How tourists’ perceived environmental value on Wetland Park Tourism influences their pro-environmental behavior

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Abstract: With the rapid development of wetland eco-tourism, tourists play more important roles in wetland tourism resources conservation. Increasing attention has been directed at studies of tourists’ perceived value and there are some existing studies about wetland eco-tourists’ perceived value and tourists’ pro-environmental behavior. However, the relationships between the two has not been examined yet. To fill the gap, this paper is aimed at better understanding the relationships between the two, and how situational factors influence the relationship. Taking Haizhu Lake Wetland Park as a case, a questionnaire survey was conducted. This paper used hierarchical multiple regression/correlation (HMRC) to examine the moderating effects of situational factors. Results showed that tourists’ environmental value perceptions do influence their pro-environmental behavior, and situational factors moderate the relationship between environmental value perception and pro-environmental behavior. Based on the results, proposals were offered to improve tourist’s perceived environmental value and pro-environmental behavior. Meanwhile, some recommendations and references were provided for wetland eco-tourism to realize wetland parks’ sustainable development.

Keywords: Wetland Ecological Tourism, perceived environmental value, pro-environmental behavior, situational factors, Haizhu Lake Wetland Park, HMRC

Introduction

Ecological tourism started in China in the 1990s. Most Chinese nature reserves had developed ecological tourism (Liu et al. 2013). With the rapid increasing of the ecological tourism market, many ecological tourism destinations such as wetland parks and geoparks are developed into ecological attractions (Liu et al. 2013). Wetland Ecological Tourism is one of the main types of ecological
tourism which is based on wetland resources. Wetland Ecological Tourism research is a new field that has emerged in recent years (Christopoulou and Tsachalidis 2004). Tourists visiting wetland parks see them as destinations of sightseeing and researching. They enjoy the landscapes, species, and ecological systems, and act to protect the natural environments of the original wetlands (Lu and Gong 2014). Compared with other tourism, wetland tourism as an eco-tourism not only satisfies tourists’ yearning for beautiful nature (Khan 2003), but also emphasizes the protection of local precious natural resources to achieve the sustainable development of tourism destinations (Koens et al. 2009).

With the rapid development of wetland tourism in China (Zhang et al. 2013), more and more people are visiting wetland parks and their activities influence the wetland’s ecological system. Tourists have become some of the most important stakeholders in wetland tourism, and they play a vital role in protecting the environment. However, some tourists in wetland parks may engage in negative environmental behavior (Chiu et al. 2014).

How to cultivate tourists’ environmental behavior, and how to arouse the enthusiasm of tourists in participating in environmental activities have become important questions in the wetland tourism research field. The importance of pro-environmental behavior has been highlighted in the tourism literature (Kollmus and Agyeman 2002; Stern 2000; Cronin et al. 2000; Moghimehfar and Halpeny 2016; Steg and Vlek 2009). Attitude (Luis 2013), consumption scenarios (Martin et al. 2016), and destination image (Chen and Tsai 2007) have proved to have influence on pro-environmental behavior. Consideration of the role of situational factors in pro-environmental behavior is strongly needed (Yoon et al. 2013).

The relationship between perceived environmental value and pro-environmental behavior, and the studies about how situational factors affect pro-environmental behavior, have been relatively neglected. This research focuses on environmental value perceived by wetland tourists and furthermore, explores the relationship between perceived environmental value and pro-environmental behavior. In addition, how situational factors influence tourists’ pro-environmental behavior is also examined. A better understanding of these relationships can provide wetland park managers with insights into wetland tourists’ perception of environmental value and their pro-environmental
behavior, to allow them to adjust their strategies that emphasize tourists to perceive positive environmental value in wetland parks, to improve tourists’ participation and enthusiasm in protecting wetland environments.

**Literature review**

*Ecological tourism and Wetland Ecological Tourism*

In the existing literature, there is no exact agreed definition of ecological tourism (Weaver and Lawton 2007). The International Ecotourism Society defines ecological tourism as “a trip to nature to enjoy it and is according to the objectives of sustainable development” (Ahmadi and Khajeh 2015, p. 64). Ecotourism should have few negative impacts on untouched natural resources. The main purpose of eco-tourists is to enjoy nature (ibid). Ecological tourism emphasizes that tourists take responsibility for natural conservation and that they need to avoid damaging the natural environment by performing pro-environmental behavior (Chiu et al. 2014). Therefore, ecotourism development depends on the environmental consciousness of tourists.

