

PERCEIVED RESTORATIVE BENEFITS OF OBUDU MOUNTAIN LANDSCAPE, NIGERIA

Henry Ojobo^{a*}, Ismail Said^b, Sapura Mohamad^c, Aldrin Abdullah^d, Norsidah Ujang^e

^aDepartment of Architecture, Universiti Teknologi Malaysia, 81310, UTM Johor Bahru, Johor, Malaysia

^bSchool of Graduate Studies, Universiti Teknologi Malaysia, 81310, UTM Johor Bahru, Johor, Malaysia

^cDepartment of Landscape Architecture, Universiti Teknologi Malaysia, 81310, UTM Johor Bahru, Johor, Malaysia

^dSchool of Housing, Planning and Building, Universiti Sains Malaysia

^eFaculty of Design and Architecture, Universiti Putra Malaysia

Article history

Received

15 April 2015

Received in revised form

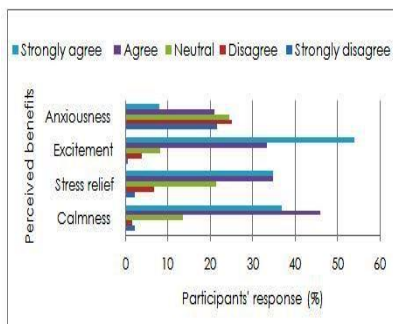
29 September 2015

Accepted

12 November 2015

*Corresponding author
ojheny@gmail.com

Graphical abstract



Abstract

Specific natural environments evoke restorative potentials for the amelioration of stress necessary for human wellbeing. However, studies focusing on the evaluation of this phenomenon have covered mainly forests, wilderness and urban landscape features, while mountain landscape features have not been adequately explored. This study examined the perception of individuals regarding the benefits of contact with the features of a mountain landscape environment in relation to human wellbeing. A direct rating scale questionnaire was administered to 200 respondents drawn from a population of lecturers and students. Overall findings suggest that the multi-stimulus Obudu mountain landscape environment possesses the potential to enhance wellbeing through excitement, calmness and stress relief. This finding will inform policy makers and landscape architects in decision-making concerning the development of mountain landscape environments and provision of landscape features for specific environments.

Keywords: Perception, restoration, mountain landscape, wellbeing, Obudu

© 2015 Penerbit UTM Press. All rights reserved

1.0 INTRODUCTION

Research in the area of evolution, habitat selection and landscape aesthetics has raised concerns over the claim that specific natural environments can evoke restorative potentials necessary for the amelioration of stress and suitable for the balance of human wellbeing. The evolutionary opinion which is grounded in the idea of biophilia refers to people's affection for plants and other living things [1]. This opinion asserts that within the evolution of human species, the coexistence of humans with the natural environment allows human beings to develop preferences for specific natural environments and the perception that these have restorative benefits. Oftentimes, aesthetic and affective reactions

motivate adaptive functioning not particularly expressed as overt actions [2]. These aesthetic and affective reactions are related to visual perceptions of natural environments.

There has been a continuous stream of studies spanning the last three decades that aim to identify positive relationships especially in the domain of aesthetic preferences for varying landscapes [2-4]. Most of the evidence of these research efforts are found in topics addressing landscape quality [5], style [6] and subtopics of predictors of visual preference of landscape environments [7,8]. The perception of natural landscape environments has also been related to their restorative benefits in terms of stimulating positive responses of wellbeing in individuals. For example, van den Berg, Koole [9]

demonstrated that individuals perceived the natural environment as more beautiful and viewing it enhanced better mood states than built environments. Similarly, van den Berg, Jorgensen [10] examined the restorative influence of urban public spaces with varying naturalness. In the study, they reported a tangible difference in the recovery of vitality, in order words, wellbeing within natural environments relative to individual perception.

However, many studies focusing on the evaluation of preferences and perceptions of environment features have explored forests, wilderness and urban landscapes [11-13]. Only a few studies have considered evaluating mountain landscape environment features [14]. With the shortfall in studies examining the perception of the benefits of landscape environment features, this study focuses on a specific landscape environment containing multiple features. The context selected is in the Obudu mountain landscape environment in Obudu, Cross River State, Nigeria. The aim of this study is to examine the perception of individuals regarding the benefits of contact with the features of a multi-stimulus mountain landscape environment. To access the benefits of contact with mountain landscape features on the basis of calmness, stress relief, excitement and anxiousness through public perception, we developed a direct rating scale instrument. The perception of the restorative benefits of the Obudu mountain landscape environment is investigated with regards to individual and gender differences.

