The relationship between outdoor sport participants' place attachment and pro-environment behavior in natural areas of Japan for developing sustainable outdoor sport tourism

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Abstract

Developing natural areas that are utilized for outdoor sports is undertaken to disperse high concentrations of tourists from the city out into rural areas to revitalize regional communities. To promote outdoor sports tourism with an emphasis on economic and environmental impacts, increasing environment awareness among marketers, tourists and local residents is critical. The purpose of this study was to clarify the influence of attachment to natural areas thorough outdoor leisure activities on pro-environment behavior. The study sample (n=146) consisted of Japanese visitors to an outdoor leisure facility located in Ikeda, Fukui Prefecture in Japan. Following previous research, we employed a place attachment scale that was designed to measure two concepts (Williams, 2000), including place dependence (i.e., functional attachment) and place identity (i.e., emotional attachment). Structural equation modeling confirmed the strength of place dependence's ability to predict place-related pro-environment behavioral intentions. However, place identity was not a significant predictor of pro-environment behavior. Program development that takes into consideration how place dependence leads to place identity and how place identity affects pro-environment behavioral intentions may be needed to execute sustainable natural environment development thorough outdoor sports.

Keywords; outdoor sport, sport tourism, sustainability, place attachment, pro-environment behavior

Introduction

Tourism is an important pillar of Japan's growth strategy, and it is expected to be a trump card for regional creation. In the “Future Investment Strategy 2018” (Prime Minister's Office, 2018), tourism, sports and cultural arts are positioned to promote a virtuous cycle of regional economic development. As one of the new priorities outlined in the "Sports Tourism Demand Expansion Strategy" (Ministry of Education, Culture, Sports, Science and Technology, 2018), outdoor sports tourism is expected to become a useful tourist attraction in Japan. With the abundance of natural resources in Japan’s rural areas, the development of outdoor sports is being pursued to redirect a portion of concentrated urban tourism out into rural areas. At the same time, sustainability is important in the development of these natural resources. The Fifth Environmental Basic Plan (Ministry of the Environment, 2018) promotes economic and social activities that use natural resources in a sustainable manner and environmental protection initiatives, such as managing environmental risks and securing biodiversity. However, Japan lags behind other developed countries in terms of the sustainable use of natural resources (Murata, 2012). Some fear that pushing the unplanned development of tourism will lead to tourism pollution, such as increasing the amount garbage and traffic, which is already a problem in some tourist areas in Japan (Kwon, 2018; Seraphin et al., 2018). Similarly, the ecological impact of increasing outdoor sports activities and tourist behavior must be considered when developing outdoor sports tourism in natural areas.

Canada is one of the developed countries working on promoting sustainable tourism that employs leisure and recreation in natural areas. In Canadian national parks, there are a variety of leisure and recreational activities in natural areas combined with interpretive programs to increase environmental awareness. More specifically, about 20% of the population paid $874 million in donations and dues to nature conservation organizations (Federal, Provincial, and Territorial Governments of Canada, 2014). Canadians evidently have a high level of awareness in terms of natural resource protection and sustainable use. As a prerequisite for sustainable development of outdoor sports that take place in natural areas, it is important to increase the environmental awareness among marketers, local residents, and tourists.

“Place attachment” which is the emotional bond between person and place, is a concept related to attracting attention, and it influences the development of environmental awareness. When place attachment increases, that place is often visited many times and this can have a positive effect on pro-environment behavior (Halpenny, 2010; Vaske & Kobrin, 2001, et al.). It has been reported that active experiences, such as outdoor sports and leisure activities in natural areas, have the effect of fostering place attachment (Higham & Hinch, 2009). Consequently, outdoor sports experiences could become a tool for fostering place attachment toward areas where such experiences take place. It in turn, this may lead to more considerate behavior toward that area's natural environment.

Place attachment research has been conducted in Japan, which specifically focused on the tourists’ and local residents’ attachment to certain tourist locations (Taniguchi, 2012). However, most research has focused on place attachment in Japan’s residential areas (Hikichi et al., 2009; Suzuki & Fujii, 2008; Hagiwara & Fujii, 2005; Oya & Haga, 2003). Regarding place attachment in the field of sports and leisure in Japan, studies on the attachment of sports team fans and volunteers to their communities (Ninomiya, 2011; 2010; Matsumoto & Watanabe, 2015) and sporting event venues (Shibata, 2014; Sakimori, et al., 2014). However, to the best of our knowledge, there has been no significant studies on place attachment related to outdoor sports tourists and natural areas. According to Japanese government policy, outdoor sports in regional areas are expected to be further developed in the future. However, the current state of outdoor sports tourism in the targeted natural areas of Japan is not well understood. To understand any future changes in Japanese outdoor sport tourists' place attachment and pro-environment behavior, it is necessary first to be able to measure both of these parameters.