The extent that academic research has studied eco-tourists, includes their ecotourism preferences (Khan 2003); motivations (Dolnicar and Leisch 2008), their willingness to pay (Hultman et al. 2015), and so on. Notwithstanding these academic achievements, exploration of the relationship between tourists’ perceptions of the site and tourists’ pro-environmental behavior is limited (Chiu et al. 2014). Very little research exists to explain why tourists engage in pro-environmental behavior (Hultman et al. 2015).

Wetland Ecological Tourism is one of the main types of ecological tourism (Liu et al. 2013). Compared with other tourism, wetland tourism emphasizes the protection of local precious natural resources to achieve the sustainable development of tourism destinations (Koens et al. 2009). Wetland Ecological Tourism research is a new field that has emerged in recent years (Christopoulou and Tsachalidis 2004). Tourists visit wetland parks and see them as a destination of sightseeing and research. They enjoy the landscapes, species, and ecological systems, and act to protect the natural environments of the original wetlands (Lu and Gong 2014). Tourists become some of the most important stakeholders in wetland tourism, and they play a very vital role in protecting the environment. However, some tourists in wetland parks
may engage in negative environmental behavior (Chiu et al. 2014). How to cultivate tourists’ environmental behavior and how to arouse the consciousness of tourists in protecting the environment have become important questions in the wetland tourism research field.

**Perceived environmental value**

Wetland tourism is popular for its water resources and its original ecology (Lu and Gong 2014). People enjoy the landscape, species, and ecological systems (ibid). Therefore, natural resources and original wetlands are the important sources of environmental value in ecotourism, and its eco-products and natural scenery is valuable to tourists (ibid). Perceived value is considered one of the most important concepts for understanding customers in the service industry (Ostrom and Lacobucci 1995; Jensen 1996). It is a significant predictor of behavior (Cronin et al. 2000). Patterson and Spreng (1997) developed a conceptual model to test the relationship among performance, value, satisfaction and behavior intention, finding that value has a strong and significant effect on behavior. Existing literature suggests that perceived value could be conceptualized as a multidimensional construct (Babin et al. 1994; Grönroos 1997; Sweeney and Soutar 2001) and perceived environmental value is proved to be one of the most important dimensions in eco-tourism (Wei and Pan 2012). Previous studies have examined perceived value in different settings such as offline retailing, online retailing, and restaurant industry (Jones et al. 2006; Overby and Lee 2006; Park 2004), but the setting of eco-tourism is neglected. So, what is the relationship between environmental value and pro-environmental behavior in eco-tourism (e.g. wetland tourism)? Our study is to examine how tourists perceive the environmental value during their wetland tourism. How perceived environmental value influences their pro-environmental behavior in eco-tourism?

As Kollmus and Agyeman (2002) argue, pro-environmental behavior is actions deliberately aimed at minimizing the negative impact on natural and built environments. Pro-environmental behavior can be expressed through different types of behavior, such as waste recycling and energy management (Iwata 2001). In addition, perceived environmental value is proven to be one of the most important dimensions of eco-tourism (Wei and Pan 2012) and value is a significant predictor of behavior (Cronin et al. 2000), so perceived environmental value may be a predictor of pro-environmental behavioral intention.
Given this reasoning, the following hypothesis is suggested:  
**H1**: Tourist’s perceived environmental value has positive influence on pro-environmental behavior.

**Situational factors to pro-environmental behavior**

The theory of planned behavior (TPB) (Ajzen 1991), the attitude-behavior-condition (ABC) theory (Stern and Oskamp 1987 cited in Stern 2000), and the model of pro-environmental behavior (Kollmuss and Agyeman 2002) are examples of models that have been used to explore people’s pro-environmental behavior. All these models argue that pro-environmental behavior is influenced by conditions or surrounding contexts. Factors that predict human behavior differ according to the situation (Moghimehfar and Halpenny 2016a). External factors (Jensen 2002) and contextual factors (Steg and Vlek 2009), appear to play an important role in people’s decisions to participate in pro-environmental behavior.

However, in a review of pro-environmental behavior literature, situational factors have not been examined systematically (Steg and Vlek 2009). Considering the role of situational factors in pro-environmental behavior is strongly needed (Yoon et al. 2013), so this study is aimed at analyzing the influence of situational factors on pro-environmental behavior.

