandate of national parks (Kafyri et al., 2012). A better understanding of the relationship between visitor satisfaction and ERB intentions will help guide the planning process. If high visitor satisfaction can induce higher ERB intentions effectively, park managers may pay more attention to strategies that aim to improve visitor experience, as this would also contribute to environmental protection. During the pandemic, while there are some positive impacts on the ecosystems in protected areas due to reduced visitation and human activities (Neupane, 2020), funding shortage and reduced revenue may force National Parks to prioritize economic benefits over environmental protection and lead to negative environmental impacts (Stone, Stone, Mogomotsi, & Mogomotsi, 2021). Increasing visitor ERB intentions and making them more involved in the protection of National Parks’ natural resources may also relieve some financial burdens for the parks.

In China, there has been little research on visitor perceptions towards domestic national parks (Huang, 2018; Packer et al., 2014). Zhangjiajie National Forest Park (ZNFP), the first national park established in China, has become an important part of the world’s natural heritage and a famous scenic site. However, few studies have investigated ERB intentions (Wang, Dai, Ouyang, & Guo, 2016) or visitor satisfaction in ZNFP (Li, Zhong, & Wang, 2008; Luo, Zhong, Zhao, & Zhang, 2010). Li et al. (2008) found that visitors had a moderate level of satisfaction with ZNFP; the participants were least satisfied with the interpretation system and the souvenir shops. In Luo et al. (2010)’s study, the food and accommodation service and interpretation system were identified as the aspects that most needed urgent improvement. However, these studies involved small sample sizes and did not examine why the identified attributes received the lowest satisfaction rates.

Tourist satisfaction with the ticket price, which is an important factor that influences travel choice (Wang, Wu, Ge, & Ning, 2021), has not been examined for ZNFP. Zhang, Xu, Su, & Ryan, 2009 found that there were negative comments from visitors about the entrance ticket price and service quality in ZNFP. In 2021, ZNFP charged each visitor 224 renminbi (RMB) (around 34.72 USD) from March to November to enter the park (in-park bus included). With the ticket, tourists can also visit three other scenic districts within the Wulingyuan scenic area, and the ticket is valid for four days. In 2017, the average ticket price of China’s National 5A Level Scenic Area was 13.7 USD, and that of natural landscape attractions was 5.7 USD (Wang et al., 2021), both much lower than ZNFP’s price. Consequently, it is important to understand whether visitor satisfaction could be negatively affected by the high ticket price.

This study applied a survey method to investigate visitor perceptions towards NBT at Zhangjiajie National Forest Park in order to provide an in-depth insight into visitor satisfaction with national park NBT during the COVID-19 pandemic and to understand how likely their ERB intentions can be influenced by a visit to the park. Three research questions were examined: (1) what park attributes affect visitor satisfaction; (2) how do sociodemographic characteristics affect visitor satisfaction; and (3) how does visitor environmental awareness change after visiting the national park?

2. Methods

2.1. Study area

Zhangjiajie National Forest Park (ZNFP) was established as China’s first national park in 1982 (Deng, Qiang, Walker, & Zhang, 2003). The park is located in the northwest of Hunan province in southern China (110° 24′-110° 28′E, 29° 17′-29° 21′N) (See Fig. 1). It is the core part of the Wulingyuan Scenic Area, which has been listed as a National Key Scenic Area, Natural World Heritage Site, National Geopark, National 5A Level Scenic Spot, and a UNESCO Global Geopark, attracting millions of visitors annually (Wang & Yuan, 2020). ZNFP covers approximately 48 km², consisting of six scenic spots including Yellowstone Village, Pipa Stream, Gold Whip Stream, Yaozi Village, Shadao Ravine, and Yuanjiajie. The area is famous for its unique ‘Zhangjiajie Landform,’ characterized by lofty quartz sandstone pillars with ravines and streams in between (UNESCO, n.d.). The park also provides important habitats for many rare and endangered wild species such as Gynostemma pentagynum and Andrias davidianus (Wang, Xia, & Chen, 2008; Yao et al., 2011). The spectacular natural scenery and significant ecological and geological values make ZNFP one of the most popular nature-based tourism destinations in China (Chen, 2020; Zhang & Xiao, 2014).

The ZNFP made the City of Zhangjiajie one of the most popular tourist cities in China and largely contributed to the city’s economic growth. However, due to the COVID-19 pandemic, the tourism industry in Zhangjiajie has been suffering drastically. In 2019, the city received 79.1 million visitors, with tourism revenue of 90.6 billion RMB (US$14.5 billion) (Hunan Provincial Bureau of Statistics, 2020), while in 2020, the visitor number declined down to 49.5 million. The revenue was only 56.9 billion RMB (US$8.9 billion) (Hunan Provincial Bureau of Statistics, 2021), around half of 2019’s revenue. In the first six months of 2021, the city experienced a recovery in the tourism industry and the visitor number of ZNFP has almost reached the pre-pandemic level (Hunan Provincial Bureau of Statistics, 2021). Importantly, the visitors are now mainly domestic residents, which is our target group in this survey.
Fig. 1. Location of Zhangjiajie National Forest Park in Hunan province, China (Adapted from http://www.iconcreator.info/blank-map-of-china).
2.2. Data collection