Therefore, this study targeted outdoor sports participants in natural areas of Japan to clarify the influence of that outdoor sports experiences on pro-environment behavior thorough place attachment. By clarifying this, the knowledge gained could be used effectively in outdoor sports program planning and sustainable development for regional revitalization.

The reminder of this paper is organized in the following manner. Section 2 contains the literature review focused on place attachment and pro-environment behavior. Section 3 is devoted to the Methodology adopted in the study. Section 4 presents the result of analysis which contains descriptive statistics, factor analysis, correlation analysis, structural equation modeling analysis for outdoor sport participants' place attachment and pro-environment behavior. Section 5 describes the findings and recommendations for further study, and Section 6 concludes the paper.

Literature review

Place attachment

When traveling, tourists choose places that are of particular interest to them. Williams et al. (1992) stated that "place" is not only an economic commodity but also the possessor of an element that implies an emotional and functional connection between people and the environment. Place attachment has been defined as an emotional bond or connection between a person and a specific place (Hidalgo & Hernandez, 2001). It is used as an effective concept for studying tourism or leisure destinations (Williams, Patterson & Roggenbuck, 1992; Kyle, Graefe & Manning, 2005). Sports experiences in certain locations are reported to be one means of fostering place attachment (Higham & Hinch, 2009; Schilar & Keskitalo, 2018).

There are numerous previous studies in which the operational definition of place attachment contains two components, including place identity and place dependence (Moore & Graefe, 1994; Williams, et al., 2000; Vaske & Kobrin, 2001; Kyle et al., 2003). Place identity refers to an emotional attachment that recognizes a place as forming the identities of individuals. Place dependence points to a functional attachment that depends on the extent to which a particular place satisfies the needs of individuals compared to other places. Depending on the subject, studies have also been conducted measuring place attachment via an index that adds factors such as "place affect" and "social bonding" (Kyle et al., 2004; Raymond et al., 2010; Halpenny et al., 2016, Chow et al., 2019). Place affect is an individual's emotions and feelings that they share with a particular place.

Social bonding refers to the interpersonal relationship that occurs in a place. This study aimed to measure the current Japanese outdoor sport participants' place attachment as a baseline. Thus, the commonly cited, highly relevant and reliable index developed by Williams et al. (2000) was applied using the two factors of place identity and place dependence.

Studies using the concept of place attachment in the field of outdoor recreation and tourism have suggested that visit frequency affects place attachment (e.g. Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck, & Watson, 1992). Halpenny et al. (2016) reported that the participation frequency in running events held in national parks fosters attachment to the events themselves. Moreover, visit frequency to the national parks where the running events are held fosters place attachment toward those national parks, and participation frequency in running events influences place attachment to the national parks through the medium of attachment to the running events. These findings strongly suggest there is a relationship between outdoor sports participation frequency and place attachment in natural areas of Japan. This study thus presents the following two research hypotheses:

H1: Outdoor sports participation frequency in a specific area affects place identity toward that area.

H2: Outdoor sports participation frequency in a specific area affects place dependence toward that area.

It has also been reported that place attachment affects pro-environment behavior as well as satisfaction (Moewn et al., 1998, Wu et al., 2019) and intent to revisit (Halpenny et al., 2016), which reinforces the importance of fostering place attachment for the sustainable development of natural areas.

Pro-environment behavior

Kato et al. (2004) conceptually classified pro-environment behavior into two forms of behavioral attitudes that differ in their motivation. The first form points to the consideration of environmental issues, such as waste issues and global warming issues which are the target of an individual’s attitude that is not limited to a specific environmental issue or regional environment. The second form points to an attitude aimed at the preservation of a specific regional environment. Thus, the issues to be solved or preserved are those of a specific place.

Representative research that empirically measured environmentally responsible behavior can be found in Vaske and Kobrin (2001). Vaske and Kobrin measured how much dedicated environmental activity has been conducted thus far, including participation in voluntary cleaning and water conservation projects. It can be said that these measurements relate to the first form of pro-environment behavior that Kato et al. (2004) identified, namely, the consideration of environmental issues. Halpenny (2010) measured pro-environment behavioral intentions and evaluated both place-specific pro-environment behavioral intentions toward specific outdoor sport locations and general pro-environment behavioral intentions that are not limited to any specific regional environment. When adopting the perspective of the sustainable development of natural resources in regional areas, it was seemingly important to capture place-specific pro-environment behavioral intentions.

There are many studies concerning pro-environment behavior toward residential areas in studies revolving around place-specific pro-environment behavior in Japan (Kato et al., 2004; Imai et al, 2010). However, there are no similar reports for temporarily visited locations of outdoor sports and leisure activities. Therefore, in this study, we attempted to measure place-specific pro-environment behavioral intentions while referring to the place-specific pro-environment behavioral intentions index used by Halpenny (2010).

