

## **Nature based tourism and environmental sustainability: Japanese tourists' relatedness and connectedness with nature**

### **ABSTRACT**

Nature-based tourism continues to gain importance globally. Research on sustainability claims that disconnection between nature and humanity may contribute to the environmental problems that we face in the 21<sup>st</sup> century. It is, thus, quintessential to better understand the underlying variables for sustainable behaviour in a tourism context. Research suggests scales on nature relatedness (NRS) and connectedness to nature (CNS) to better understand people's attitudes towards nature. The current paper tests the applicability of these scales in a Japanese tourism setting. The scales seem, to a certain degree, appropriate in a Japanese tourism context, however they may need further refinement. In contrast to the conventionally recognized differences, which focus on the physical aspects of the human–nature relationship (relatedness) and affective community with nature (connectedness), relatedness and connectedness appear to have different dimensions used in the East Asian context. However, the paper shows that further tests in both Eastern and Western cultures should be done, with a particular focus on the dimension 'active in nature' and how this should be understood and treated. According to the strong tendency of developing and selling outdoor activities among nature based destinations combined with the strong increase of East Asian tourists, i.e., in Norway, further researching and testing of these aspects on the East Asian cultural values is recommended and directions are provided.

**Key words: nature, tourism, connectedness, relatedness, scale**

### **INTRODUCTION**

The growing number of East Asian/Japanese tourists has been prominent with the Asia Pacific tourist market being the fastest growing market over decades in international tourism sector (UNWTO, 2016). This trend provides opportunities as well as threats regarding developing an environmental sustainable tourism industry in Norway and other nature based tourism countries. Many countries aim to offer valuable nature-based tourist experiences for tourists to delight in and enjoy. As the topic of environmental sustainability has become of major

concern in tourism as well as in society in general, there is a need to develop measurement instruments to understand cultural variations that may affect these experiences. This paper therefore replicates and adjusts existing scales reflecting attitudes towards nature, developed and tested in western contexts, in an eastern tourism context. Thus, the Nature Relatedness Scale (NRS) and Connectedness to Nature Scale (CNS) are tested in the Japanese nature-based tourism market. This study, accordingly, contributes to a better understanding of how to measure Japanese relatedness and connectedness to nature. Subsequently, the study analyses and discusses how to understand Japanese tourists in terms of attitudes towards nature. The study results help the tourism industry to develop sustainable tourist activities attracting East Asian tourists to visit and to satisfy their desires in a sustainable way.

Interactions between cultures and markets are increasing rapidly in tourism. In order to prepare for the opportunities and avoid the dangers presented by this trend, tourism managers must make knowledgeable decisions founded on valid assumptions about cultural influences. Researchers explore important and general concepts of people's relatedness and connectedness to nature through cultural values (Stern, 2000; Stern & Dietz, 1994). The concern for nature is reflected through aspects such as empathy (Schultz, 2000) and the/a belief that the natural environment (Clayton & Opatow, 2003) shapes our identity.

In an attempt to understand tourists' tendencies to value nature-based tourism resources, a contingent valuation method to endow value to nature has been performed (Lee, 1997). Lee's study discusses ways of measuring environmentally sustainable behaviour and offers a valid measurement tool for community-based tourists (Lee, Jan, & Yang, 2013). While these studies make a positive contribution to measuring aspects of nature-based tourism, the cultural aspect of the issue still requires further research. Accordingly, in order to develop a sustainable and ecologically sound tourism in countries with fragile environments, acknowledging the tourists' perception of self, their attraction to nature and experience is vital.

Even though researchers have theorized about humans' psychological relationship with the natural world, there seems to be a gap in tourism research on the topic. Researchers such as Berry (1997), Fisher (2002) and Norberg-Hodge (2000), among others, state how important feeling connected to nature is in ecological behaviour. As early as 1949, Leopold points to the abuse of land because of man's perception of nature as a commodity. Additionally, he

suggested the perspective of viewing land as community instead of commodity in order to use it more respectfully. These authors also argue a normative approach to fostering a more sustainable behaviour, i.e., by expanding our sense of self as part of nature we would treat nature more respectfully (Roszak, 1995).

In order to ensure a sustainable nature-based tourism industry, the actors such as municipalities and businesses need to understand the tourists' attitudes towards, and behaviour in, nature. Research shows that personality and attitudes, as well as knowledge and skills, predict pro-environmental behaviour (Hines, Hungerford & Tomera, 1986–1987). Personal relationship and connectedness with nature are delineated as fundamental in acknowledging the way people treat the environment in general (Nisbet et al., 2004).