2.2.1. Questionnaire design

This study used a questionnaire to measure tourist satisfaction towards ZNFP and tourists’ tendency to adopt ERBs before and after the trip. The questionnaire was written in Chinese, consisting of three sections. The first section measured tourist satisfaction using the perceived-performance model, which examines visitors’ evaluation of the actual performance of park attributes (Tse & Wilton, 1988). This model is particularly applicable to the context of our study because performance quality is under the control of tourism providers (Baker & Crompton, 2000; Fallon & Schofield, 2013). This study operationalized satisfaction at three levels: the overall satisfaction, satisfaction with the park’s macro-attributes (natural scenery, artificial attractions, infrastructure, park services, activities and events, and price reasonableness), and satisfaction with seventeen microelements, including flora, fauna, roads, washrooms, kiosks, interpretation systems, visitor center, restaurants, and so on. A five-point Likert scale was used to measure visitor satisfaction (5 = very satisfied, 1 = very dissatisfied).

The second section consisted of 11 statements of ERB, and visitors were asked to self-report their propensity to adopt those behaviors before and after visiting the park. One statement was, “I pay attention to environmental protection signs.” There were two separate columns for rating the items. To measure their ERB intentions before the visits, the question in Column 1 was phrased as, “During the past six months, to what extent do you agree that the statements describe yourself?” To measure their ERB intentions after the visits, the question in Column 2 was, “During the next six months, to what extent do you agree that the statements will describe yourself?” Similar approaches were used in previous studies (Hsu et al., 2018; Staats, Harland, & Wilke, 2004). A five-point Likert scale was used to measure their intentions (5 = extremely agree, 1 = extremely disagree). The statements included both onsite ERBs and ERBs in visitors’ daily lives, which were adapted from Alessa, Bennett, & Klikskey, 2003’s and Lee, Jan, & Huang, 2015’s studies and the Environmentally Responsible Behavior Index (Smith-Sebasto, 1995) respectively. The daily life ERBs covered categories including community activism, political activism, and educational activities (Thapa, 2010). The third section asked about visitor demographic information, including their gender, age, education level, employment status, income level, residency status, times of visiting, travel purpose and how they heard about ZNFP. The survey was approved by the UBC Research Ethical Boards for surveying adults and people who are under 19 years old.

2.2.2. Survey procedure

A pre-test was conducted with a small group of visitors to remove any ambiguous wording and unsuitable criteria. The time needed to complete the questionnaire was estimated to be between 3 and 7 min. The final survey was conducted both in-person and online, with the sample population consisting of visitors that were visiting the park as well as visitors that had recently been to the park. Combining onsite and online surveys has been used in previous studies and was approved to be effective (Li, Shu, Shao, Booth, & Morrison, 2021; Milohnić, Cvelić-Bonifačić, & Licul, 2019; Modrow, Tuck, Qian, Yu, & Haataja, 2021; Yuen, Tang, Lee, & Cheng, 2022). Providing two ways of surveying helps recruit large and more diverse samples (Birnbaum, 2004), and having an online survey option can also minimize contact and reduce the risk of spreading disease during the COVID-19 pandemic. The in-person survey was conducted in Zhangjiajie in mid-June 2021. Questionnaires were distributed in person at the six scenic spots of ZNFP. Specifically, the authors and volunteers, who had been trained prior to the survey, walked along all trails at the spots, inviting visitors to do the survey. In total, 330 questionnaires were distributed, and 313 of them were completed, with an effective response rate of 94.8%. The online survey was conducted using a professional online survey platform called Wenjuan.com, one of the most popular survey platforms used by academics and businesses in China. The questionnaires were uploaded to the website, generating an online questionnaire with a sharable link. The link was shared among tourist group chats on social media platforms, such as Wechat and Weibo, and on the mobile travel applications, Trip.com and Mafengwo, from June to September 2021. The website automatically discarded incomplete questionnaires. Out of the 653 submissions in total, 178 submissions were identified as careless responses and were excluded from the analysis. Finally, 475 valid online questionnaires were collected with a completion rate of 72.7%. The survey had a total sample size of 788.

2.3. Data analysis

The data analysis was conducted using IBM SPSS Statistics (Version 27) predictive analysis software. We first tested the data reliability to check the internal consistency of the questions included in the survey and then analyzed the demographic characteristics using descriptive analysis. The Kaiser–Meyer–Olkin (KMO) and Bartlett’s test of sphericity were used to test sampling adequacy for factor analysis. Principal component analysis (PCA) was used to identify key factors influencing tourist satisfaction. An independent samples t-test and one-way ANOVA were applied to assess potential differences in tourist satisfaction among different demographic groups. Tukey HSD post hoc testing was used for aspects with homogeneous variance and Games-Howell testing was conducted for aspects that violated variance homogeneity (Hilton, 2006). We investigated the influence of visiting ZNFP on tourists’ ERB intentions using a paired sample t-test. We also examined the relationship between tourist satisfaction and ERB intentions by using the Spearman correlation analysis. Results were considered statistically significant if p < 0.05.
3. Results