As Homburg and Stolberg (2006) put it, situational factors play a significant role in promoting or hindering the implementation of environmental behavior. Especially when some behaviors are affected by external barriers, and are difficult to implement, the intention to participate in pro-environmental behavior will depend less on psychological variables. That is to say, the effect of the environmental value perception (psychological variables) on pro-environmental behavior intention will be weakened if the pro-environmental behavior is hard to enact. On the other hand, environmental behavior may follow some non-environmental motives, such as a desire to save money or a desire for personal comfort (Stern 2000). One is sensitive to “oughts” according to self or others and tends to feel morally obligated to display pro-environmental behavior (Hunecke et al. 2001). People tend to demonstrate environmentally friendly behavior if they perceive sufficient benefits such as monetary savings (Bamberg and Moser 2007). Thus, the effect of the environmental value perception (psychological variables) on pro-environmental behavior
intention will be strengthened by motives which also belong to situational factors (Kollmuss and Agyeman 2002). Given this reasoning, the following hypothesis is suggested:

H2: Moderating functions of situation factors exist in the relationship between environmental value perception and behavior.

Based on the two hypotheses, H1 and H2, a graphic representation of the model is showed in Figure 1.

![Figure 1](image)

Figure 1. A graphic representation of the two hypotheses.

Situational factors include demographic variables such as age, gender and educational background (Fliegenschnee and Schelakovksy 1998 cited in Kollmuss and Agyeman 2002), internal factors such as responsibilities, motives, pro-environmental knowledge, value, attitudes, and locus of control (Hines et al. 1986; Stern 1999), and external factors such as institutional, social incentives and constraints (Blake 1999; Kollmuss and Agyeman 2002). Motives are forces that drive an individual’s reaction to a given situation (Gollwitzer 1993). Tanner (1999) argued that constraints include objective (lack of motives, interest), subjective (lack of time, money and knowledge) and ipsative (overstretched infrastructure). Meanwhile, Moghimehfar and Halpenny (2016) divided the constraint factors into three parts: intrapersonal (psychological factors that prevent people from taking certain actions), interpersonal (the consequences of the interaction with the people around us) and structural (the physical environment that limits people’s actions). Our measurement items of situational factors are based on the previous studies, including both internal and external factors.
Methodology

To test the proposed inter-relationship among perceived environmental value and pro-environmental behavior, the ordinary least square regressive model (OLS) was used. And then, this study performed hierarchical multiple regression/correlation (HMRC) to examine the moderating effect of situational factors on the relationship between perceived value and pro-environmental behavior.

Place of study

Haizhu Lake Wetland Park in Guangzhou Province, China was used as the field research area. It is the largest national wetland park in the central district of the city, and is regarded as the “green heart” of Guangzhou (China Wetland Conservation Association 2017). The wetland ecosystem includes river wetland, city lake wetland and semi-natural forest. The wetland park is famous for a water area of 377 hectares and over 100 bird breeds living within it. Its ecosystem is valuable and full of natural resources. It consists of three parts. The first part, called Haizhu Lake, is completely constructed. It is a demonstration area which combines the local culture of Lingnan water village with the wetland scenery, and its design borrowed from the Lingnan-style garden. Tourists can walk around the lake, enjoy the beautiful scenery of lotuses, learn the old Lingnan culture, and get close to water and nature.

Meanwhile, the other parts of the wetland park focus on biodiversity conservation. Every year, there are plenty of popular science activities and environmental education campaigns (such as parent-child campaigns, cultural performance activities, biology and science courses, and so on) held in this wetland park. These activities aim at raising tourists’ environmental awareness and educating people with knowledge of the natural ecosystem (China Wetland Conservation Association 2017).

The beautiful nature and the interesting activities attract many tourists. However, with the growing number of tourists, the ecosystem in Haizhu Lake Wetland Park has been destroyed (as a result of littering and the picking of flowers in the park) and tourists are excepted to act environmentally. The government put forward a charging policy, which was effected on the 1st of January, 2016, to protect the ecosystem of Haizhu Lake Wetland Park. In addition, a limited number of visitors (3000 per day) was set, so that tourists can now be admitted into the park only if they have made an appointment.
Data collection

