Risk Perceptions of Wildlife Tourists Interacting with Giant Pandas in a Semi-Captive Setting

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Abstract

In order to provide insight into wildlife tourists' risk perceptions when interacting with giant pandas in a semi-captive setting, a survey of tourists at the Chengdu Research Base of Giant Panda Breeding in China was done. Quantitative analyses were used to explore visitors' risk perceptions. Results show that the overall perceived risk was at a medium level for wildlife tourists at the panda facility. Experience quality risk, physical safety and amenity risk are three factors identified within the scales and ranked according to tourists' perception. Significant differences in perceptions were found according to cultural background, age, family status and levels of education of respondents. The investigation of risk perceptions in wildlife tourism offers a potential theoretical foundation to better understand the market composition and more accurately predict tourists' behavior in a particular destination as well as their intention to revisit that destination.

Keywords: Risk perception; Giant panda; Wildlife tourism; Chengdu; China: semi-captive setting

Introduction

The giant panda is an icon of wildlife tourism in China. It is featured in the logo of the World Wildlife Fund's "All Time Top 10 Species to See," and is ranked as the top species in the world in that list [1]. It is widely considered to be an adorable, harmless animal, and plush panda toys for children to play with are commonplace. However, incidents where giant pandas attack humans do occur occasionally in China. For example, in September 2006, a young man was bitten on his right calf by a giant panda known as Gugu, after he jumped into the enclosure to attempt to shake hands with the animal. In October 2007, another young man injured his legs after entering an enclosure with a giant panda, and similar incidents with tourists happened in 2009 and 2012 [2,3].

It is important to learn about tourists' risk perceptions, both before their departure and once they arrive at their destination, as these are central to their decision-making [4,5]. Understanding tourists' risk perceptions will benefit destination management and marketing [6,7]. This paper identifies the risk perception profiles of wildlife tourists in a semi-captive setting with respect to the giant panda in China. The research questions that guide the research are as follows:

a)	What are tourists' risk perception profiles at the Chengdu Research Base of Giant Panda Breeding (CRBGPB)?

b)	What are tourists' biggest concerns about perceived risks while interacting with giant pandas?

c)	What factors impact risk perception, and how do they differ between groups?

Literature review

Risk perception in wildlife tourism

Risk perceptions in tourism have been examined in several areas and some studies that focused, for instance, on the perceived risk of a particular travel experience such as in adventure tourism and sports tourism [8-10]. In wildlife tourism experiences, people's perceptions of risk are influenced by the species, the size of the animal, the degree to which wildlife are considered

to be dangerous, whether species are diurnal or nocturnal, and the degree of control individuals feel that they have over wildlife activities [11]. Wildlife - human interaction associated with hunting has also been explored where the perceived risks can be indirectly influenced by management action and information dissemination [12].

Risk perceptions should be a consideration in wildlife management because such perceptions ultimately influence management policy [13]. Gore et al. [14] introduced a special issue of *"Human Dimensions of Wildlife"* that focused on risk concepts and their application to wildlife management. Smith et al. [15] studied interactions between tourists and free-ranging bottlenose dolphins in an artificial feeding program at Monkey Mia, Australia. Smith's research identified several factors (including the duration of time dolphins waited before being fed, the presence and absence of food, and the identity of the interacting dolphin) that contributed significantly to the incidence of risky interactions between free-ranging dolphins and tourists. Cong et al. [11] identified three factors when people interact with dolphins, including experience quality risk, physical risk and amenity risk.

In sum, risk perception is an important topic in wildlife tourism research but remains under-explored. Risk is likely to vary between captive and non-captive settings, and there is a gap for investigating wildlife tourism risk perception in a semi-captive setting, especially with a focus on the iconic giant panda species in China. Studies are required to better understand risk perception among wildlife tourists. This is especially the case given the existence of a global pandemic that likely was caused by interaction between humans and wildlife. However, the data that are presented here pre-date the current coronavirus pandemic.