3.1. Tourist sociodemographic information

Of the 788 survey respondents, 43.4% were male and 56.6% were female (See Table 1). Around 45% of the participants were in the age group of 21–40 and nearly 30% were 20 years or under. Most of these visitors were local (68.1%), the rest were from other domestic provinces except for 12 international foreign visitors with their long-term employment in China, which is quite different from the pre-pandemic distribution. Since the survey took place during the COVID-19 pandemic, it is not surprising that most surveyed visitors were domestic. More than 70% of the respondents had earned or were pursuing college degrees or higher. In terms of employment status, students accounted for almost half of the sample (47.2%), followed by full-time workers (29.2%), self-employed individuals (13.5%), retired people (5.3%), unemployed (3.4%) and part-time workers (1.4%). The annual income level of the sample was relatively low, with 55.7% of the respondents earning less than 50,000 yuan annually and 6% earning more than 200,000 yuan a year.

Most participants heard about ZNFP via the internet (33.4%) or through friends or relatives (31.2%), and 17.1% of them indicated that they knew of Zhangjiajie because it was a famous site. For nearly half of the respondents, the main reason for visiting ZNFP was ‘natural scenery enjoyment’, followed by ‘leisure and recreation’ (28.3%), ‘pressure reduction’ (10.4%) and ‘environmental education’ (7.5%). Eighty percent of the participants planned to stay no more than 3 days and 71.6% of them were visiting for the first time.

| Information sought       | Responses | Frequency (N = 788) | %   |
|--------------------------|-----------|---------------------|-----|
| Gender                   | Male      | 342                 | 43.4|
|                          | Female    | 446                 | 56.6|
| Age                      | 20 and under | 236                | 29.9|
|                          | 21–40     | 352                 | 44.7|
|                          | 41–60     | 152                 | 19.3|
|                          | 61 and above | 48                 | 6.1 |
| Place of residence       | Local (Hunan Province) | 537            | 68.1|
|                          | China (outside Hunan Province) | 239 | 30.3|
|                          | Outside China | 12                | 1.5 |
| Educational background   | Elementary | 8                  | 1.0 |
|                          | Secondary  | 225                 | 28.6|
|                          | Post-secondary | 498                | 63.2|
|                          | Graduate or higher | 57              | 7.2 |
| Employment status        | Unemployed | 27                 | 3.4 |
|                          | Part-time  | 11                  | 1.4 |
|                          | Full-time  | 230                 | 29.2|
|                          | Student    | 372                 | 47.2|
|                          | Retired    | 42                  | 5.3 |
|                          | Other      | 106                 | 13.5|
| Annual income            | <50,000 CNY | 439               | 55.7|
|                          | 50,000–100,000 CNY | 168           | 21.3|
|                          | 100,000–200,000 CNY | 134          | 17.0|
|                          | >200,000 CNY | 47               | 6.0 |
| Information source       | Advertisement | 112              | 14.2|
|                          | Friends or relatives | 246           | 31.2|
|                          | Tourism magazine | 32              | 4.1 |
|                          | Webpage or social media | 263            | 33.4|
|                          | Other      | 135                 | 17.1|
| Main reason for visiting Zhangjiajie | Environmental education | 59      | 7.5 |
|                          | Leisure and recreation | 223      | 28.3|
|                          | Natural scenery | 392             | 49.7|
|                          | Pressure reduction | 82              | 10.4|
|                          | Other      | 32                  | 4.1 |
| Length of stay           | 1 day      | 166                 | 21.1|
|                          | 2–3 days   | 466                 | 59.1|
|                          | 4–7 days   | 127                 | 16.1|
|                          | More than 7 days | 29               | 3.7 |
| Times of visiting        | 1          | 564                 | 71.6|
|                          | 2          | 144                 | 18.3|
|                          | 3          | 46                  | 5.8 |
|                          | 4          | 8                   | 1.0 |
|                          | >4         | 26                  | 3.3 |

Table 1: Visitor sociodemographic profile and travel history.
3.2. Descriptive statistics

3.2.1. Visitor satisfaction

Fig. 2 shows visitor mean satisfaction levels with seven macro attributes of the park. “Natural scenery” received the highest rating of satisfaction ($M = 4.68, SD = 0.56$) and “price reasonableness” had the lowest ($M = 3.74, SD = 0.97$). The mean satisfaction scores of other attributes fluctuated around 4 (satisfied).

Visitors’ mean satisfaction scores of 17 microelements of ZNFP are summarized in Fig. 3. Consistent with the results above, nature-related criteria, “landscape” ($M = 4.63$) and “plants” ($M = 4.48$), were the most satisfying elements to the respondents. “Animals” in the park, interestingly, only received a satisfaction score of 4.03. In contrast, the respondents were least satisfied with the elements related to tourism service, such as “restaurants and food stands” ($M = 3.50$) and “kiosks” ($M = 3.58$). Elements associated with environmental education also received relatively low scores as the mean satisfaction of “education program” and “interpretation system” were 3.66 and 3.81, respectively. “Maps” and “signs” were also rated below 4 (satisfied).