The relationship between Place attachment and pro-environment behavior

Several studies in the field of recreation have revealed a positive relationship between place attachment and pro-environment behavior (e.g., Vaske & Kobrin, 2001; Halpenny, 2010; Ramkissoon et al., 2013; Ramikissoon & Mavondo, 2014; Chow et al., 2019). Vaske and Kobrin (2001) investigated the relationship between the two factors that constitute place attachment (i.e., place identity and place dependence) and pro-environment behavior. They found that high levels of place dependence correlate with high levels of place identity, and high levels of place identity correlate with high levels of pro-environment behavior. Furthermore, they found that place identity seems to act as an intermediary between place dependence and pro-environment behavior. Stedman (2002) also showed that positive emotional and identical attachments strongly influence preservation and pro-environment behavior among both seasonal and full-time residents in the Lake District. Similarly, Halpenny (2010) reported that place identity affects both general pro-environment behavioral intentions and place-specific pro-environment behavioral intentions. They also found that place dependence affects both general pro-environment behavioral intentions and place-specific pro-environment behavioral intentions through the medium of place identity. Finally, they reported that place dependence affects general pro-environment behavioral intentions by fostering place-specific pro-environment behavioral intentions through the medium of place identity. This study thus presents the following three research hypotheses:

H3: Place identity toward a specific outdoor sports location affects pro-environment behavioral intentions toward that particular area.

H4: Place dependence toward a specific outdoor sports location affects pro-environment behavioral intentions toward that particular area.

H5: Place dependence toward a specific outdoor sports location affects place identity.

In this study, we measured the place attachment and place-specific pro-environment behavioral intentions of outdoor sports participants in natural areas of Japan that are currently being developed, and we examined how place attachment influences place-specific pro-environment behavioral intentions. Figure 1 summarizes the proposed relationships among outdoor sports participation, place attachment, and pro-environmental behavior in the form of a hypothesis model.

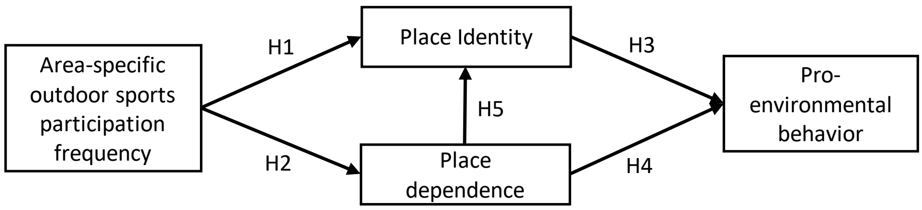

Figure 1. Hypothesis model

Methodology

Our investigation included the administration of a paper-based questionnaire survey at an outdoor leisure facility called "Tree Picnic Adventure Ikeda" (hereinafter, TPA) in Ikeda town, Fukui Prefecture, on November 17–18, 2018. Data was collected by 3 trained staff members who were graduate students from the faculty of sport health and sciences. The average time spent completing the survey was 5 minutes. We asked individuals to participate in our survey after they had finished their activities. We then handed out the questionnaire and writing materials to those willing to participate. We then conducted the questionnaire survey on the basis of self-administered distribution and collection of questionnaires. A total of 146 questionnaires were collected, and interviews were conducted to obtain supplementary data from staff members of Town UP Ikeda, which manages and runs TPA.

Setting

Figure 2 shows a map of Ikeda town where TPA is located is a protected area, and 90% of the area is covered by forests (Fukui prefecture, 2018). The population comprises approximately 2,600 people (Fukui Prefecture Ikeda Town Hall, 2018). Ikeda is said to be the town where depopulation is progressing the fastest within Fukui Prefecture. Consequently, Ikeda initiatives include numerous efforts utilizing its forestry and woodland resources to create a rich lifestyle in harmony with nature, the preservation and nurturing of its forest environment, the creation of opportunities for the employment and immigration/residence of young people, and the advancement of a regional circulation-based economy. Launched in 2016, TPA is the central pillar of these efforts. TPA is a facility where visitors can experience the nature of Ikeda town through activities, such as tree climbing, zip-lining, rafting in the summer, and ice skating in winter. Tree tents and cabins serve as accommodation facilities, and nature education programs are offered to visiting groups. Information obtained in the interviews revealed that TPA consistently attracts over 35,000 visitors per year. When it opened in 2016, 37,344 people visited TPA, and two years later, 36,802 people visited. The main objective of TPA is the attraction of tourists from outside town and the creation of opportunities for townspeople, especially children, to experience the nature of Ikeda. It is also important to note that the permanent settlement of townspeople and immigration by people from elsewhere is secondary focus.

TPA was launched as a private enterprise in 2016, is when the Japanese government began to focus on the utilization of natural resources in order to decentralize tourism and increase the number of regional tourists (Japan Tourism Agency, 2015). Since TPA constitutes a precedent in natural resource utilization in a regional area, it was judged to be a suitable facility for this study.