The current paper comprises three main sections. The first section reviews relevant literature on cultural differences in tourists and the implications for nature-based tourism. It also reviews the nature connectedness and nature relatedness scales adopted in the current study, in a tourism context. The second part details methods of the research, explaining the data instrument used, the study subject and analysis. The final section of the paper provides the interpretation and contextualization of the study results, with recommendations for future research.

## **LITERATURE REVIEW**

### **Cultural impact in Tourism**

Consumer value, attitudes, behaviour and lifestyle all relate to, and stem from, culture. Culture can be defined in various ways, while certain similarities exist; culture is learned, communicated and shared between people. Roosens (1995) describes culture as an amalgamation of individual processes including individual expressions of identity and affiliation. Others focus on the collective programming of the members of one group distinguishing it from another group (Hofstede, 1982). Following Hofstede's lead, Markus and Kitayama (1991) claim that the 'self or identity is critical because it is the psychological locus of cultural effects ... it functions as a mediating, orienting, and interpretive framework that will systematically bias how members of a given socio-cultural group will think, feel, and act' (in De Mooij, 2004, p. 94). It is an accepted argument that tourists' cultural backgrounds influence their experiences as tourists. Important issues such as relationships between travel

motivation and choice of certain destinations and countries (Kim & Lee, 2000; Kozak, 2002; Kim & Prideaux, 2005), types of activities the tourists would undertake with culturally specific meanings endowed (Charters, & Ali-Knight, 2002; Lee, Lawton & Weaver, 2012) as well as what mode of travel, be them in individual or organised group forms (Wong & Lau, 2001) seems to be influenced by cultural backgrounds.

In the context of Japanese tourism where the current paper is positioned, the influence of national culture as well as contemporary media culture have been found playing a significant role. Indeed, Graburn and Butler (1995) illustrate how the aestheticization in Japanese culture was used to create a desirable image for tourism products. Iwashita (2006) further identified the major role played by popular media in contracting Japanese tourists' perception of UK as a tourist destination. In this study, *Harry Potter and the Philosopher's Stone* and the television series of *Sherlock Holmes*, and Beatrix Potter's *Peter Rabbit* stories are found to have contributed to creating the image of the UK in the minds of Japanese tourists. Thus, we maintain that reviewing the applicability of west-developed scales in this study, approaching from Japanese cultural perspective, is a meaningful exercise.

Japanese society has three main cultural philosophies as its underlying ideological bases: Shintoism, Confucianism and Zen Buddhism (Rarick, 1994). As one of the three major cultural backbones of Japan, Confucianism has a strong impact in its society. Confucianism originated from China more than 2000 years ago. However, there are varying degrees of differences between Chinese and Japanese forms of Confucianism. There are fundamental values of Confucianism, including Ren (benevolence), Yi (righteousness), Li (propriety), Zhi (wisdom) and Xin (loyalty) (Chan, Ko, & Yu, 2000; Lu, 1983; Tamney & Chiang, 2002; Yao, 2000). From these fundamental values, there is a clear lack of Ren (benevolence) in Japanese Confucianism, while a strong emphasis on loyalty is clear. This trait of Japanese Confucianism can be observed from as early as 604 (Morishima, 1982). With the social and economic modernization and developments in Japan since its industrialization era, the values of Confucianism have evolved to be Japanese society's own form of cultural philosophy. In this evolution of Japanese Confucianism, Shintoism must be understood as an influencing and influenced thought of society. Shintoism is Japan's indigenous religion, which has been present before the introduction of Buddhism from China. Shintoism literally means 'ways of God'. Its central belief has a pantheistic orientation, thus elements of nature have a special meaning. With this cultural trait, the Shintoism values are still reflected in today's

management practice in Japan (Rarick, 1994) and even in some of its medical practices of the society (Ohta, 2006).

### **Nature-Based Tourism: Western versus Eastern Perspectives**

As people become more and more environmentally sensitive, nature-based tourism or ecotourism has received increased attention from tourists and recreationists. Almost 20 years ago, Laarman & Gregersen (1996) pointed out that nature-based tourism was a small but rapidly increasing tourist segment and that the tourism industry should implement a pricing policy as a tool to make nature-based tourism sustainable. While the attention to nature-based tourism activities were growing rapidly in Europe and other Western parts of the world, Asia, as a whole, was a place to be visited by international (largely Western) tourists until the advent of the twenty-first century. Accordingly, main discussions in the region were more on product development or adopting Western practices for a better provision of tourist experiences to Western tourists (Dowling & Weiler, 1997; Lew, 1996).