3.2.2. Purpose of travel

Age and gender appeared to be important factors influencing respondents’ purpose of travel. The proportion of visitors coming for “natural beauty enjoyment” increased with age, from 40.25% in the ‘20 and under’ group to 72.92% in the ‘61 and above’ group (Table 2). A smaller percentage of people came for “environmental education” in older age groups, with 13.56% in the ‘20 and under’ group, 2.63% in the ‘41–60’ group and 0 in the ‘61 and above’ group. Over 13% of the people in the two younger groups chose to visit ZNFP for pressure reduction, while less than 2% of the people in the older groups did. There were also some interesting gender differences. More than half of the female respondents visited the park for natural scenery enjoyment, compared to 44.2% of male respondents. A larger percentage of male respondents came with the purpose of “pressure reduction” (16.1%) than female respondents (6.1%).

3.2.3. Visitor loyalty

Visitor loyalty was measured by their intention to revisit or their intention to recommend others to visit (Pinkus, Moore, Taplin, & Pearce, 2016). More than 70% of the respondents indicated that they would like to revisit ZNFP in the future and over 90% would recommend the park to others (Table 3). Loyalty varied among different tourist groups. The intention to revisit the park and the possibility of recommending the park to others increased with the length of stay and overall satisfaction level. Visitor loyalty also varied among groups with different visiting purposes. Respondents who came for environmental education (e.g., learning about local wildlife and landscape) had the lowest inclination to return (61.0%), while pressure reduction, natural scenery enjoyment and leisure had over 70% of wanting to return.

3.3. Tourist demographics and satisfaction

Results of the independent samples t-test and one-way ANOVA suggested that gender (e.g. $p = 0.95$ for natural scenery and $p = 0.80$ for infrastructure), information source (e.g. $p = 0.12$ for artificial attractions and $p = 0.11$ for infrastructure) and times

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1 M: Visitors’ mean satisfaction score; SD: Standard Deviation.
of visiting (e.g. \( p = 0.40 \) for park service and \( p = 0.41 \) for activities and events) did not affect tourist satisfaction significantly in most aspects. However, there were significant between-group differences in satisfaction level depending on age, educational background, employment status, annual income, main reason for visiting, and length of stay (Table 4).

The results of post-hoc tests are summarized in Table 4. It was revealed that younger visitors were less satisfied than older visitors. For example, age group a \(( M = 3.83, SD = 0.840)\) and b \(( M = 3.88, SD = 0.909)\) were less satisfied with the activities and events provided by the park than group c \(( M = 4.13, SD = 0.769)\) and d \(( M = 4.31, SD = 0.748)\) (Fig. 4a). Mean plots of other attributes revealed similar relationships between age and satisfaction. In terms of educational background, the mean plot (Fig. 4b) showed a negative relationship between satisfaction with artificial attractions and education level. The post-hoc test suggested that respondents with secondary school education \(( M = 4.08, SD = 0.813)\) were more satisfied with artificial attractions than those with graduate or higher degrees \(( M = 3.70, SD = 0.823)\); respondents with high school education \(( M = 4.04, SD = 0.81)\) also demonstrated higher satisfaction with park services than respondents with college degrees \(( M = 3.84, SD = 0.91)\). Students were the least satisfied with all attributes of the park, except for price reasonableness as it’s 50% discount for all students all year round and free to the high school graduating students in the summer. Participants with an annual income between 50,000 and 100,000 Chinese yuan were the most satisfied with the park, and the mean plots of other attributes all showed a similar pattern to that apparent in Fig. 4c. Visitors coming to enjoy the natural scenery or for leisure were more satisfied with the infrastructure, activities and events, and price reasonableness than those coming for other reasons. Finally, visitors who stayed for more than three days were more satisfied with the price (Fig. 4d) and the overall experience compared to those who stayed for two or three days.

3.4. Principal component analysis (PCA) on tourist satisfaction micro variables

The 17 satisfaction criteria obtained a Cronbach’s alpha value of 0.919, indicating high reliability. A PCA, with Oblimin rotation of the criteria, resulted in 3 components, explaining 60.012% of the total variance, with the KMO value = 0.929 and \( p < 0.001 \) for Bartlett’s test. Variables with factor loadings above 0.4 were kept, which Tabachnik & Fidell (2007) have suggested is an acceptable rule. Park infrastructure and tourism service were the most important components, each accounting for approximately 24% of the variance, and the natural characteristics component explained about 12% of the variance (Table 5).