2.0 METHOD

2.1 Participants

A total of 250 questionnaires were distributed to respondents. Of these, 202 were returned but two were declared invalid due to multiple entries. A total of 200 valid questionnaires were eventually utilized in this study. From the demographic of respondents that participated, 137 were males and 63 were females between the ages of 21 to 50 years old. The respondents were drawn from a population of lecturers and students through convenience sampling from the urban environment of Benue State University, Makurdi, Nigeria. This category of respondent was selected because of their level of education and ability to understand questions. Makurdi district is located around N7°43'50.00" N latitude and 8 ° 32'10.00" E longitudes with characteristic urban features of hardscapes, dense population, commercial activities and heavy traffic.

2.2 Measures and Instrument

A questionnaire was prepared to explore the perception of respondents pertaining to the restorative benefits of the features of mountain landscape environments in terms of calmness, stress relief, excitement and anxiousness. These variables have been identified as components of affective responses and positive feelings that determine mental wellbeing [2,15,16]. The questionnaire contained six colour photographs selected from 30 photographs captured by the authors in specific locations in the Obudu mountain landscape environment, Cross River State, Nigeria. Only six pictures were selected to avoid confusing the respondents, who are largely non-experts in the area of landscape. Each photo was selected to represent a specific feature of the mountain landscape environment. Photos have been found to be valid in so far as the intent of evaluations is based on the information in the photo and not experience of the place [17]. The rationale for using this process is supported by the study conducted by Schirpke, Hölzler [18] in which a photographic questionnaire depicting diverse alpine landscapes was utilized. Clarity and quality of the photos determined selection. To ensure the clarity and quality of the photos, the camera is held at eye level and focused on a horizontal plain when photos are taken [19]. The photos were taken at midday to avoid the characteristic misty weather of the Obudu mountain landscape environment during the month of August. The photos as shown in Figure 1 depicted six major features of the Obudu mountain landscape environment namely: river, forest, built, waterfall, mountain vantage point and artificial water park features.

2.3 Procedure

Subjective responses of respondents were obtained through direct rating of the Obudu mountain landscape features in the questionnaire. The direct rating approach used in this study is in line with the assertion of Bell, Green [20] that perceptual responses can be acquired through predictions of the contributions of a particular physical ingredient of a scene with regards to its perceived value. The first part of the questionnaire elicited the respondent's gender and age demographics. While the second part of the questionnaire contained only the six photos to be viewed by the respondents, the third part asked the question, 'What do you perceive to be the overall benefit of your contact with the mountain landscape features shown in part 2?'. Respondents were asked to score calmness, stress relief, excitement and anxiousness on a 5-point Likert scale ranging from strongly disagree to strongly agree.