Since the turn of the new century, however, debates have emerged about the Asian form of ecotourism, in which Weaver (2002) argued that distinct forms of Asian ecotourism exist, albeit influences from the West were strong. Another view on Asian ecotourism suggests that the ecotourism that we know is indeed a Western construct, thus Asian practices of ecotourism-relevant activities need to be researched (Cater, 2006). More recently, studies have demonstrated distinct forms of ecotourism in China (Buckley, Cater, Linsheng, & Chen, 2008) and in South Korea (Choo & Jamal, 2009; Lee, Lawton, & Weaver, 2012; Lee & Mjelde, 2007). In the Japanese market, the importance of tour guides in ecotourism is highlighted, linking this phenomenon to the country's tourism policy framework (Yamada, 2011).

It is important to consider Japanese indigenous religious and cultural background to the perception of nature. The consideration is essential, because cultural construction of nature is the sublime power that informs tourists' gaze upon what nature is (Urry, 1995; Eder & Ritter, 1996). Taoism, Buddhism and Shintoism comprise the Japanese religious and cultural background (Rarick, 1994; Hartz, 1993). The fundamental worldview of Taoist and Buddhist is that nature and human are a unity rather than separate beings (Lee & Prebensen, 2014; Graef, 1990). Shintoism, a polytheistic belief, regards that various existence or objects of the world such as trees, mountains or even water can be Kami or God. Based on this worldview, the division between object and spiritual existence is not clear (Jensen & Blok, 2013) and thus

in line with the unity concept existing in Taoism and Buddhism. This philosophical position, placed in the west-devised scales to measure the degrees of connectedness or relatedness to nature is, indeed, a fundamentally different compared to the Judao-Christian western position. In order to gain a deeper understanding of ‘why’ Japanese tourists’ behaviours are in certain ways, we should invest efforts to better understand the Japanese philosophical position of unity between nature and humanity.

### **Connectedness to Nature Scale (CNS).**

Dunlap, Van Liere, Mertig and Jones (2000) suggest the new environmental paradigm (NEP). They propose a 15-item scale, which aims to measure individual beliefs concerning their relationship to the natural world. The scale reflects the individual worldview forming our belief systems, the inner truths about self, the physical world and social reality’ (Rokeach, 1968). Schultz (2002) discusses connectedness to nature as being the extent to which an individual includes nature within his/her cognitive representation of self. Based on this definition, Mayer and Frantz (2004) add affective experience to the NEP scale, in addition to the more cognitive dimension in a connectedness scale (CNS). This scale is aimed at establishing an individual’s affective, experiential connection to nature (Mayer and Frantz, 2004).

The self is proposed as key in terms of individual connectedness to nature (Schulz, 2002, p. 67) and reflects ‘the extent to which an individual includes nature within his/her cognitive representation of self’. With one item, reflecting this concept to include nature into oneself, Schultz (2001) named this scale the Inclusion of Nature in Self (INS) scale.

The self is proposed as key in terms of individual connectedness to nature (Schulz, 2002, p. 67) and reflects ‘the extent to which an individual includes nature within his/her cognitive representation of self’. The scale is named the inclusion of self (INS) scale. Building on these works, Mayer and Frantz (2004) present a connectedness to nature scale (CNS), a measure designed to tap into an individual’s affective, experiential connection to nature. Comparing the CNS with the NEP scale, it can be argued that the CNS scale includes affective measures to a larger extent. The CNS scale has also undergone more rigorous reliability tests compared with the INS scale. Therefore, the present work adopts the CNS scale on Japanese tourists’ connectedness to nature.

## **Nature Relatedness Scale (NRS).**

The Nature Relatedness Scale (NRS) is utilized as a construct to describe the individual levels of connectedness with the natural world. Similar to the CNS discussed above, nature relatedness also includes a self-construal that includes the natural world, but also one's gratitude for and acknowledgment of the interconnectedness with all other living elements on the earth. Furthermore, it is described as including our understanding of the importance of all aspects of nature (Nisbet et al., 2004). The difference between the CNS and the NRS is that while CNS focuses on the affective community with nature, the NRS includes the physical aspect of the human–nature relationship. The physical aspects of nature are vital in tourism in that people travel to see or be in natural surroundings. It is therefore, expected that the Nature Relatedness Scale might be effective in understanding the meaning or the motivational aspects of nature-based tourism.

## **METHOD**

### **Study population**

A group of Japanese visiting a nature-based attraction near Tokyo were asked to participate in the survey. The tourist attraction chosen for the present study are very famous among Japanese residence to visit during the whole year. Altogether, 156 Japanese visitors (30% males, 70% females) completed the questionnaire. In the collected data, 53.2% of the respondents are between 25 and 44 years of age. Furthermore, 14% are in the age group 18–24 and 17.7% in the age group of 45–54 years of age. Regarding educational background, 41% of the respondents have undergraduate university (tertiary) education level and 32% claim to have either high school/vocational level of education.