Data were collected via a self-administered questionnaire during July and August, 2016, the high visitation season for Haizhu Lake Wetland Park. The sample consists of two parts: an online sample and an empirical research sample. Online questionnaires were sent to those who had gone to Haizhu Lake Wetland Park in the year 2016, and their comments were shared on websites, like Xiecheng and Mafengwo. Web Links of the questionnaire were sent through tourists’ IDs, which was published on all the comments-based websites. In Chinese communities, the response rates of questionnaires are often low, especially in big cities (Hao 2006) and in the end, 56 questionnaires from 500 interviewees were received, with a return rate of 11.2% and with a usable response rate of 100%.
In addition, empirical research was conducted in the wetland park for four days. With convenience sampling, 260 usable responses were collected with a 92.86% usable response rate, resulting in a total return rate of 40.41%, a rate which meets Cheng’ study on social change (Cheng 2001). Participants were tourists visiting the Haizhu Lake Wetland Park. In order to obtain a sample of individuals who were able to answer the questions on perceived environmental value and pro-environmental behavior, only those who had been in the park for a short time or those who had travelled around the park were asked to complete the paper-based questionnaire. The 316 usable responses provided more than the minimum required sample size (200) that is needed to ensure appropriate use of HMRC (Anderson and Gerbing 1988).

In the wetland park, we (the authors) also observed tourists’ pro-environmental behaviors and when we walked around the park, we searched for environmental protection facilities. Furthermore, when we conducted our questionnaire, we talked to our interviewees about how they feel about the park’s environment, and how they feel about their behaviors within the park.

**Survey instrument**

A self-administered questionnaire was developed for this study. The questionnaire consisted of four sections. The first three sections were designed to identify the respondent’s pro-environmental behavior, perceptions of environmental value and the surrounding situations in Haizhu Lake Wetland Park using a 5-point rating scale: ranging from 1 (strongly disagree) to 5 (strongly agree). The descriptive information for each construct utilized in this study is reported in Table 3. The forth section captured demographic information. The survey questions represented the measurement items used to capture each construct in the proposed model (Figure 1).

Measurement items were all chosen from previous studies and adapted for our study. Pro-environmental behavior items were used in existing articles and assessed by similar constructs (e.g. Guagnano et al. 1995; Stern 2000; Moghimehfar and Halpenny 2016); perceptions of environmental value items were taken from studies on perceived value (e.g. Wei and Pan 2012; Wei and Wang 2013; Wang et al. 2014) and items were concluded from studies about situational factors influencing people’s behavior (Hines et al. 1986; Kolmuss and Agyeman 2002; Steg and Vlek 2009; Moghimehfar and Halpenny 2016).
Since the measurements for situational factors were not extensively used in pro-environmental behavior literature, these items were mainly adopted from tourism and behavior studies and modified to match wetland park tourism. Based on some theories of pro-environmental behavior, e.g. ABC theory (Stern and Oskamp 1987 cited in Stern 2000) and the theory of planned behavior (Ajzen 1991), we interviewed some tourists who were in the park, and then added some items for our measurements. The items’ reference sources are showed as follows:

**Table 1. Measurements items’ reference sources.**

| Constructs                        | Reference sources                                      |
|-----------------------------------|--------------------------------------------------------|
| Environmental behavior (PB)       | Guagnano et al. 1995; Stern 2000; Moghimehfar and Halpenny 2016. |
| Environmental value perceptions (EVP) | Wei and Pan 2012; Wei and Wang 2013; Wang et al. 2014. |
| Situational factors (SF)          | Ajzen 1991; Hines et al. 1986; Kolmuss and Agyeman 2002; Steg and Vlek 2009; Moghimehfar and Halpenny 2016. |

**Pre-test of the measures**

Before the questionnaire was finalized, an academic professional in the tourism industry and two professors who are familiar with the perceived value study and of wetland tourism reviewed the questionnaire to provide feedback regarding the layout, wording, and the ease of understanding of the measurement items. Minor revisions were made based on their suggestions. Subsequently, a pre-test using a convenience sample of 35 graduated students and people who had visited the wetland park before to ensure the reliability of each construct. The reliability of the measurements was well above the suggested cutoff of 0.70 (The reliability of environmental value perception, environmental behavior and situational factors were 0.747, 0.855, 0.785), indicating internal consistency (Nunnally 1978 cited in Timothy 1995). The wording of the questionnaires was slightly modified based on the respondents’ feedback.
Results

Sample profile

Descriptive information of the sample for this study showed that 56.6 percent were male and 43.2 percent were female. Most respondents were between 18 and 44 years old (84.5 percent). More than a quarter (39.6 percent) of the respondents’ monthly salary was between 2501 Yuan and 5000 Yuan (USD 395.77 and USD 791.23). Regarding education levels, 55.1 percent of respondents held at least a Bachelor’s degree.