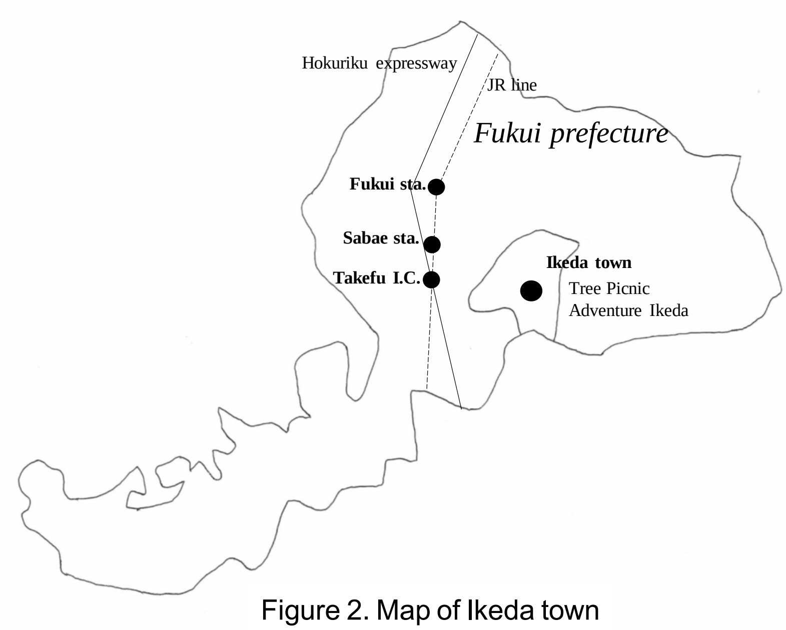

Figure 2. Map of Ikeda town

Instrumentation

The survey included personal attributes, a place attachment scale, and a pro-environment behavior scale. The personal attributes included gender, age, place of residence, annual income, number of companions, type of accommodation, type of travel, and the person's TPA visit frequency.

The survey regarding place attachment included a 12-item place attachment index composed of items regarding place identity (6 items) and place dependence (6 items), which is consistent with Williams (2000). The Items of place attachment scale were scored on a five-point Likert scale, ranging from "1 = Completely disagree" to "5 = Completely agree". The words and phrases "this place", "here", "this area", and "place", which indicate the place of activity in our measurement items, were treated as synonymous with "Ikeda town". The phrases "doing what I do", "the things I do", and "the type of things I do", which indicate activity content, were treated as synonymous with "doing outdoor sports". In this way, we constructed indicators that measured place attachment to Ikeda town where the survey participants had engaged in outdoor sports. To stay as faithful as possible to Williams's 12-item index when applied in the Japanese language, questions were created with the aid of prior back translation to confirm their accuracy. For the back translation, both the author and a professor specializing in sports tourism translated each item into Japanese and adopted only the expressions closest to the English originals. Then, a professor who was well versed in the English language made corrections to the first draft. By repeating this process multiple times, we were able to create an index in the Japanese language equivalent to the English original.

Regarding items related to pro-environment behavioral intentions, we referred to the place-specific, pro-environment behavioral intentions index used by Halpenny (2006). This made it possible to devise an index of 11 items. The items of pro-environment behavior scale were scored on a five-point Likert scale, ranging from “1 = Completely disagree” to “5 = Completely agree”, which were designed to measure the extent to which pro-environment behavioral intentions can be expected toward the natural area of Ikeda town in the following year.

Analysis

IBM SPSS Statistics 20. was employed to apply descriptive statistics, factor analysis, and correlation analysis. For the verification of our research questions, structural equation modeling analysis was performed using SPSS Amos 18.0. For the conformity degree indexes, we applied a Goodness of Fit Index (GFI), Adjusted GFI (AGFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA).

Findings

Outdoor sports participants' characteristics

Table 1 summarize the personal attribute data of the outdoor sports participants. Generally, there was not much difference between men and women. The average age of participants was 32.4 years, with half of the participants being in their 20s. Most participants earned between $30,000 and $70,000 (45.5%, n = 61), with the second-largest group earning $30,000 or less (40.3%, n = 54). Of those surveyed, 17.2% (n = 25) were residents of Fukui Prefecture, with 82.8% (n = 120) visiting from other prefectures. The average number of companions was 3.72, and most participants were with friends (51.7%, n = 75). About 90% of the participants were visiting TPA for the first time. As for accommodation types, most participants did not stay for the night, and, the data revealed that the participants were visiting on day-trips (40.6%, n = 58), staying outside the town of Ikeda (32.9%, n = 47) or staying in accommodation in Ikeda (23.1%, n = 33). As for style of travel, half of the participants had come purely to visit TPA (50.7%, n = 71), while 27.1% (n = 38) were also visiting other places within Fukui Prefecture, 14.3% (n = 20) were also visiting places outside Fukui Prefecture, and 7.9% (n = 11) were also visiting other places within the town of Ikeda.