### **Procedure**

The survey was tested in a pilot study. First, the original scales were adjusted to a nature-based tourism setting. Scholars working with nature-based tourism were then asked to answer the questionnaire. Based on the feedback from the scholars, some questions were removed and some were somewhat altered.

Potential participants were approached by trained research assistants, provided with a general verbal introduction to the study, and were asked to volunteer to complete the survey. Those who agreed completed a questionnaire anonymously. They supplied basic demographic information, including age, gender, education level and the type of environment in which they were brought up. In addition, all participants were supposed to complete the scale questions.

**Tourists' Connectedness to Nature Scale (CNS).** The scale is adopted from Mayer and Frantz (2004), who were highly influenced by the work of Leopold (1949), and adjusted in a process that included psychology students and instructors' evaluations and improvements. The resulting scale includes 17 items. In order to utilize the CNS scale with tourists, a rigorous test was provided. First, tourism researchers suggested the right wording for each item, and then the scale was tested on other researchers and potential tourists. A total of 14 items were used in a tourist's connectedness to nature scale (see appendix 1).

**Tourists' Nature Relatedness Scale (NRS).** The scale is adopted from Nisbet et al. (2004), which includes the affective, cognitive and physical relationship that individuals have with the natural world. The NRS has undergone different studies and tests and includes three dimensions: nature relatedness NR-self, NR-perspective and NR-experience.

Nature relatedness to self is often referred to as our ecological identity and is identified as being imperative in order to understand human behaviour as part of the planet and ecosystem (Conn, 1998; Næss, 1973). Damage to nature is viewed as a way of damaging the self. Researchers have studied the environmental self-concept, linking environmental self-definition with self-reports of environmental attitudes and behaviour. Nature-based tourists and ecotourists are expected to search for nature and to perform activities in nature differently to other tourists (Higham & Carr, 2002).

*The NR-Self*, signifies an internalized identification with nature. NR-Self reflects feelings and thoughts about one's personal connection to nature, such as 'My connection to nature and the environment is part of my spirituality', and 'My relationship to nature is an important part of who I am'.

*NR-Perspective*, mirrors an external, nature-related worldview. This dimension includes a sense of individual human actions and their impact on all living aspects, for example, 'Humans have the right to use natural resources the way they want', and 'Conservation is unnecessary because nature is strong enough to recover from any human impact'.



*NR-Experience*, reveals a physical awareness of the natural world, the level of comfort with and desire to be out in nature, and includes items such as ‘The thought of being deep in the woods, away from civilization, is frightening’, ‘My ideal vacation spot would be a remote, wilderness area’ and ‘I enjoy being outdoors, even in unpleasant weather’.

A total of 21 items were used in a tourist’s relatedness to nature scale (see appendix 2).

## **ANALYSE**

In order to examine the dimensionality of the constructs and to assess the discriminant validity of the scales, i.e., tourist relatedness and connectedness to nature, exploratory factor analyses are first conducted. Exploratory factor analysis helps identify if there are a set of indicators that can be reduced to a more limited set of underlying dimensions. It should be noted that exploratory factor analysis is performed to test whether the original relatedness and connectedness scales are appropriate in a tourism context. Varimax rotated analyses are conducted for both scales, and five relatedness factors and two connectedness factors are extracted.

The factor analysis of the 27 relatedness to nature items shows five factors, explaining 53.6% of the variance. Removing the items with low correlation scores and running a new factor analysis on the remaining 16 relatedness items enhanced the explained variance to 58.7% and indicates four factors. Based on the correlations, the factors were given the following names: ‘Personal relatedness’, ‘Environmental relatedness’, ‘Man above animal’ and ‘Active in nature’. The factor analysis of the 13 connectedness to nature items shows two factors, explaining 57.4% of the variance. These are named ‘Personal connectedness to nature’ and ‘Distant to nature’.

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Table 1 and Table 2 to be inserted about here

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Based on the factor solutions reported in table 1 and table 2, the dimensions for the scales were extracted (mean scores for factors). Part a) in table 3 shows the number of items, mean, standard deviation and Cronbach’s alpha for each of the computed scales for the two variables (tourist relatedness and tourist connectedness to nature).

Cronbach's alpha discloses the reliability of the scales. Carmine and Zeller (1979) suggest that Cronbach's alpha should not be lower than 0.80 for widely used scales. In the present study, the coefficients in the relatedness scale ranged from 0.56 to 0.87, and in the connectedness scale from 0.61 to 0.91. The alpha values for two of the factors are rather low (the latter factor in both scales), calling for further studies.

Analysing the communalities ( $h^2$ ), some of them seem rather low, which might be explained by possible skewness along the various indicators used. The factor loadings in table 1 and 2 show that in most cases these captured a substantial part of the extracted variance. For example, regarding personal relatedness, the factor score accounts for  $(0.70)^2 / 0.649 = 0.755$ ; i.e., 76% of the extracted variance. None of the indicators is found to load on one factor only, however.