Table 2. Demographic Profile of the respondents.

| Category                | Frequencies | Percentage (%) |
|-------------------------|-------------|----------------|
| Gender                  |             |                |
| Male                    | 179         | 56.6           |
| Female                  | 137         | 43.4           |
| Age                     |             |                |
| Under 18                | 23          | 7.3            |
| 18-24                   | 140         | 44.3           |
| 25-44                   | 127         | 40.2           |
| 45-65                   | 23          | 7.3            |
| Over 65                 | 3           | 0.9            |
| Education               |             |                |
| Middle school or lower  | 54          | 17.1           |
| High school             | 87          | 27.5           |
| Bachelor                | 145         | 45.9           |
| Master or higher        | 29          | 9.2            |
| Monthly salary(RMB)     |             |                |
| under1500               | 15          | 4.7            |
| 1501-2500               | 29          | 9.2            |
| 2501-5000               | 125         | 39.6           |
| 5001-10000              | 77          | 24.4           |
| over10000               | 15          | 4.7            |
| No salary being a student | 55         | 17.4           |


**Descriptive information for measurement items.**

Table 3. presents tourists’ perceptions of environmental value (EVP), environmental behavior (EB) and the situational factors (SF) that may influence tourists’ EB regarding tourism experiences in Haizhu Lake Wetland. The three variables were measured with a 5-point scale, so that anything above three signified a positive perception. Table 3. shows that the means of the measurement items for EVP and EB were all greater than 3, while most means of SF’s measurement items were under three, indicating that the tour in Haizhu Lake Wetland is of environmental value and respondents are willing to protect the wetland environment, however, at the sametime, they are in a situation that holds them back from environmental behavior. These findings are similar to those of a previous study by Wei and Pan (2012). Specifically, comparing EVP with EB, the means of EVP is near to or over 4, while the EB’s means are less than EVP’s. Even though people appreciate the ecological wetland, their will to protect the wetland is not very high.

**Table 3.** Descriptive information for measurement items.

| Construct                      | Measurements items                                                                 | Mean  | SD    |
|--------------------------------|------------------------------------------------------------------------------------|-------|-------|
| EVP (Environmental value perception) | Service facilities in wetland park are harmony with the ecological environment     | 3.87  | 0.855 |
|                                | Clean and tidy                                                                     | 4.09  | 0.723 |
|                                | Original ecology                                                                   | 3.9   | 0.884 |
|                                | Abundance of natural resources                                                     | 3.78  | 0.926 |
|                                | Helpful to physical and mental well-being                                         | 4.22  | 0.775 |
| EB (Environmental behavior)    | Read the environment protection cautions                                          | 3.72  | 0.909 |
|                                | Discourage others from damaging the environment                                   | 3.45  | 0.973 |
|                                | Carefully read the interpretive panels on wetland resource                         | 3.77  | 0.785 |
|                                | Actively abide by environment protection rules                                     | 4.46  | 0.598 |
|                                | Willing to spread the knowledge of environmental protection                        | 3.71  | 0.81  |
|                                | Willing to donate to environmental protection                                      | 3.27  | 0.835 |
|                                | Willing to pay more attention to environmental protection knowledge                | 3.76  | 0.801 |
Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) results in five factors: structural factors, intrapersonal factors, interpersonal factors, cognitive factors and internal motive factors. These five factors explain 66.32% of the total variance of the latent variable. Factor loadings are all higher than 0.6; Cronbach alpha of 17 items is 0.863, which is over 0.7, suggesting good internal consistency of the measures. The KMO (Kaiser-Meyer-Olkin) value was 0.806 and the Bartlett’s test of sphericity highly significant (p<001), indicating that this EFA result fits the data.
How tourists’ perceived environmental value

Table 4. Exploratory Factor Analysis for situation factors.