Table 1. Outdoor sport participants' characteristics

item	%	(n)	item	%	(n)
Gender			**Place of residence**		
male	53.8	(78)	inside Fukui pref.	17.2	(25)
female	46.2	(67)	out of Fukui pref.	82.8	(120)
missing		(1)	missing		(1)
Age			**TPA visit frequency**		
～20	4.1	(6)	first time	89.0	(130)
20～29	50.7	(74)	second time and more	11.0	(16)
30～39	17.1	(25)	**Type of accommodation**		
40～49	19.9	(29)	in Ikeda town	23.1	(33)
50～	8.2	(12)	out of Ikeda town	32.9	(47)
Companion			both in and out of Ikeda town	3.5	(5)
myself	0.7	(1)	day trip	40.6	(58)
family member	17.2	(25)	missing		(3)
spouse (partner)	20.0	(29)	**Type of travel**		
friend(s)	51.7	(75)	only TPA	50.7	(71)
work colleague	10.3	(15)	incl. Ikeda town sightseeing	7.9	(11)
missing		(1)	incl. Fukui pref. sightseeing	27.1	(38)
			incl. out of Fukui pref. sightseeing	14.3	(20)
			missing		(6)

Place attachment

Table 2 shows the mean values and standard deviations for Williams's (2000) 12-item place attachment index used in this study. "Ikeda town is the best place for doing outdoor sport" (mean value = 4.12), which is the item of place dependence, received the highest score of the place attachment items. Meanwhile, all items constituting the measurement for place identity averaged below "3 = Neither agree nor disagree." Looking at the mean values for place identity and place dependence that are the two components of place attachment, the functional attachment of place dependence (mean value = 2.95) averaged slightly higher than the emotional attachment of Place identity (mean value = 2.42). Although place dependence scored slightly higher than place identity, both had an averaged score that was less than "3 = Neither agree nor disagree".

Table 2. Items measuring place attachment

Items	Mean	S.D.
Place Identity (M = 2.42, S.D. = .971)		
I feel like Ikeda town is a part of me.	2.22	1.27
Ikeda town is very special to me.	2.70	1.14
I identify strongly with Ikeda town.	2.84	1.23
I am very attached to Ikeda town.	2.08	1.17
Visiting Ikeda town says a lot about who I am.	2.30	1.18
Ikeda town means a lot to me.	2.39	1.20
Place Dependence (M = 2.95, S.D. = .542)		
Ikeda town is the best place for doing outdoor sport.	4.12	1.11
No other place can compare to Ikeda town.	3.07	1.03
I get more satisfaction out of visiting Ikeda town than from visiting any other place.	2.89	0.74
Doing outdoor sport in Ikeda town is more important to me than doing it in any other place.	2.81	0.99
Doing outdoor sport in Ikeda town I would enjoy just as much at another site. *	2.43	1.21
I wouldn't substitute any other area/place for doing outdoor sport in Ikeda town.	2.41	1.03

*: inverted scale

Pro-environment behavioral intentions

To understand the factor structure, we conducted an exploratory factor analysis (maximum likelihood method/promax rotation) for the 11-item pro-environment behavioral intentions index that was based on Halpenny's (2006) place-specific pro-environment behavioral intentions (Table 3). As a result, we were able to extract three separate factors, including (1) "Actual Behavior," which involves one's own time, effort, and/or money, such as participation in public meetings related to the conservation and management of the natural environment, participation in projects to protect nature, contributions to support nature conservation, donations, and more; (2) "Limits to Use," such as avoiding visits to places that are recovering from environmental damage or limited use of environmentally harmful actions in general; and (3) "Understanding of the Natural Environment," which includes deepening one's understanding of one's natural environment without necessarily committing one's time, effort, or money while doing so. The cumulative contribution rate of these three factors was 65.1%. The reliability factor for each factor was as follows: "Actual Behavior," α =.887; "Limits to Use," α =.828; and "Understanding of the Natural Environment," α =.706.

Comparing the average values for each factor revealed that "Understanding of the Natural Environment" (average value = 3.57), which does not require actually spending time, effort, or money ranks highest, with "Actual Behavior" (average value = 2.66) ranking lowest.