3.5. Visitors’ intentions for environmentally responsible behavior

3.5.1. Change in ERB intention

Table 6 summarizes the means and standard deviations of tourists’ tendency to adopt the eleven ERBs before and after their visits. “I try not to disrupt the plants and animals” \(( M_{before} = 4.58, M_{after} = 4.64)\), “I protect the natural resources of the destinations” \(( M_{before} = 4.33, M_{after} = 4.47)\), “When I see garbage, I will put them in the trash can” \(( M_{before} = 4.14, M_{after} = 4.30)\) and “I would read and follow the park environmental education information in brochure or poster” \(( M_{before} = 4.10, M_{after} = 4.28)\) were the behaviors that respondents were most willing to adopt, both before and after visiting the park. The respondents agreed less about their intentions to read environment-related articles or books (S1).
Fig. 4. The relationships between satisfaction and tourists' sociodemographic factors.
After the visits, the means of tendency increased for all the statements, and we performed a paired-sample t-test to determine whether the differences were significant (Table 6). The results showed that pre-visit and post-visit intentions differed significantly for each statement ($p < 0.01$), suggesting that visitors were more motivated to adopt ERBs after their visit. The mean for “I would discuss with others about environmental issues” increased the most ($M_{\text{difference}} = 0.25$), followed by “I would convince my travel companions, if any, to protect the natural environment of the destination” ($M_{\text{difference}} = 0.22$), “I want to participate in environmental education programs” ($M_{\text{difference}} = 0.21$) and “I would report any environmental pollution or destruction to administration” ($M_{\text{difference}} = 0.21$). The mean for “I protect the natural resources of the destinations” increased the least ($M_{\text{difference}} = 0.13$).

### 3.5.2. ERB intention and satisfaction

Each respondent’s agreement scores for the 11 statements before and after visiting were averaged respectively, producing $M_{\text{general before}}$ and $M_{\text{general after}}$. A Spearman correlation analysis was applied to investigate how satisfaction was correlated with $M_{\text{general after}}$, and the mean difference ($M_{\text{general before}} - M_{\text{general after}}$). Spearman analysis was used because the variables violated the test of normality. $M_{\text{general after}}$ ($r = 0.282, p < 0.001$) was positively related to visitors’ satisfaction with the park, but there was no significant relationship between satisfaction and the change in ERB intention after visiting the park ($p > 0.05$).

### 4. Discussion

The natural scenery of ZNFP received high recognition from the participants. This is consistent with previous research at the park (Li et al., 2008; Zhang, Xu, Su, & Ryan, 2009), suggesting that the site’s unique topography has remained attractive to people over the last decade. The survey revealed that some aspects of the park require improvement: price reasonableness, park services, activities and events, and artificial attractions. Average ticket price in a region has been found to be negatively correlated with its GDP (Wang et al., 2021). Tourism development has shifted Zhangjiajie from an underdeveloped county to a tourism-oriented prefecture-level city (Zuo & Huang, 2020). However, with a tourism-dominated economy, Zhangjiajie heavily relies on ticket revenue from ZNFP and other scenic spots for park maintenance, public expenditure, and even paying past government debt that has accumulated over the decades of park development (Huang, 2018). ZNFP needed to charge a high ticket price in order to remain profitable. A justification for the high prices at ZNFP is that the ticket is valid for four days. In addition, the ticket covers the whole Wulingyuan Scenic Area, which is 264 km², comprising of ZNFP and three other scenic districts. According to conversations with local guides, if planned carefully, the whole scenic area could provide an enjoyable four-day trip consisting of diverse hiking trails and viewpoints. However, only 20% of the visitors that were surveyed stayed for 4 days or more. Poor quality services, extra high

### Table 2

Visitors’ purpose of travel organized by age groups.

| Age         | Purpose                        | Percentage |
|-------------|--------------------------------|------------|
| 20 and under| Environmental education        | 13.56%     |
|             | Leisure in nature              | 27.54%     |
|             | Natural beauty experience      | 40.25%     |
|             | Pressure reduction             | 13.56%     |
|             | Other                          | 5.08%      |
| 21–40       | Environmental education        | 6.53%      |
|             | Leisure in nature              | 29.83%     |
|             | Natural beauty experience      | 45.74%     |
|             | Pressure reduction             | 13.35%     |
|             | Other                          | 4.55%      |
| 41–60       | Environmental education        | 2.63%      |
|             | Leisure in nature              | 26.32%     |
|             | Natural beauty experience      | 66.45%     |
|             | Pressure reduction             | 1.97%      |
|             | Other                          | 2.63%      |
| 61 and above| Environmental education        | 0.00%      |
|             | Leisure in nature              | 27.08%     |
|             | Natural beauty experience      | 72.92%     |
|             | Pressure reduction             | 0.00%      |
|             | Other                          | 0.00%      |

### Table 3

Tourists’ intention to revisit Zhangjiajie National Forest Park, China.

| Responses                                      | Frequency ($N = 788$) | %   |
|------------------------------------------------|------------------------|-----|
| Whether tourists would revisit the park         | yes                    | 572 | 72.60 |
|                                                | no                     | 216 | 27.40 |
| Whether tourists would recommend the park to others | yes                    | 728 | 92.40 |
|                                                | no                     | 60  | 7.60  |
### Table 4
Influence of sociodemographic factors on visitor satisfaction with attributes of Zhangjiajie National Forest Park.