| Factors                           | Factor loading | Eigenvalue | Explained variance | Reliability alpha |
|-----------------------------------|----------------|------------|--------------------|-------------------|
| Factor 1: structural factors      |                | 5.423      | 31.90%             | 0.789             |
| No good sewage systems            | 0.781          |            |                    |                   |
| No detailed interpretation boards | 0.766          |            |                    |                   |
| Not enough dustbins               | 0.744          |            |                    |                   |
| No environmental-friendly products| 0.699          |            |                    |                   |
| Not much environmental protection activities | 0.683 |            |                    |                   |
| Factor 2: intrapersonal factors   | 2.196          | 12.92%     | 0.785              |                   |
| No free time                      | 0.800          |            |                    |                   |
| Not enough strength or energy     | 0.773          |            |                    |                   |
| No extra income                   | 0.767          |            |                    |                   |
| No interest                       | 0.696          |            |                    |                   |
| Factor 3: interpersonal factors   | 1.342          | 7.80%      | 0.759              |                   |
| People around will not participate in environmental protection activities | 0.787 |            |                    |                   |
| People around will not remind others | 0.779       |            |                    |                   |
| People around will litter         | 0.717          |            |                    |                   |
| People around will not be interested in environmental protection knowledge | 0.701 |            |                    |                   |
| Factor 4: cognitive factors       | 1.225          | 7.20%      | 0.801              |                   |
| Can’t change the environment status by myself | 0.855 |            |                    |                   |
| Can’t persuade the surrounding people into protecting the environment by myself | 0.847 |            |                    |                   |
### Factor5: internal motive factors

|                          | 1.088 | 6.40% | 0.717 |
|--------------------------|-------|-------|-------|
| Travelling environmentally wastes energy | 0.869 |       |       |
| Travelling environmentally wastes time    | 0.850 |       |       |

Cronbach alpha coefficient of 17 perceived value = 0.863.

The “Structural factors” represent the physical surroundings that influence people’s action intention. Lack of infrastructure is an example. “Intrapersonal factors” refers to individual factors that affect people when performing certain tasks, such as time, energy and so on. “Interpersonal factors” reflects the factors that are the outcome of an individual’s interaction with others. These three factors are consistent with a previous study of Moghimehfar and Halpenny (2016). And the “cognitive factor” includes two items (“Can’t change the environment status by myself” and “Can’t persuade the surrounding people into protecting the environment by myself”), which are related to people’s cognition on their personal strength. Motivation evolves one’s own needs and is shaped by intensity and direction (which determines which behavior is chosen from all the possible options) (Kollmuss and Agyeman 2002). “Internal motive factors” means the motivation of saving energy and time.

Situational factors consist of structural factors, intrapersonal factors, interpersonal factors, cognitive factors, and internal motive factors. Structural factors are about environmental and physical conditions that already exist. They include sewage systems, dustbins, environmentally friendly products, explanation boards and environmental promotion activities, which are all supplied by the government. They are intended to ensure an environmentally-friendly situation for tourists and encourages them to protect the wetland park’s environment.

Intrapersonal factors refer to the most direct inner factors of tourists themselves, which decide whether they can perform pro-environmental behavior. This refers to whether tourists have time, energy, money or interest to be environment protectors or not. Interpersonal factors are the outcome of tourists’ interaction with people around them. This factor refers to what people around do and how people around think about environment protection and will influence tourists’ behaviors and thoughts.
Cognitive factors relate to people’s cognition of their personal strength. Some people may have the ability to do environmental protection, but they are not self-confident in their strengths or they don’t think they can do something environmental friendly. Internal motive factors are about motivations informing one’s own needs, and are shaped by intensity and direction (e.g. determines which behavior will be chosen from all the possible options). The study argues that what a wetland park provides, the ability and interest of tourists, what people do and how people think in the park, and if tourists have confidence and motivation in doing pro-environmental behavior will actually influence the relationship between environmental value perceptions and pro-environmental behavior.

It was observed that there were only a few environmental protection facilities, such as green bins, in the Haizhu Lake wetland park. When visiting the park, the authors could hardly find any ecologically built hiking trails and the public toilets, which were not particularly environmental. This shortage of environmental protection facilities will hinder people from undertaking environmentally friendly behavior to some extent.

According to the interviews with tourists there, most people come to the park for only half-days or for one full day. The purpose of their visit is mostly to relax, and some of them knew little about the activities carried out by the park’s management service.

**Testing the main hypotheses**

The basic premise of these moderating effects is that the relationship between environmental value perception and people’s pro-environment behavior in the wetland park is affected by the situation. This study used hierarchical multiple regression/correlation (HMRC) to examine these moderating effects (Moghimehfar and Halpenny 2016). For a sample of 316 responses, the dependent variable (Y) was environmental behavior (EB), the independent variable was environmental value perception (EVP), represented by X1 and the moderating variable was situational factors (SF), represented by M. Next, interaction variables were formed by multiplying the centralized independent variable X1’ by moderating variable centralized M’, resulting in an independent variables \( X2(x2=(x1-\bar{x}1)*(m-\bar{m}1)) \) (Dawson 2014). Furthermore, we chose gender, age, education, and income as control variables in our models.
We entered control variables first. Then, environmental value perception (X1) was added, and finally the interaction variable X2 was added to the main effect independent variable. The difference in R2 of model 2 and model 3 was examined. Table 5 shows the results of the hierarchical MRC analysis of model 1 to model 3.