Based on the factor solutions reported in table 1 and table 2, the indicators with loadings above 0.5, i.e. those representative of the extracted dimensions, are calculated the following way:

$$Y_i = \sum_{i=1}^n (S_i/n)$$

where  $S_i$  = score on item  $i$ , and  $n$  = number of items.

Part a) in table 3 below shows the number of items, mean, standard deviation and Cronbach's alpha of the computed scales. Part b) in table 3 shows the intercorrelations between the constructed scales for the two variables. The relatively high correlation scores for the related scale, e.g. 'Man over animal' and 'Personal relatedness', indicate intercorrelation, i.e. the dimensions overlap. However, other explanations for the high intercorrelation may exist (Singh, 1991). Tourists who feel related to nature may for instance deal with it in various ways. Table 3 also shows that none of the intercorrelations between the scales is perfect. Even for the highest reported intercorrelation coefficient (between 'Personal relatedness with nature' and 'Man above animal'), it can be seen that the two variables' factor score accounts for  $0.73^2 < 0.53$  of the variance, but also that individually the two factors add substantially to the total captured variance. Thus, the scales are intercorrelated, but each of the scales capture the ambiguous domains of relatedness and connectedness in a relatively good way.

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Table 3 to be inserted about here

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The results in Part b) in table 3 reveal an interesting point for consideration. Normally in our current understanding of environmentalism, when humans are placed superior to physical environments, it would be considered as an anthropocentric position (Murdy, 1975). In the anthropocentric position, human connection or relatedness to nature is not viewed as essential as much as in alternative views, such as biocentrism or ecocentrism and the like. That is to say, that the anthropocentric view of nature considers any damage or change to nature does not equally affect humanity, while the alternative views consider any unfavorable acts to nature are equally damaging to humanity. An interesting question that raises is why would the result of the current study demonstrate a somewhat contrasting trend to the current understanding on the relationship between nature and humanity?

As nature relatedness and nature connectedness may correlate, the discriminant validity of dimensions in the two scales is investigated (Bagozzi & Heatherton, 1994). The highest correlation between dimensions was 0.76 (between the personal connectedness and personal relatedness scales), see table 4 below. The study result calls for more investigations in terms of how the constructs work in a tourism context, and how they reflect important aspects of sustainable attitudes and behaviour in different cultural settings.

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Confirmatory factor analysis was used to establish reliability and convergent and discriminant validity of the measurement scale of nature relatedness and nature connectedness and (Hair et al., 2009). First, the overall model of fit of nature relatedness was tested by examining the chi-square test and various different types of goodness-of-fit statistics including absolute fit measures, incremental fit measures, and parsimonious fit measures (Bollen 1989 and Hair et al., 2009). CFA indicated that the initial measurement model does not fit the data well. To eliminate the indicators with low contributions in the model fit, the completely standardized loadings, t-value, and squared multiple correlations were reviewed. One indicator (“Even in the middle of the city, I notice nature around me”) was deleted because this was not loading well on the appropriate construct. After deleting one indicator, overall measurement model with four constructs and 15 observed indicators was re-estimated by CFA and the results of goodness of the proposed model showed acceptable fit indices ( $\chi^2= 161.72$ ,  $df=84$ ,  $GFI=.88$ ,  $NNFI=.83$ , and  $CFI=.91$ ,  $RMSEA=.077$ ,  $IFI=.91$ ).

Next, construct reliability and validity were checked. Firstly, construct reliability, error variance extracted, and average variance extracted (AVE) of each construct were examined. All measurement items of tourist related to nature were significantly loaded exceeding the critical level of the t value ( $p < .05$ ; Fornell & Larcker, 1981) and composite reliability of each construct ranged from 0.70 to 0.90, indicating internal consistency of personal, environment importance, and man above animal. However, 'active in nature' shows low composite reliability (Table 5). Table 6 indicates the correlation matrix of constructs, discriminant validity and convergent validity, suggesting that the squared correlation estimates are smaller than average variance extracted except for 'active in nature'. Discriminant validity was detected with average variance (AVE) and maximum shared variance (MSV), which indicates that if either estimates of AVE or MSV are larger than the squared correlation estimates, discriminant validity suggests no problem except for 'active in nature' (Farrell, 2010). This result warrants further research on the matter of use of body in nature in Japanese tourist market. It has been suggested that the perception of body in Asia in relation to nature is more of an element of a unity rather than a separate entity as in Western perception (Bruun & Kalland, 2014; Dumoulin, 2005). This may have an implication when it comes to being 'active in nature' as a tourist. Reflecting the region's Zen Buddhist and Taoist values, this issue of body in nature within tourism context certainly deserves further investigation.