Significant differences in risk perception

Differences in demographic characteristics have been discussed extensively in the literature and the main findings include the following:

1.   Young people have a higher perception of risk than older people [16].

2.   Males have higher risk perception than females and tolerance for tourism-related risk decreased with age [17,18].

3.   Higher education levels lower the perception [5,19].

4.   First-time and repeat visitors differ in terms of their perceptions of risk at a destination [20-22,5].

5.   Cross-cultural differences have been verified in risk perceptions [23-25]. A number of studies have demonstrated that perceived risk varies across countries and cultures [26,27]. Reisinger and Mavondo [24] showed that tourists from the United States, Hong Kong and Australia perceived more travel risk, and were more reluctant to travel than tourists from the United Kingdom, Canada and Greece.

6.   In addition, risk perception differs with environmental and management settings [28,29].

There is no consensus in previous literature on gender differences [9] and this current research found no significant gender differences with regard to perceptions of risk. Schroeder et al. [9] reported that males had higher perceptions of destination risk associated with an Olympic Games host city than females. This inconsistency of results suggests that when there are differences in risk perception between males and females it likely depends upon the type of risk presented [30,31].

Different types of risk perception in tourism

Risk is a multidimensional construct [32,33]. Studies have identified a variety of risk concerns such as vacation risk, equipment risk, financial risk, physical risk, psychological risk, satisfaction risk, social risk, time risk and opportunity loss [33,34]. Scholars have different views regarding risk perception according to the specific tourism context [35-37]. To frame this study, the five main aspects of risk perception have been considered and incorporated into our measurement scales. They are: physical risk, financial risk, satisfaction risk, equipment risk, and psychological risk.

Methods

Study site

The Chengdu Research Base of Giant Panda Breeding (CRBGPB) is a non-profit organization engaged in wildlife research, semi-captive breeding, conservation, education, and educational tourism. It was founded in 1987 with six giant pandas rescued from the wild. Since its foundation, there has been a total of 184 pandas bred to 2020, with 27 additional cubs born in 2016. There are 600 pandas in captive settings all over the world. The panda facility is located in the northeast of downtown Chengdu and covers an area of 36.5 hectares. A variety of wildlife interaction experiences are available at the CRBGPB which include observing pandas, holding pandas, having photographs taken holding pandas, feeding, learning about pandas, and a volunteer program.

Scale construction

The measurement scale regarding risk perception for wildlife tourism was based on a review of the literature, with additional experts' opinions. The items in the scale were based on previous literature [30,32,38,33,39]. On completion of the review of the literature, 9 risk-perception items were utilized and rated on a 5-point Likert scale(Table 1).

Scale validity and reliability

Table 1 presents the results of inter-item reliability (or internal consistency) using Cronbach's alpha (α) which is considered to be the most important reliability index based on the number of the items in the questionnaire, and on the correlations between

the variables (Nunnally, 1978). We examined the reliability of the entire 9-item scale using SPSS 16.0. Cronbach's Alpha for the scale was 0.822 and above the suggested Cronbach's Alpha value of 0.7 (Nunnally, 1978). The adequacy indicator of the sample KMO=0.837>0.70 indicated that the sample data were suitable for factor analysis. The control of sphericity (Bartlett's sign<0.001)

indicated that principal component analysis was applicable. After the component factor analysis, three factors were extracted using eigenvalues above 1; the total variance explained was 66.68%. These factors have been labelled as risks associated with visitor experience in the setting, physical aspects in the setting, and amenity of the setting.

Table 1: Risk Items and Component Factor Analysis.

Item	Item Name	Component			Factor	Mean	SD	Cronbach's
		1	2	3				
1.Possibility that spending goes beyond expected costs	Spending	0.089	0.326	**0.743**	Experience	2.5	0.811	0.657
2.Possibility that experience will not be as good as expected	Experienced	0.209	0.103	**0.789**				
3.Possibility that there is less chance to encounter wildlife in the destination	Encounter	0.325	-0.075	**0.705**				
4.Possibility that accidents may happen	Accidents	0.162	**0.777**	0.211	Physical	2.3	0.901	0.743
5.Possibility that physical adaption to the local environment is a risk	Physical Safety	0.258	**0.796**	0.025				
6.Possibility of wildlife attack	Attack	0.434	**0.646**	0.093				
7.Possibility that the time spent isn't worthwhile	Time	**0.717**	0.246	0.281	Amenity	2.56	0.966	0.792
8.Possibility that traffic access will be affected by a natural disaster	Access	0.788	0.24	0.126				
9.Possibility that facilities are not well developed	Facilities	0.805	0.24	0.083				