Table 3. Items measuring pro-environmental behavior

Items	1	2	3	Mean	S.D.
Acutal behaviour (α=.887, Mean=2.66)					
Participate in a public meeting about managing Ikeda town or similar area.	.956			2.29	1.16
Volunteer my time to projects that help Ikeda town or similar area and natural area	.852			2.51	1.09
Write letters in support of Ikeda town and similar protected areas	.815			2.51	1.15
Contribute donations to ensure protection of natural area like Ikeda town	.603			2.90	1.18
Encourage others to reduce their waste and pick up their litter when they are at Ikeda town or similar area	.578			3.07	1.18
Limits to use (α=.828, Mean=2.81)					
Volunteer to stop visiting a favorite spot in the park if it needs to recover from environmental damage		.918		2.78	1.01
Volunteer to reduce my use of a favorite spot in the park if it needs to recover from environmental damage		.746		2.84	1.09
Understanding of Natural Environment (α=.706, Mean=3.57)					
Learn more about Ikeda town's natural environment			.747	3.58	1.02
Sign petitions in support of Ikeda town and similar protected areas			.697	3.56	1.12
removed item					
Pick up litter at Ikeda town or other natural area left by other visitors.				3.49	1.10
Tell my friends not to feed the animals in Ikeda town or similar area.				3.58	1.05
Factor colleration	—				
	.232	—			
	.454	.252	—		

Hypothesis testing

Hypothesis testing was conducted to clarify the influence of outdoor sports experiences on pro-environment behavioral intentions toward the area through the intermediary of place attachment. In this study, since TPA is a facility for enjoying outdoor sports in the town of Ikeda, TPA visit frequency was equated with area-specific outdoor sports participation frequency. Table 4 shows the Pearson's product-moment correlation coefficient for each of the following variables: TPA visit frequency; place identity and place dependence, which combine to form place attachment; and the three previously mentioned factors that constitute pro-environment behavioral intentions. A significant positive correlation was found between TPA visit frequency and both place identity and place dependence. Place dependence showed a significant positive correlation with the factors "Actual Behavior" and "Understanding of Natural Environment." However, place identity showed no correlation with any of the pro-environment behavioral intentions factors.

The results of our correlation analysis clearly showed that place identity was not correlated with pro-environment behavioral intentions, but the analysis was followed up with structural equation modeling analysis. We tested a model that assumes a direction of influence from (1) TPA visit frequency to the two elements of place attachment; (2) place dependence to place identity; and (3) the two elements of place attachment to the factors that constitute pro-environment behavioral intentions (Figure 3).

Three sub-models were developed, including Model A , which assumed a direction of influence from the two elements of place attachment to the pro-environment behavioral intentions factor "Actual Behavior”. Model B assumed a direction of influence from the two elements of place attachment to the factor "Limits to Use”, and Model C assumed a direction of influence from the two elements of place attachment to the “Understanding of Natural Environment” factor. A good model fit was shown for model B (X^2 = 1.3, df = 1, GFI = .994, AGFI = .940, CFI = .984, RMSEA = .051) and model C (X^2 = 1.24, df = 1, GFI = .994, AGFI = .941, CFI = .989, RMSEA = .048).

With the results of our covariance structure analysis, H1 and H2 were first tested for the influence of TPA visit frequency on place attachment (i.e., place identity and place dependence). The results of this study showed a clear influence of TPA visit frequency on both place identity (β = .32, $p < .05$) and place dependence (β = .20, $p < .05$). Thus, H1 and H2 were accepted.

Regarding the influence of the constituents of place attachment on pro-environment behavioral intentions (H3 and H4), while place dependence did not affect "Limits to Use,” it did influence “Actual Behavior” (β = .40, $p < .05$) and “Understanding of Natural Environment” (β = .42, $p < .05$) significantly. On the other hand, much as in the results of our correlation analysis, place identity did not significantly affect any of the factors that constitute pro-environment behavioral intentions. Thus, H3 was rejected and H4 was supported partially. Regarding H5, while place dependence did affect place identity (β = .43, $p < .05$) (H5 was accepted), place identity did not have any effect on pro-environment behavioral intentions and thus did not seem to act as an intermediary between place dependence and pro-environment behavioral intentions.

Table 4. Correlation matrix

	1	2	3	4	5	6
1. TPA visit frequency	—					
2. Place identity	.28**	—				
3. Place dependence	.24*	.29**	—			
4. Actual behaviour	-.11	.10	.23*	—		
5. Limits to use	.12	.02	.06	.24*	—	
6. Understanding of Natural Environment	-.06	.01	.22**	.40**	.28**	—