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Second, confirmatory factor analysis of nature connectedness was tested. The results of the estimation of CFA of the overall model were acceptable in terms of the range of goodness-of-fit indices after four error terms were covaried to adjust the model for better fit. The RMSEA value was .07, which met the requirement of good fit of less than .08. Other fit indices also show that the specified model was acceptable (GFI = .89, NNFI = .85, CFI = .91, IFI = .91). Composite reliability, convergent validity, and determinant validity were checked to establish

the construct reliability and validity. First, the results of composite reliability ranging from 0.62 to 0.89 exceed the recommended minimum Cronbach's alpha (Fornell & Larcker, 1981). In addition, convergent validity was established by assessing t-value of standardized loadings and average variance extracted (AVE). All t-values were significant at the  $p < 0.05$ . However, the average variance extracted (AVE) of 'personally connected to nature' and 'distant from nature' are marginally below the .5 cutoff (Table 7). Similar to the result on the 'active in nature' above, this finding also highlights the need for a further study on these two items when applied to Japanese market. Having surveyed young Japanese people on their tendencies in New Environmental Paradigm (NEP) scale, Barrett, Kuroda & Miyamoto (2002) showed the urgent need for an adequately adopted and developed tool to deal with environmental issues by providing the most effective education to the youth. Echoing this assertion, tourism researchers should delve into cultural sensitivities when it comes to adopting and further developing western scales to better understand the market.

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Table 7 to be inserted about here

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## **CONCLUSION**

The Nature Connectedness Scale is tested in a tourism setting and found valid, indicating that Japanese tourist connectedness to nature reflects two factors, i.e. 'Personal connectedness to nature' and 'Distant from nature'. It should be mentioned that Cronbach's alpha was low for the 'Distant from nature' factor. Further testing should be performed.

Nature relatedness showed four factors reflecting 'Personal relatedness', 'Environmental importance', 'Man above animal', and 'Active in nature'. The latter factor shows low Cronbach's alpha values. In addition, some of the factors show rather high intercorrelations, e.g. 'Personal relatedness' and 'Environmental importance', which calls for further studies. The scales should be treated with care in tourism. The study results may be explained either by the applicability of the scale not being optimal in tourism settings, or from a cultural perspective, i.e. the scale does not function well in Eastern cultures.

Looking at the means of the factors, however, both relatedness and connectedness to nature seem to be of great importance and the 'Man above animal' and 'Distant from nature' are of relatively lower importance, calling for further exploration of the concepts in both Eastern and Western cultures. In particular, the Japanese form of Confucian values, where loyalty is a strong characteristic but lack of benevolence is not, should be investigated further to see whether there are any cultural influences in this.

The study result highlights one point that needs further investigation for a conclusive answer. The very concept of 'use of nature' needs further refinement. From Part b) in table 3, we notice a high degree of overlap between the factors "'relatedness' (see table 1 for individual items) and 'Man above animal' (see table 1 for individual items). This is an unconventional result as mentioned in the results section. Coincidentally, it supports an earlier study on the South Korean form of ecotourism where changes made to natural settings were not viewed as acts of damaging nature (Lee et al., 2013). Rather, it was considered as a natural progression of humanity. The cultural logic is that nature and humanity is a unity, hence as humanity and human society changes, the changes brought to nature reflect the changes in human society (Lee et al., 2013). Similar suggestions are found in cases for China's nature-based tourism (Sofield & Li, 2007; Wen & Ximing, 2008). The current study results indicate a similar case in Japan while highlighting the meaning of unity in the East Asian sense.

Thus, the seemingly unconventional result could be attributed to the East Asian concept of the unity of nature and humanity. Currently, there are varying degrees of acceptable changes made by human to nature based on the essential needs for human survival, for example, conservationism versus preservationism. The current study result warrants further research into the 'acceptable degrees of changes' in the context of economic, political and socio-cultural perspectives of a society.

CFA indicates that the initial measurement model does not fit the data well. After deleting one indicator, overall measurement model with four constructs and 15 observed indicators was re-estimated by CFA and the results of goodness of the proposed model showed acceptable fit indices. Discriminant validity suggests no problem except for 'active in nature' (Farrell, 2010). This result indicate further research on the matter of use of body in nature in Japanese tourist market, which is in line with other findings in research performed in East Asian contexts (Bruun & Kalland, 2014; Dumoulin, 2005 ). The findings advocates that being 'active in nature' as a Japanese tourist may reflect region's Zen Buddhist and Taoist values, calling for further investigation.