Data collection and Analysis

Tourists at the CRBGPB were invited to complete the questionnaire before their visit (which took place from 7 July to 26 July 2013) using 10 interviewers. In order to ensure consistency between interviewers' approaches, interviewers were provided with training prior to collection of data. They were given basic knowledge about wildlife tourism, and instructions on how to interact with participants. They were also instructed to hold the questionnaire and ask participants the questions one-by-one. Any definitions which participants found ambiguous were to be explained to them. The interviewers consisted of 10 students from Sichuan University and they were trained for survey delivery. Their training included knowledge of wildlife tourism issues and instructions on how to interact with the respondents. They were instructed to explain definitions of terms to respondents and ask for responses to each question. They were also asked to follow a purposeful random sampling method that involved approaching visitors in a manner that would reduce interviewer bias in sampling.

According to previous interviews with staff in the CRBGPB, tourists from Japan, the USA and Korea are relatively more common than tourists from other countries. Most Japanese and Korean visitors were able to speak English, so the questionnaire was delivered in two languages: Chinese and English. Questionnaires were completed and collected on site. Interview respondents were

provided with a small panda badge souvenir as encouragement and 680 tourists were willing to participate in the study. In total, 650 valid questionnaires (482 for Chinese and 168 for foreigners) were completed for a response rate of approximately 93%.

Data analysis

Descriptive statistics, independent-sample t-tests, and a one-way analysis of variance ANOVA) were used to explore significant differences in demographic characteristics of participants regarding risk perceptions. Using a cluster analysis, taxonomies involving weak, medium, and strong risk perception were found. Descriptive statistics were first used to analyze the risk perceptions tourists reported about giant panda interactions in CRBGPB. An ANOVA was used to explore demographic characteristics to determine whether there were significant differences in the perception of risk according to gender, age and education.

Results

Profile of the sample

The sample consisted of an even distribution between males and females. Most of the respondents were single (64%), students (46%), aged between 20 and 29 years (41%), with an educational background at the Bachelor level (43%). The majority of respondents had an annual household income of less than US$10,000 (48%). Respondents were primarily Chinese tourists

(74%) from a wide geographical base including Chengdu, Sichuan (except Chengdu and Chongqing), Hubei, Guangdong, Shaanxi, Yunnan, Shanghai, Zhejiang, Beijing, and Shandong. A total of 33 provinces and municipalities were represented in the Chinese sample of the survey. In terms of the English questionnaire (26% of respondents), the four most highly represented nationalities were the United States (n=53), Britain (n=36), the Netherlands (n=24) and Australia (n=24).

Profile risk perception of wildlife tourism in CRBGPB

Overall, the mean score of the total sample was 2.49 reflecting a low level of risk perceptions (on a scale 1=low risk to 5 =high risk) for the CRBGPB wildlife experience. A Q–Cluster analysis was used to group respondents into risk perception clusters. After multiple testing, three groups were obtained using K-means cluster analysis. When the mean value of the risk perception scale was less or equal to 2, the group was labelled as lowest risk perception. When the mean value of the risk perception scale was between 2 and 3, it was labelled as medium risk perception. When

the mean value of the risk perception scale was greater than 3, the grouping was labelled as having the highest risk perception. The lowest risk perception group accounted for 29% of the sample (n=191), the medium risk perception group included 37% of the sample (n=243), and the highest risk perception group comprised 33% of the sample (n=216). The two language versions of the questionnaire were analyzed through t-tests, for statistical similarities and differences in responses. Table 2 highlights the results of the ANOVA analysis which indicates that there were significant differences between groups on all risk scale items.

The overall mean scores for both the Chinese and English samples were categorized as medium risk perception, whilst on average the Chinese results reflected a significantly higher risk perception than the English. Interestingly, in Chinese respondents, amenity risk was seen as the highest risk, followed by experience quality, and then physical safety. The participants who completed the English version perceived experience quality as the highest risk, followed by amenity and physical safety.

Table 2: Risk Clusters by Item Response.