| Sociodemographic factors | Variables                        | One-way ANOVA | Post hoc |
|--------------------------|----------------------------------|---------------|----------|
|                          |                                  | f-value       | p-value  |
|                          |                                  |               | c,d > a,b|
| Age                      | Natural scenery                  | 5.162         | 0.002    |
| a. 20 and under          | Man-made attractions             | 6.678         | <0.001   |
| b. 21–40                 | Infrastructure                   | 4.857         | 0.002    |
| c. 41–60                 | Park services                    | 5.763         | 0.001    |
| d. 61 and above          | Activities and events            | 7.615         | <0.001   |
|                          | Overall impression               | 8.858         | <0.001   |
| Education background     | Natural scenery                  | 0.082         | 0.970    |
| a. Elementary            | Man-made attractions             | 3.809         | 0.010    |
| b. Secondary             | Infrastructure                   | 1.943         | 0.215    |
| c. Post-secondary        | Park services                    | 3.280         | 0.020    |
| d. Graduate or higher    | Activities and events            | 5.404         | 0.001    |
|                          | Overall impression               | 0.785         | 0.502    |
|                          | Natural scenery                  | 4.358         | 0.001    |
| a. Unemployed            | Man-made attractions             | 5.581         | <0.001   |
| b. Part-time             | Infrastructure                   | 5.755         | <0.001   |
| c. Full-time             | Park services                    | 4.716         | <0.001   |
| d. Student               | Activities and events            | 5.575         | <0.001   |
| e. Retired               | Price reasonableness             | 2.701         | 0.020    |
| f. Other                 | Overall impression               | 4.208         | 0.001    |
| Annual income            | Natural scenery                  | 6.659         | <0.001   |
| a. <50,000 CNY           | Man-made attractions             | 3.169         | 0.024    |
| b. 50,000–100,000 CNY    | Infrastructure                   | 6.133         | <0.001   |
| c. 100,000–200,000 CNY   | Park services                    | 3.597         | 0.013    |
| d. >200,000 CNY          | Activities and events            | 2.736         | 0.043    |
|                          | Price reasonableness             | 1.907         | 0.127    |
|                          | Overall impression               | 5.243         | 0.001    |
| Main reason for visiting | Natural scenery                  | 5.751         | <0.001   |
| a. Environmental education | Infrastructure                 | 6.206         | <0.001   |
| b. Leisure and recreation | Park services                  | 3.359         | 0.010    |
| c. Natural scenery enjoyment | Activities and events           | 5.570         | <0.001   |
| d. Pressure reduction    | Price reasonableness             | 7.250         | <0.001   |
| e. Other                 | Overall impression               | 5.086         | <0.001   |
| Length of stay           | Natural scenery                  | 1.565         | 0.196    |
| a. 1 day                 | Man-made attractions             | 1.059         | 0.366    |
| b. 2–3 days              | Infrastructure                   | 2.096         | 0.099    |
| c. 4–7 days              | Park services                    | 2.291         | 0.077    |
| d. More than 7 days      | Activities and events            | 2.476         | 0.060    |
|                          | Price reasonableness             | 3.314         | 0.020    |
|                          | Overall impression               | 5.064         | 0.002    |

### Table 5
Summary of principal component analysis on tourist satisfaction variables in Zhangjiajie National Forest Park.

| Component               | Satisfaction variable              |
|-------------------------|-----------------------------------|
| 1. Park infrastructure  | Roads outside park (0.80)         |
| 24.02%                  | Roads inside park (0.77)          |
|                         | Pavement (0.78)                   |
|                         | Trails (0.69)                     |
|                         | Garbage bins (0.68)               |
|                         | Washrooms (0.67)                  |
| 2. Tourism service      | Interpretation system (0.81)      |
| 24.01%                  | Maps (0.81)                       |
|                         | Restaurants and eateries (0.76)    |
|                         | Education programs (0.67)         |
|                         | Kiosks (0.64)                     |
|                         | Visitor center (0.60)             |
|                         | Signs (0.57)                      |
| 3. Natural characteristics | Fauna (0.76)            |
| 11.98%                  | Flora (0.69)                      |
|                         | Landscape (0.67)                  |
costs of gondola and lifts inside the park (Zhang, Xu, Su, & Ryan, 2009), and the lack of clear guidance on visitor routes (Li et al., 2008; Luo et al., 2010) are potential reasons why many visitors chose to stay for only one or two days. Among the 20% of visitors who stayed 4 days or longer, most were students who came for field trips or internships, enthusiastic photographers and hikers, and people that held annual entrance pass (about 46.6 USD). The analysis showed that tourists who stayed longer were more satisfied with the price and overall experience in the park. A longer length of stay also means that tourists would have higher expenditure on other associated products and services (Scholtz et al., 2015), which is particularly important for places like Zhangjiajie that rely heavily on tourism for economic growth.

The tourists had mixed feelings about the animals in ZNFP. Macaques were widespread in the park, and they were the only animal group that frequently interacted with the tourists. Many tourists had positive attitudes towards the human-wildlife interaction, which they thought added excitement and fun to their visit. This is consistent with Li et al.’s (2012)’s findings. However, some participants were scared and disliked the macaques because the macaques would follow them or aggressively approach them for food. Some witnessed or heard of people being attacked by the macaques. These tourists wanted the parks to better manage the animals to reduce the human-wildlife conflicts.