**Table 5.** Results of a hierarchical MRC analysis for environmental value perception and situational factors.

| Variables                  | Model 1   | Model 2   | Model 3   |
|----------------------------|-----------|-----------|-----------|
| Constant                   | 0.844*    | 0.878*    | 0.871**   |
| Gender                     | 0.010     | 0.010     | 0.037     |
| Age                        | -0.162*   | -0.143*   | -0.123    |
| Education                  | -0.039    | -0.107    | -0.135*   |
| Monthly salary             | -0.103*   | -0.073    | -0.077*   |
| F                          | 3.612**   | 30.161    | 54.705    |
| R^2                        | 0.135     | 0.266     | 0.322     |
| X1: Environmental value perception(EVP) | 0.341** | 0.283**   |
| M: Situational factor(SF)  | -0.207**  | -0.185**  |
| X2: Interaction variable   |           | -0.129**  |
| ΔF                         | 3.612**   | 26.549**  | 24.544**  |
| ΔR^2                       | 0.135     | 0.131     | 0.056     |

1. Dependent variable: Environmental behavior intention
2. * means: p<0.05 ** means: p<0.01

As hypothesized, SF (β=-0.185, p < 0.01) was significantly negatively associated with pro-environmental behavior, and EVP (β=0.283, p < 0.01) was significantly positively associated with pro-environmental behavior, which means that the more environmental value people perceived, the more possibly it is that people perform pro-environmental behavior. The results support Hypothesis 1. The interaction variable (β=-0.129) is significant (p < 0.01). The change in R^2 of model 3 and that of model 2 is 0.056 (p < 0.01) and so also significant. This result indicated that the effect of EVP on EP is significantly changed by situational factors. That is to say, it is hard to gauge whether what people perceived about the wetland park’s environment had a positive or negative influence on their pro-environmental behavior, because of their different situations.
The results also supported Hypothesis 2. Statistical tests revealed that the moderating function of situational factors exists in the relationship between environmental value perception and pro-environmental behavior. It was also observed that tourists in the wetland park mostly stayed with their friends or family. Therefore, it is likely that tourists’ decision-making can easily be influenced by the people around the site. The environmental facilities, such as public toilets were not eco-friendly, as mentioned earlier.

Simple Slope Analysis was used to identify where the statistical differences in the relationship exist (Cohen et al. 2003). In our data, the standard deviation of $M'$ is 1, and the mean of $M'$ is 0, as it has been centered. We assigned 1 or -1 to the moderating variable (Dawson 2014), representing negative- and positive-situational factors. We then draw a graph on regression analysis of the dependent variable (Y) to the independent variable (X1).

![Figure 3. Situational factors’ moderating effect diagram.](image)

In figure 3, it is statistically possible to claim that Hypothesis 2 is supported. When in a positive situation, EVP is more effective in positive pro-environmental behavior, but when in a negative situation EVP is much less effective in positive pro-environmental behavior.

Finally, MATLAB7.0 was used to draw a three-dimensional graph, examining the results of the Simple Slope Analysis. Figure 4. shows that when the M value decreased from positive (in negative situations) to minus (in positive situations), the slope is much steeper, fully proving the results of the Simple Slope Analysis.
Conclusions

Summary and discussion

We conducted this study to answer a set of questions: is environmental value perceived by tourists in Haizhu Lake Wetland Park? If so, what is the relationship between environmental value perceptions and tourists’ pro-environmental behavior? And, does the relationship between environmental value perceptions and pro-environmental behavior differ according to the different situations of tourists in the park?