Items	Statistical Variable	Lowest Risk Perception (n=191)	Medium Risk perception (n=216)	Highest Risk Perception (n=243)	Overall Sample (N=650)	F	Sig.
Spending	Mean	1.530	2.720	2.69	2.3575	105.252	.000
Experience	Mean	1.790	2.68	2.97	2.522	107.075	.000
Encounter	Mean	1.940	3.10	3.150	2.774	102.933	.000
Accidents	Mean	1.690	2.230	3.180	2.419	142.606	.000
Physical adaption	Mean	1.610	1.920	3.010	2.235	155.412	.000
Attack	Mean	1.530	1.930	3.29	2.317	251.498	.000
Time	Mean	1.630	2.340	3.400	2.525	232.538	.000
Access	Mean	1.64	2.39	3.42	2.552	229.936	.000
Facilities	Mean	1.69	2.38	3.7	2.344	294.069	.000

The mean scores for the nine items using the Chinese version of the questionnaire ranged from 2.26 to 2.83; which were higher than the English version which ranged from 1.87 to 2.61. Both the Chinese and English questionnaires ranked tourism quality risk (worry that there is less chance to encounter wildlife in the destination) as the highest risk. Furthermore, the data relating to experience risk had the highest mean and physical risk had the lowest. Overall, amenity risk was ranked in the midrange of the mean scores. Based on these findings, it appears that all tourists perceive interacting with giant pandas in semi-captive settings to be relatively safe in terms of wildlife tourism risk.

There were a number of significant differences between participants who completed the Chinese survey and those who

completed the English language version. The Chinese cohort had more concerns about risk than the non-Chinese. This may be because non-Chinese are tourists to the country with lower expectations and a greater acceptance of risk as a result of wider travels. This is in line with a previous research finding that Chinese people perceive traveling to be more risky compared with Japanese and Korean people [32].

Demographic characteristics differences in risk perception

Results from the ANOVA are shown in (Table 3) and revealed statistically significant differences at $p < 0.05$ in destination risk perception among the seven age groups for nine wildlife tourism risk perception items.

Table 3: Summary Demographic Differences in Risk Perception of Wildlife Tourism at the CRBGPB.

Variables	Highest Risk Perception	Lowest Risk Perception	Tendency	Significant Difference
Questionnaire type	Chinese questionnaires	English questionnaires	Chinese is stronger than English	Yes
Gender	Female	Male	Female is slightly stronger than male	No
Age	Age between 16-29	Age more than 60	The more aged, the weaker risk perception	Yes
Education	Vocational high school	Doctor Degree	The more educated, the weaker risk perception	Yes

Age significantly influenced the perception of financial risk (possibility that spending goes beyond expected cost) and time risk (possibility that the time spent is not worthwhile). Different age groups had significant differences in spending and time. Using Scheffe's post-test, it was found that participants between the ages of 20-29 perceived a higher risk than their older counterparts aged 30-39. The younger group (20-29) had a significantly higher risk perception than the 40-49-year-old cohort in relation to the item of spending. In terms of risk relating to time, participants aged between 16-19 years perceived a higher risk than those between the ages of 40-49. In general, the age group between 20 and 29 years had the highest risk perception with respect to all nine items.

A t-test determined that there were no significant differences between wildlife tourism risk perceptions according to gender. A Scheffe post hoc-test with respect to levels of education found that the vocational high-school group perceived higher risk than those with a Ph.D. with the 'Possibility of wildlife attacks' item. Independent t-tests indicated a number of significant differences between students and non-students' risk perception. The scores for students were consistently higher with the exception of 'Possibility that physical adaption to the local environment is a risk'. Students were significantly more concerned about the tourism experience risks, medium on amenity risks, and less on physical risk (Table 2).

Discussion

The current research has made a contribution to understanding the characteristics of tourism risk perception in a semi-captive wildlife setting in China. The significance of this study is reflected through a discussion of the original aims of the paper and presented below.

Three types of risk perception in relation to the CRBGPB experience have been identified. These were experience quality risk, physical risk and amenity risk. Wildlife tourists perceived experience quality as the highest risk, physical safety as the lowest risk, and amenity risk was in the intermediate position. Based on these findings, it is suggested that, overall, tourists perceive interaction with giant pandas in semi-captive settings to be relatively safe in terms of wildlife tourism risk. This could be because of two reasons. First, the giant panda is generally not aggressive and is a 'cute' animal. Second, the giant panda is an icon of China and tourists cannot choose a substitute. Moreover, individuals may perceive less risk when the pandas are in a semi-captive setting. The data suggest that if a risk is perceived to be relevant, and individuals believe that they can manage the risk, they are likely to engage in protective behavior [40]: individuals assess the risk and then decide how to cope with it.