*p<.05, **p<.01, ***p<.001

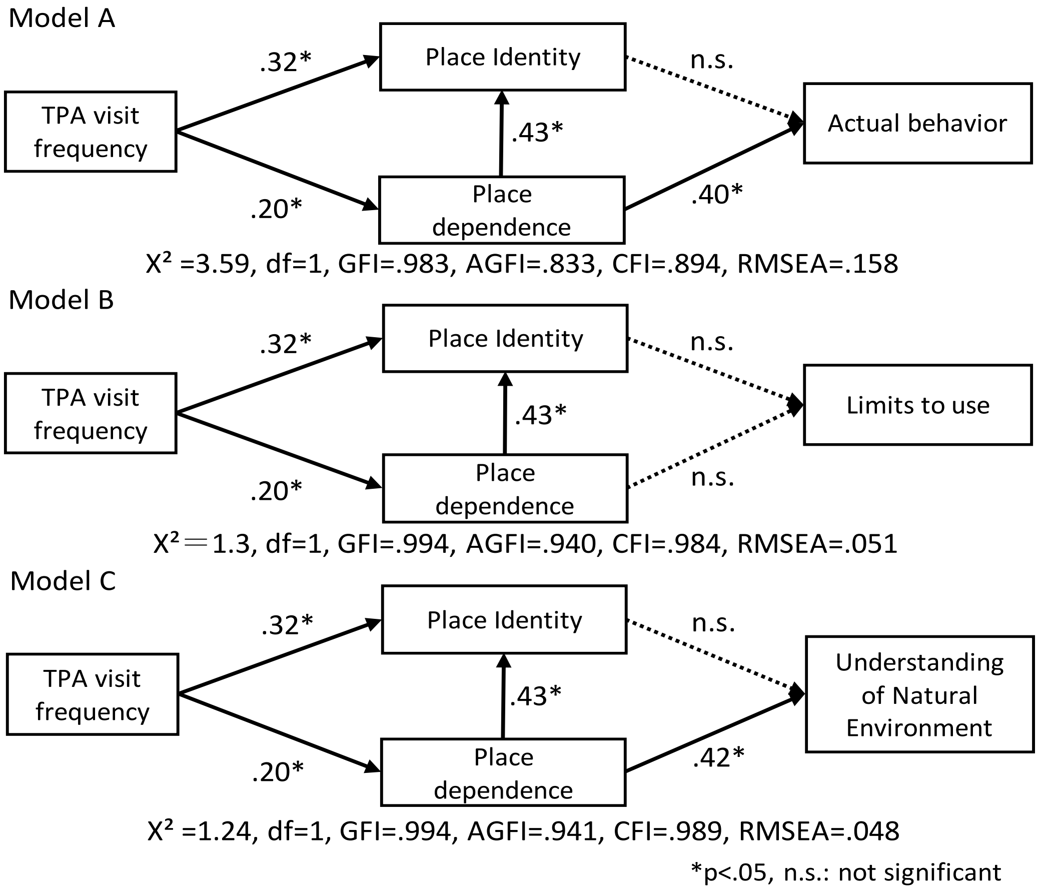

Figure 3. Structural Equation Models

Discussion

Current state of Japanese outdoor sport participants' place attachment and Pro-environment behavior

Based on the analytical results, current outdoor sport tourists' place attachment and pro-environment behavior intention to the natural area were relatively low. In terms of place attachment, place dependence, which is functional attachment, was formulated rather than place identity, which is emotional attachment, to Ikeda-town. We assumed that place attachment to Ikeda town through the TPA experience had not yet developed in the survey participants because about 90% were first-time TPA visitors. About half of the participants had also come purely to visit TPA. It can be said that place dependence would be developed more than place identity because the participants were visiting primarily to fulfill their functional need of experiencing TPA. Since the sustainable development of natural resources in Japan is still at an early stage, it is expected that place attachment will develop in the future, which is why continuous measurement of place attachment is desirable.

In terms of pro-environmental behavior, compared with Halpenny's (2006) results of tourists' pro-environment behavioral intentions toward national parks in Canada, outdoor sports participants' pro-environment behavioral intentions in natural areas in Japan rank lower across all items. On this basis, it can be inferred that the awareness and behavioral intentions of participants toward the protection and sustainable use of natural resources in natural areas of Japan are presently at a relatively low level. Although we were able to show that awareness and understanding of the natural environment are high, it was evident that this did not necessarily translate well into actual behavior.

Parks Canada, which manages Canada's national parks, has developed educational programs tailored to the characteristics of each national park in order to increase environmental awareness among tourists and Canadian citizens. The Canadian government's commitment to sustainable development suggests that the Canadian people's pro-environment behavioral intentions are high. The interviews with the staff members of "Town UP Ikeda" revealed that although TPA provides natural education experience programs for groups, it does not provide environmental education programs on topics such as natural environment protection. When utilizing the natural environment as a tourist attraction, pro-environment behavioral intentions toward the location of activity may be significantly increased by simultaneously developing and providing environmental education programs that increase tourists' awareness of the natural environment.

The effects of place attachment to pro-environmental behavior through outdoor sport participation

From the result of the structural equation model, place dependence appeared to act as an intermediary between outdoor sport participation and some pro-environment behavior. Consequently, outdoor sports may be effectively used to increase place attachment and pro-environment behavior when attempting to sustainably develop tourism in rural areas with abundant natural resources

Although Moore and Graefe (1994) did not deny the possibility of developing attachment toward places that have not been visited, they did state that place attachment usually begins to form after one or more visits. Even if the visitors' main reason for visiting Ikeda town is the TPA experience and not Ikeda town itself, it can still be inferred that experiencing outdoor sports will lead to re-visits through the formation of place attachment to the area.