The study result indicates that both the Nature Connectedness scale and the Nature Relatedness Scale can be adopted in a tourism context. However, the paper shows that further tests in both Eastern and Western cultures should be done, with a particular focus on the dimension 'active in nature' and how this should be understood and treated in a Japanese context. Tourism researchers should delve into cultural sensitivities when it comes to adopting and further developing western scales to better understand the market.

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Table 1. Exploratory factor analysis of tourist relatedness to nature

	<i>h</i> <sup>2</sup>	Personal	Environment importance	Man above animal	Active in nature
Relationship to nature – part of who I am	.649	.779			
Connection to nature – part of my spirituality	.732	.749			
I feel very connected to all living things on Earth	.657	.652			
I am not separate from nature but part of nature	.620	.647			
I think a lot about the suffering of animals	.655		.749		
I always think how my actions affect the environment	.549		.720		
Even in the middle of the city, I notice nature around me	.612		.656		
I am very aware of environmental issues	.472		.613		
Animals, birds and plants have fewer rights than humans	.636			.753	
Humans have the right to use natural resources	.575			.689	
Conservation is unnecessary	.569			.666	
Nothing I do will change problems	.538			.652	
Some species are just meant to die	.477			.601	
I enjoy outdoors, even in unpleasant weather	.602				.762
My ideal vacation spot would be a remote wilderness area	.629				.724
I enjoy digging in the earth and getting dirt on my hands	.421				.561
Percentage of common variance	58.7	27.7	15.2	8.5	7.2
Percentage of trace	100	47.19	25.90	14.48	12.26
Eigenvalue		5.815	1.639	1.387	1.181
Alpha		0.874	0.746	0.721	0.564

Table 2. Factor analysis of tourist connectedness to nature

	$h^2$	Personally connected to nature	Distant from nature
I feel embedded with the broader natural world	.445	.846	
I often feel part of the web of life	.599	.844	
All inhabitants of Earth share a common life force	.440	.805	
When I think of my life, I am part of a larger cyclical process	.396	.799	
I think of the natural world as a community to which I belong	.642	.760	
I often feel a kinship with animals and plants	.601	.760	
I belong to the Earth as it equally belongs to me	.524	.724	
I have a deep understanding of how my actions affect the world	.474	.689	
I recognize and appreciate intelligence of other living organisms'	.712	.651	
I have a sense of oneness with the natural world around me	.656	.644	
I consider myself to be on the top of the hierarchy in nature	.733		.768
My personal welfare is independent of the natural world	.633		.748
I often feel disconnected from nature	.613		.619
Percentage of common variance	55.79	43.84	11.97
Percentage of trace	100	78.58	21.45
Eigenvalue		5.70	1.55
Alpha		0.907	0.608

Table 3. Consistency in and interaction among scales: Tourist relatedness and connectedness to nature

	Scale (a)				Scales (b)		
	# Items	Mean	SD	Alpha	2	3	4
<b>Relatedness*</b>							
Personal	4	4.2	1.38	0.87	0.39	0.76	0.15
Environmental Imp.	4	4.1	1.17	0.75		0.20	0.39
Man above animal	5	2.9	1.17	0.72			0.41
Active in nature	3	4.0	1.23	0.56			
<b>Connectedness**</b>							
	# items	Mean	SD	Alpha	2		
Personally connected to nature	10	4.3	1.15	0.91	0.15		
Distant from nature	3	2.9	1.17	0.61			

Table 4. Discriminant validity of relatedness dimensions

	Personal relatedness	Environmental importance relatedness	Man over animal relatedness	Active in nature relatedness	Personal connectedness	Disconnected
Personal relatedness	1	0.39	0.76	0.15	0.76	0.14
Environmental importance relatedness		1	0.20	0.39	0.62	0.13
Man over animal relatedness			1	0.41	-0.14	0.48
Active in nature relatedness				1	0.45	0.19
Personal connectedness					1	0.15
Disconnected from nature						1

Table 5. Overall CFA for the measurement model of nature relatedness

Construct and indicators	Completely standardized loading	Reliability (Li <sup>2</sup> )	Error variance
<b>Personal</b>		<b>.88*</b>	<b>.66**</b>
Relationship to nature – part of who I am	.95	.90	.10
Connection to nature – part of my spirituality	.89	.79	.21
I feel very connected to all living things on Earth	.74	.55	.45
I am not separate from nature but part of	.61	.37	.57
<b>Environment importance</b>		<b>.79*</b>	<b>.66**</b>
I think a lot about the suffering of animals	.60	.36	.64
I always think how my actions affect the environment	.90	.81	.11
I am very aware of environmental issues	.74	.55	.45
<b>Man above animal</b>		<b>.73*</b>	<b>.36**</b>
Animals, birds and plants have fewer rights than humans	.73	.53	.47
Humans have the right to use natural resources	.67	.45	.55
Conservation is unnecessary	.57	.32	.68
Nothing I do will change problems	.45	.20	.80
Some species are just meant to die	.53	.28	.72
<b>Active in nature</b>		<b>.53*</b>	<b>.28**</b>
I enjoy outdoors, even in unpleasant weather	.44	.19	.81
My ideal vacation spot would be a remote wilderness area	.48	.23	.77
I enjoy digging in the earth and getting dirt on my hands	.45	.20	.80