It is interesting to see that over 70% of visitors in Zhangjiajie were under 41, and most of them were well-educated but did not have a high income. Occupation, education level, and age appear to be the important sociodemographic factors that influence visitor satisfaction. In terms of occupation, close to half of the respondents were students, which was also the case in some of the previous studies (Li, 2017; Li et al., 2008) before the COVID-19 pandemic. The timing of the survey and the new ticket policy could explain the high percentage of visitors being students. Most students were on their summer vacation, and graduating students had more varied responses in their motivation. Other studies have also found that as age increases, nature exploration and appreciation of the natural environment decreases. Education level also appeared to influence visitors’ satisfaction with some park attributes. Well-educated respondents were less satisfied with the artificial attractions in the park (e.g., One-Hundred Dragon Lift, titled as “the world’s highest, fastest elevator with the largest deadweight”). Well-educated respondents are more likely to have been exposed to environmental knowledge and are more aware of the potential negative environmental impacts of the large-scale construction in ZNFP (Zhang, Xu, Su, & Ryan, 2009). Besides, visitor satisfaction appeared to increase with age, which might be explained by the differences in travel purpose and expectation among the age groups. Most older respondents came to ZNFP to seek natural beauty, while younger participants had more varied responses in their motivation. Other studies have also found that as age increases, nature exploration and relaxation become more of a priority for choosing travel destinations (Ma, Chow, Cheung, Lee, & Liu, 2018). Younger tourists, instead, tend to be more novelty-seeking (Luo & Deng, 2008). ZNFP has built elevators, trails, and scenic railways to assist tourists’ sightseeing and add excitement to their experiences, but few activities or events have been held in the park. ZNFP used to have special performances and events that interacted with the local culture and life, and visitors were motivated by the performance and art that they viewed. However, many of the words on the engraved stones had fallen
off, making them very hard to read. The hanging signs were clear but there were few of them, and some were difficult to find. The standing boards received some positive comments. Not only did the boards have pictures on them, they each had a QR code that provided audio interpretation. In terms of content, most of the signs were about the geographic features and legendary tales of the area, lacking information about biodiversity and ecosystem functions, which is a core part of environmental education (Replka & Švecová, 2012; Wang, 2009). Setting up creative plant identification signs and illustrative diagrams of ecological processes could help attract tourists’ attention and provoke their curiosity about the surrounding environment and species diversity. Apart from improving the essentially passive signs, other forms of educational programs also are needed for ZNFP. A wildlife education center, information booths and themed presentations are examples of effective projects that could be considered (Orams, 1997).

A larger proportion of female visitors came to experience the natural scenery compared to the male visitors. This is consistent with the results from Meng and Uysal’s study (2008), where they found that women were motivated to visit nature-based destinations more by natural beauty and restfulness than activities. Interestingly, more than one-fifth of male visitors (compared with 6% of female visitors) were visiting ZNFP in an attempt to relieve pressure. This seems contradictory to previous studies suggesting that men tend to be motivated by the fun and challenges associated with participating in physical activities than to have a relaxation experience (Meng & Uysal, 2008). The increasing mental stresses the COVID-19 pandemic placed on people might play a role in the larger need of male visitors for pressure reduction. More focused studies are needed to examine the effects of the pandemic on people’s purpose of visit.

In terms of loyalty, this study provided evidence for Pinkus, Moore, Taplin, & Pearce, 2016 finding that satisfaction positively influences visitors’ intentions to revisit, or to recommend a visit to others. Length of stay also appeared to be positively associated with visitor loyalty, which is likely mediated by satisfaction. Visitors who spend more days in national parks have more time and opportunities to explore and enjoy the park and likely have higher satisfaction (Scholtz et al., 2015).

One important finding of this study was that visitor intention to engage in environmentally responsible behavior showed significant improvement after they visit the ZNFP. The ERB scores that increased the most were “I would discuss with others about environmental issues”, “I would convince my travel companions to protect the natural environment of the destinations”, “I want to participate in environmental education programs”, and “I would report environmental pollution or destruction to administration”. This represents a mix of onsite and general behaviors. This provides evidence for the argument that recreational experiences in nature can foster visitors’ pro-environment attitudes and promote ERBs both on the site and in daily life (Finger, 1994; Lee, Jan, & Huang, 2015; Lee & Jan, 2015). However, we need to be cautious when interpreting the results. There might be other factors that contribute to the intention difference we observed. Although ‘social desirability’ concerns tend to only have a weak effect on people’s self-reported environmental behaviors (Milfont, 2009), it is still likely that some people indicated a stronger tendency to engage in ERB in the future partially because they think it is the right thing to do. The act of taking a survey could also have an impact on participants’ behaviors in some circumstances (Zwane et al., 2011); with a large sample size and a low survey frequency, however, the impact on this study is likely to be small.