The Chinese-language risk-perception questionnaire produced significantly higher risk perception scores compared with the English one. Older people reported lower risk perception compared with younger people. There was no significant gender difference regarding the perception of risk. Students reported significantly higher levels of risk compared with non-students.

Results indicated that the majority of participants were students with bachelor's degrees and with an annual income of less than $10,000. There was an equal amount of men and women. In terms of age, 60% were less than 30 years. The characteristic of the current sample supports past research that has found that most wildlife tourists are young adults with a high education but because many are students, their incomes are often not high [41,42].

Independent of cultural background, age had a significant effect with regard to the wildlife tourism risk perception, as did financial risk and time risk. Younger participants (between the ages of 16-19) reported the highest risk perception. The findings of the current study support Schroeder et al. [9] who found that the youngest group of U.S. residents, aged between 18-24 years, had the highest perceptions of destination risk associated with an Olympic Games host. The findings of the present research are consistent with Floyd & Pennington-Gray [30] who found that participants aged between 18-24 years had the highest perception of destination risk with London as a destination. Compared with older people, young people tend to have a higher risk perception. It is interesting to note that the participants who were above the age of 60 years were more worried about the experience quality risk compared with physical risk as expected and had the weakest overall risk perception. It is possible that the more experienced the tourists are, the less risk is perceived by them. However, Sonmez & Graefe [19] did not find that age and gender influenced an individual's perception of risk.

There were significant differences in risk perception when examining education levels. The vocational high school group

had the strongest risk perception and the doctoral group had the weakest perception of risk. These findings show that the more educated the participants, the weaker the risk perception, supporting the research of Park & Reisinger [16].

Conclusion

The investigation of tourists' risk perceptions in wildlife tourism offers a potential theoretical foundation to better understand the market composition and more accurately predict tourists' behavior in a particular destination as well as their intention to revisit that destination. The cluster analysis indicated three taxonomies for tourists' risk profiles which were weak, medium, and high-risk perceptions. These categories could be applied to other wildlife tourism settings and species for evaluation of risk perception and also have wider implications for tourism destination marketing and management. The overall perceived risk was at a medium level for wildlife tourists at the panda facility. Measuring wildlife tourists' risk perception profiles should have relevance for wildlife conservation, destination management, tour operators, travel agencies, and others. This paper provides a strong basis for exploration of further issues of risk perception in semi-captive settings. Significant differences were found between various groupings of tourists; this provides an avenue for further research in comparing the risk assessment of wildlife tourists and other tourists in a variety of situations.

This paper has been achieved through cross-cultural collaboration and exploration and has proposed a scale for the exploration of risk perception of tourists in a wildlife tourism setting. Significant differences were found for cultural background, age, family status and levels of education. Given that this research explores a famous and unique Chinese tourism destination, and as the Chinese outbound tourism market was increasing across the globe prior to COVID-19, additional research could be undertaken in a variety of wildlife tourism settings to explore the issues of this market. This paper indicates that risk perceptions appear to be situationally grounded with fundamental demographic influences.

As with all research, there are some limitations of the present study. These include that our participants were sampled in the space of one month in July 2013 thus the high level of student respondents that we found may be due to their being on summer break. However, this high level of students could also be reflective of the educational goals of the panda facility. A further limitation is that the questionnaire was delivered in Chinese and English only, whilst key international visitors to the CRBGPB were noted by employees as being from Japan, the USA and Korea, so the future surveys could be presented in Japanese & Korean languages.

Future research could further sample the panda facility at a different time. This would be an excellent opportunity to explore issues of educational research in conservation-based settings. Future research could explore gender differences with other species or in different settings for tourists interacting with wildlife. Future research using an SEM model to examine the relationship between risk perception, environmental attitude and place involvement is proposed.

The global coronavirus pandemic has greatly curtailed both international and domestic tourism and has likely changed perceptions of risk regarding tourism generally and wildlife tourism specifically, given that wildlife may have been a link in the pandemic causal chain. Thus, it is likely that the specific results of our study would differ were new data collected. However, the data provide a baseline against which change can be assessed, and the methodology presented here is both robust and replicable and can be applied to assess perceptions of risk in a world in which uncertainty is to be expected and managed [41-46].

Acknowledgement

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