\* Composite reliability, \*\* Average Variance Extracted estimate



Table 6. Validity and Correlation Matrix of Constructs

	<b>MSV</b>	<b>ASV</b>	<b>Environment importance</b>	<b>Personal</b>	<b>Active in nature</b>	<b>Man above animal</b>
<b>Environment importance</b>	0.345	0.227	0.755			
<b>Personal</b>	0.433	0.262	0.587	0.810		
<b>Active in nature</b>	0.433	0.277	0.576	0.658	0.532	
<b>Man above animal</b>	0.068	0.026	0.058	0.086	0.260	0.605

Table 7. Overall CFA for the measurement model of nature connectedness

Construct and indicators	Completely standardized loading	Reliability (Li <sup>2</sup> )	Error variance
<b>Personally connected to nature</b>		<b>.89*</b>	<b>.46**</b>
I feel embedded with the broader natural world	.80	.64	.36
I often feel part of the web of life	.77	.59	.41
All inhabitants of Earth share a common life force	.79	.62	.38
When I think of my life, I am part of a larger cyclical process	.79	.62	.38
I think of the natural world as a community to which I belong	.66	.44	.56
I often feel a kinship with animals and plants	.68	.46	.54
I belong to the Earth as it equally belongs to me	.79	.62	.38
I have a deep understanding of how my actions affect the world	.62	.39	.61
I recognize and appreciate intelligence of other living organisms'	.45	.20	.80
I have a sense of oneness with the natural world around me	.61	.37	.63
<b>Distant from nature</b>		<b>.62*</b>	<b>.37**</b>
I consider myself to be on the top of the hierarchy in nature	.82	.67	.37
My personal welfare is independent of the natural world	.44	.19	.81
I often feel disconnected from nature	.50	.25	.75

\* Composite reliability, \*\* Average Variance Extracted estimate

## Appendix 1

### Nature Relatedness (NR) Items (Nisbet et al., 2008)

#### NR-Self

- My connection to nature and the environment is a part of my spirituality
  - My relationship to nature is an important part of who I am
  - I feel very connected to all living things and the Earth
  - I am not separate from nature, but a part of nature
  - I always think about how my actions affect the environment
  - I am very aware of environmental issues
  - I think a lot about the suffering of animals
  - Even in the middle of the city, I notice nature around me
  - My feelings about nature do not affect how I live my life
- (9 items)

#### NR-Perspective

- Humans have the right to use natural resources any way we want
  - Conservation is unnecessary because nature is strong enough to recover from any human impact
  - Animals, birds and plants have fewer rights than humans
  - Some species are just meant to die out or become extinct
  - Nothing I do will change problems in other places on the planet
  - The state of non-human species is an indicator of the future for humans
- (6 items)

#### NR-Experience

- The thought of being deep in the woods, away from civilization, is frightening
  - My ideal vacation spot would be a remote, wilderness area
  - I enjoy being outdoors, even in unpleasant weather
  - I don't often go out in nature
  - I enjoy digging in the earth and getting dirt on my hands
  - I take notice of wildlife wherever I am
- (6 items)

## Appendix 2

### Connectedness scale (Mayer & Frantz, 2004)

- \_\_\_ 1. I often feel a sense of oneness with the natural world around me.
- \_\_\_ 2. I think of the natural world as a community to which I belong.
- \_\_\_ 3. I recognize and appreciate the intelligence of other living organisms.
- \_\_\_ 4. I often feel disconnected from nature.
- \_\_\_ 5. When I think of my life, I imagine myself to be part of a larger cyclical process of living.
- \_\_\_ 6. I often feel a kinship with animals and plants.
- \_\_\_ 7. I feel as though I belong to the Earth as equally as it belongs to me.
- \_\_\_ 8. I have a deep understanding of how my actions affect the natural world.
- \_\_\_ 9. I often feel part of the web of life.
- \_\_\_ 10. I feel that all inhabitants of Earth, human and non-human, share a common 'life force'.
- \_\_\_ 11. Like a tree can be part of a forest, I feel embedded within the broader natural world.
- \_\_\_ 12. When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature.
- \_\_\_ 13. I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.
- \_\_\_ 14. My personal welfare is independent of the welfare of the natural world.