The results of the study provided the following answers: Yes, tourists do have perceptions of environmental value. And, these perceptions of environmental value do influence their pro-environmental behavior. EVP is significantly positively associated with pro-environmental behavior. The more environmental value people perceived, the more possible it is that they will perform pro-environmental behavior. Specifically, environmental value perception is more effective in inducing positive pro-environmental behavior in a positive situation rather than a negative situation.
This wetland park is famous for a water area of 377 hectares and has over 100 bird species living there. Its ecosystem is valuable and full of natural resources. Every year, many popular science activities and environmental education campaigns are held in this wetland park. These activities are aimed at raising tourists’ environmental awareness and educating people with knowledge of the natural ecosystem. Both the beautiful nature and the interesting activities attract many tourists coming to visit. Although people appreciate the ecological wetland, they somehow also destroy the ecology and their pro-environmental behavior needs to be improved. Tourists’ attitude to environmental behavior is not only guided by the values they perceive, but also by some situational factors, such as the people around them, the park’s environmental facilities, and their own time and experiences.

Based on the results above, we can claim that this wetland park, famous for its rich biological species (environmental value) and various science activities (structural factor), will be better protected if people around it are more environmental friendly and if they also have confidence in protecting it. Government should make efforts to encourage the conservation of wetland parks’ natural environments and advocate for eco-friendly lifestyles through education and policy promotion. Pro-environmental awareness needs to be raised person-by-person. If so, rich biological species are likely to be better protected, and tourists get more environmental value. Furthermore, they will enjoy more interesting activities and will be situated in more environmental surroundings, which will in return promote environmental behavior.

Tourists enjoy themselves in the wetland park, and perceive the environmental value at the same time. This finding coincides with Wang et al. (2014) and Wei and Pan (2012), who also agreed that tourists can perceive value during wetland tourism, and environmental value is one of the most important values. As Chen and Tsai (2007) argued, tourists’ perceived value is the key factor of behavior. The more value tourists get from wetland parks, the more positive their behavior is. This study has also found that tourists’ pro-environmental behavior is positively influenced by their perception of environmental value. A further finding in our study is that the relationship is moderated by structural factors, intrapersonal factors, interpersonal factors, cognitive factors, and internal motive factors. Part of these situational factors were strongly suggested in previous studies. (Moghimehfar and Halpenny 2016a). Once a
wetland park becomes a tourist destination, its ecosystem is affected by the tourists in better and worse ways (Sirakaya et al. 2004). This study has proven that tourists in the wetland park are somehow willing to perform some pro-environmental behavior. Therefore, encouraging tourists to actively participate in environmental protection and promoting their interaction with the natural environment is necessary for environmental protection.

**Implications of the study**

This study has practical implications. Findings of this study are important to wetland tourism developers. Tourism planners need to develop, not only a short-term perspective of wetland tourism benefits, but also a long-term perspective of environmentally-friendly tourism. This study showed that as tourists’ perception of the environmental value in the wetland park increases, their awareness to protect the environment increases, and that this effect is influenced by the situational factors surrounding them. When holding nature-based tourism activities, like wetland park tourism, the strategists need to consider the strength of this relationship, and focus on maintaining their ecosystem.

This finding also suggests that tourism developers and marketers should know how tourists perceive environmental value and how it affects their pro-environmental behaviors. For example, this study revealed that the relationship between tourists’ environmental value perceptions and pro-environmental behaviors was stronger in a positive situation, but the promoting relationship will be weakened in a negative situation. Therefore, even though tourists perceive environmental value positively, their protection of the wetland environment may not be turned into real actions when there is no enough infrastructure or when people around them damage the environment. For this reason, the physical environment of wetland parks should facilitate people’s participation in pro-environmental behavior. Providing more information about environmental issues and environmentally-friendly practices can decrease negative interpersonal and intrapersonal factors. An example of a strategy is planning entertainment activities that involve families and groups in environmentally friendly activities, prizes and punishments as motivations to protect the environment may also be applicable.
In sum, wetland tourism developers should plan a strategy that emphasizes tourists to perceive positive environmental value in wetland parks. Great efforts can be given to improve the infrastructure convenient for tourists, and to hold environmental education activities for improving tourists’ participation and enthusiasm in protecting wetland environments.

**Limitation of the study and future research**

Since this study used both a web-based survey and a no-site survey, differences may exist in these two groups. If the survey was extended to include tourism planners, residents, or other stakeholders related to the wetland park, there might be different levels of perception of environmental value, and strength of the situational factors may change. Furthermore, including more tourists in other wetlands may help us better understand the relationship between perceived environmental value and pro-environmental behavior and the role of situational factors.

This study examined how situational factors influence the effects of perceived environmental value on pro-environmental behavior. One other limitation was testing only one moderating effect on the relationship. Future research should investigate other moderators such as age and/or gender. In addition, further research may find some other affecting factors that influence people’s will to protect the surrounding environment.

**Notes**

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