Some researchers (Halpenny, 2010; Vaske & Kobrin, 2001) have reported that both emotional attachment and functional attachment are correlated with pro-environment behavioral intentions toward a specific area, with emotional attachment serving as a mediating element between functional attachment and pro-environment behavioral intentions. However, the results of this study revealed a relationship only between functional attachment and pro-environment behavioral intentions. Since 90% of survey participants were first-time TPA visitors and likely to have an initially high functional need to experience the activities, and the value of experiencing nature unique to the town of Ikeda through outdoor sports was founded to be directly related to pro-environment behavioral intentions. In other words, if natural areas were the place where participants' functional needs would be fulfilled when they participate in outdoor sports, pro-environment behavior might be developed in that areas. Since functional attachment affects pro-environment behavioral intentions in natural areas that are in the early stages of development, developmental approaches are not easy to copy, and they will instead need to use the unique functional features and characteristics of each specific area. However, as previous research has clarified, emotional attachment would be developed through place identity and be a mediating element between functional attachment and pro-environment behavior. Thus, if it were possible to experience activities similar to those at TPA in other natural areas, it is likely that tourists would visit those areas as well. Although merely functional attachment was measured this time, it is conceivable that emotional attachment will grow in the future because place dependence affected place identity from the result of this research. Therefore, program development may need to take into consideration how place dependence leads to place identity and how place identity affects pro-environment behavioral intentions when attempting to execute sustainable natural environment development through outdoor sports.

To explain why place identity and place dependence did not affect the pro-environment behavioral intentions factor “Limits to Use,” we inferred that the common way of thinking about “Limits to Use” of natural areas in Japan would not include an element of individual agency or control, because limits on use are often based on policies and administrations rather than individual judgment.

Limitation and additional avenues for research

Although TPA provides a precedent of regional revitalization in Japan, utilizing abundant natural resources and outdoor sports, it has only been running for three years. It was not possible to collect sufficient data from repeat visitors to TPA because most of them were first-time visitors. It will therefore be necessary to collect more data from repeat visitors in TPA. Also, samples of outdoor sport participants in other natural areas will need to be collected. In this study, we measured the current states of place attachment and place-specific pro-environment behavioral intentions of outdoor sports participants in natural areas of Japan that are being developed. More continuous research is necessary to see how place attachment and pro-environmental awareness would change in the future. It should be more useful to investigate place attachment by some variables such as differences in age, place of residence and other factors.

It is conceivable that pro-environment behavior scales constituted an item that measured behavior unfamiliar to Japanese outdoor sport tourists. This shows the need to develop an index for pro-environment behavioral intentions toward specific areas unique to Japan that takes Japanese culture into consideration.

Conclusion

In working toward the development of sustainable outdoor sports tourism in natural areas in Japan, the purpose of this study was to clarify how outdoor sports experiences influence pro-environment behavioral intentions toward an area through place attachment.

To develop sustainable outdoor sports tourism, tourists' and marketers’ awareness of the environment and sustainability are both important. Marketers must offer outdoor sports programs and also devise plans to foster attachment and increase environmental awareness among tourists toward an area.

Judging from our research, outdoor sports participants' place attachment and pro-environment behavioral intentions are not very high in Japan. On the other hand, this study revealed that outdoor sports participation has a positive relationship with place attachment and some pro-environment behavior. Furthermore, the results of this research support the utilization of outdoor sports when attempting to develop sustainable tourism in natural areas.

Since the sustainable development of outdoor sports utilizing natural resources is still its an early stages in Japan, place dependence that fulfills individual needs on a functional level appeared to be significantly more developed than place identity, and place dependence was founded to have a significant influence on pro-environment behavioral intentions. It is conceivable that areas in the early stages of attempted revitalization through outdoor sports attractions will need to develop programs that allow for an experience of natural resources unique to each regional area through outdoor sports. However, place dependence merely expresses attachment on a functional level, which means that if there were other areas with similar functionally satisfactory activities, the initial area might rapidly lose its appeal and be replaced. Therefore, we suggest programs that lead to emotional attachment to natural areas. Such programs should be based on the awareness of the natural environment where outdoor sports programs are held.

In conclusion, when developing outdoor sports tourism in a sustainable manner in regional areas, it is important to promote outdoor sports programs and create attachment to natural area where outdoor sports programs area held, while also developing some educational programs that lead to higher tourist awareness of the natural environment. By continuing similar research in the future, it will be possible to more clearly identify the structures and processes that leads to place dependence promoting pro-environment behavioral intentions of outdoor sport participants via place identity.

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