The mechanism of how recreation experiences lead to attitude and behavior change is a complex system involving satisfaction, knowledge, place attachment, environmental commitment, and perceived value of destinations (Cheng & Wu, 2015; Chiu et al., 2014a; He, Hu, Swanson, Su, & Chen, 2018; Lee, 2011; Sahabuddin, Tan, Hossain, Alam, & Nekmahmud, 2021; Su, Hsu, & Boostrom, 2020). By using the correlation analysis, this study showed that post-visit ERB intention is positively associated with satisfaction, which is consistent with the conclusions in some previous studies (Davis, Le, & Coy, 2011; López-Mosquera & Sánchez, 2011). We also found that tourist satisfaction is not significantly correlated with the extent of change in their ERB intention. This finding might indicate that although increasing tourist satisfaction can be helpful in enhancing their environmental awareness, the effects might be limited. National parks still need well-designed educational programs and diverse learning opportunities to increase visitors’ environmental sensitivity and to facilitate long-term changes in the behavior of visitors.

4.1. Management implications

Based on the findings, we propose several strategies to increase the time that tourists spend in ZNFP. Firstly, the park needs to boost its service quality by improving the professionalism and friendliness of employees. Secondly, the park needs to provide more guidance for visitors so that they can explore the area easily. For example, a typical 4-day visiting route could be developed and made available to visitors either at the entrance or online, so that they do not need to rely on a tourism agency or hotels to plan their visits. Thirdly, the park needs to further improve its infrastructure, especially the parking lot and washrooms, as the results of the PCA analysis suggests that the existing infrastructure significantly influences visitor satisfaction with ZNFP. Additionally, strategies targeting specific sociodemographic groups are needed to improve visitor experience. To make the park more attractive to students and other young tourists, it is critical to provide more diverse and affordable food services and interactive activities that encourage visitor engagement. A combination of passive and active interpretive programs would be helpful for the environmental education development of ZNFP, attracting more eco-tourists and increasing other tourists’ nature awareness. For instance, setting up wildlife information booths with pictures and props can stimulate visitors’ interest. In addition, more challenging low-impact hiking routes could be developed to satisfy hikers and tourists seeking adventurous activities for pressure reduction. Finally, around two-thirds of tourists heard about ZNFP either via the internet or by word of mouth. Developing creative online marketing strategies via social media could help ZNFP to stand out in the competitive tourism market.
5. Conclusions

As the first national park in China, Zhangjiajie National Forest Park made a significant contribution to the development of nature-based tourism in China by creating enormous ecological, social, and economic benefits to residents and visitors domestically and internationally. Thirty years of evolution has turned ZNFP into a famous travel destination attracting millions of tourists annually, but it has also left a legacy of issues resulting from inexperienced management and insufficient funding in the early years. Facing the increasingly competitive tourism market and the challenge from the pandemic, ZNFP needs to identify its unique advantages and present them to visitors. This study revealed that the park’s ticket price, food service, interpretative system, and environmental programs need to be improved the most to enhance visitor satisfaction. The tourists visiting the park vary in their motivation, multiple customized strategies are required to improve their satisfaction and loyalty. In this particular study, satisfaction was not correlated with changes in intentions towards environmentally responsible behavior. This finding suggests that to create a lasting positive impact on tourists’ environmental attitudes and behaviors, ZNFP needs to provide tangible nature-learning and nature-experience programs. Although most of these findings cannot be directly applied to other nature-based tourism destinations, they provide a framework for assessing and analyzing service quality and tourist satisfaction. Future research could explore how to better combine the recreational aspect with the educational role of national parks and other protected areas without compromising tourist satisfaction.

6. Limitations

There were several limitations to the study. First, although paper questionnaires were distributed as people were encountered, visitors that came with travel agencies were likely to be underrepresented. Tours planned by travel agencies usually have a tight schedule, and visitors are often given time constraints on how long they can stay at each scenic spot. They tended to refuse to spend time filling out the survey. Meanwhile, online questionnaires were mainly distributed in tourism-related chat groups, which are largely comprised of younger visitors. Thus, older tourists who do not use those online platforms might also be underrepresented. In addition, the environmentally responsible behavior intentions were self-reported by visitors. There might be a gap between what respondents claimed they would do and their actual behaviors. The extent to which these intentions would lead to real behavior change needs to be examined. Another limitation results from the fact that visitors’ pre-visit and post-visit ERB intentions were measured in the same survey due to restrictions in time and the large sample size. Although clear guiding questions were provided to ask visitors to recall their past behaviors and predict their future intentions, the process involves a lot of thinking and future decision-making, which might discourage certain participants to provide careful responses. Future research may use a longitudinal approach to conduct follow-up ERB surveys with visitors to improve data accuracy.

Credit authorship contribution statement

Yuqing Cheng: Data curation, Methodology, Formal analysis, Writing – original draft. Fangbing Hu: Methodology, Formal analysis, Writing – original draft. Jingxin Wang: Data collection, data sorting. Guibin Wang: Writing – review & editing. John L. Innes: Writing – review & editing. Yiping Xie: Resources, Data curation. Guangyu Wang: Supervision, Conceptualization, Writing – review & editing. Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The research is partially funded by the UBC International Student Research Assistant Funding (Project number WLIURA 111044) and partially from APFNet National Park Research Project (APFNet-UBC 2017). The authors are grateful towards Shijing Liu, Jiafan Yang, and Yimeng Long for their assistance during the fieldwork. We would also like to thank the reviewers for providing numerous valuable suggestions.

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