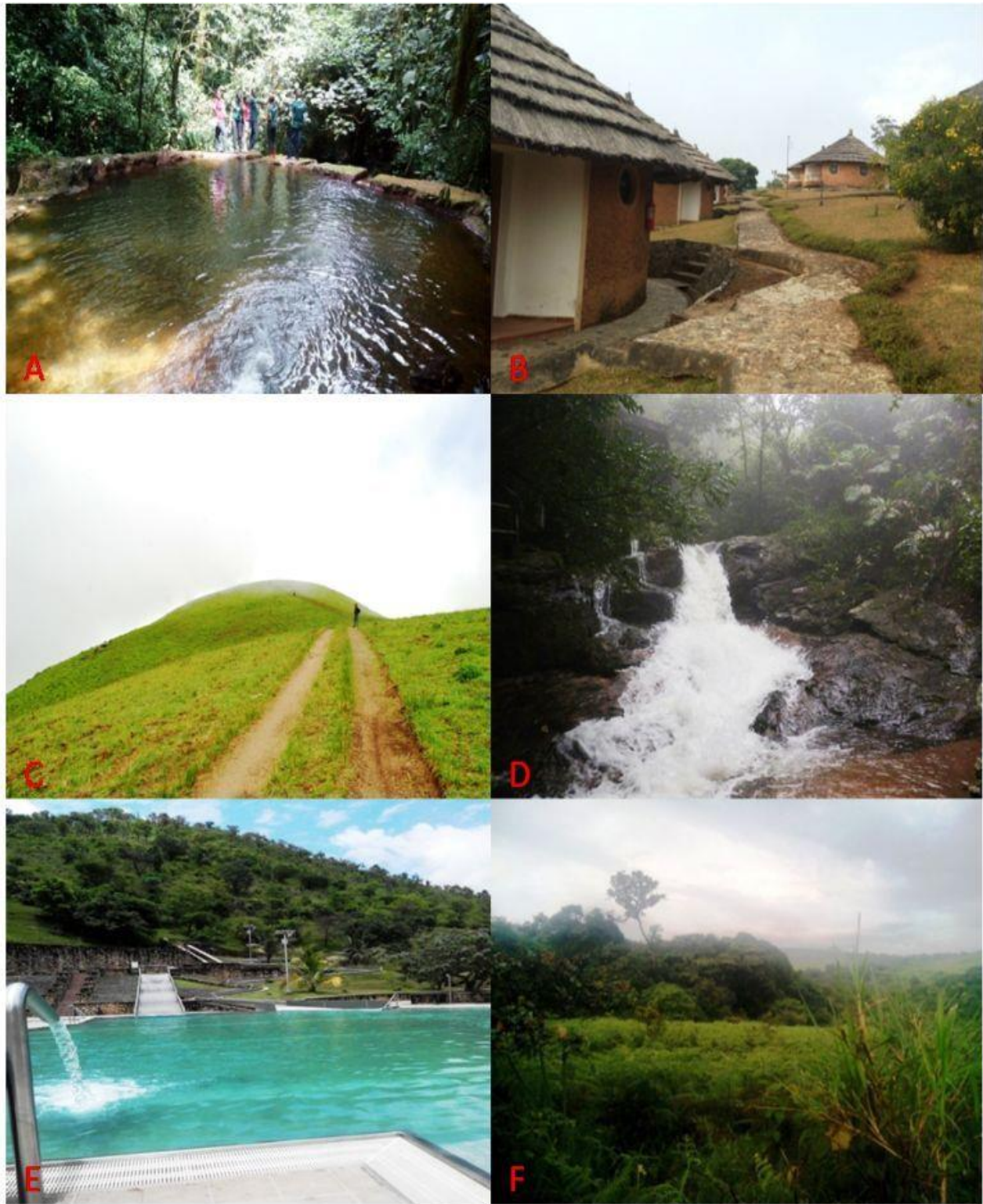


Figure 1 Features of the Obudu mountain environment: A--Mountain vantage point, D-Waterfalls, E-Artificial water park and F-Forest

2.4 Data Analysis

The data was analyzed using descriptive statistics to ascertain the overall response of the respondents pertaining to the perception of the mountain

landscape features and paired sample t-test to test for gender difference in their perception. SPSS v20.0 was deployed in the process of data analysis.

3.0 RESULTS AND DISCUSSION

Descriptive results obtained as shown in Figure 2 indicates that 54% of the respondents strongly agreed that excitement is the highest benefit that can be obtained through contact with the mountain landscape environment features. Excitement is an ingredient of affective responses with regards to human-nature interaction [16]. Albeit, individual perception in this study was based on subjective judgments obtained through surrogate photos of the real environment, the reason for the high rating of excitement is embedded in its physiological meaning. The finding portends that individuals are likely to have the feeling of excitement when they interact experientially with the real mountain landscape environment features. It can be concluded that the features inherent in the Obudu mountain landscape environment are mediums that will enable excitement in individuals. This finding supports that of [21] that individuals are likely to acquire feelings of excitement during the observation of features in the Mount Everest landscape.

Furthermore, a number of individuals perceived that calmness (45%) and stress relief (35%) constitute the benefits derivable from contact with the mountain landscape environment features. The individual's perception regarding calmness and stress relief is initiated by the aesthetic and affective benefits they apportion to the mountain landscape features. However, with regards to aesthetic and affective theory [2], calmness and stress relief are positive feelings aided by visual interaction with most natural environments. The individual's fascination with the environment features being viewed is most likely to generate positive feelings. From the perspective of Kaplan [22], fascination which is a component of any restorative environment, suggests that particular stimuli attract individuals' feelings. Therefore, the photos representing the features of Obudu mountain landscape environment (see Figure 1) used in eliciting responses provided the stimulant for the individual's perception of the mountain landscape features as beneficial in terms of calmness and stress relief. This finding is consistent with those of Hartmann and Apaolaza-Ibanez [23] and White, Smith [24], which suggest that when individuals are exposed to pictures of nature such as waterscapes and familiar biomes, positive feelings are evoked. Although this study was not concerned with positive feelings as an outcome of viewing the mountain landscape features, it has established that aside from excitement, individuals perceived the features of the mountain landscape environment as being able to provide calmness and stress relief; hence, the possibility of experiencing positive feelings in a mountain landscape environment.

However, when individual responses were compared between the respondents, a majority of them (25%) disagreed with the idea that anxiousness was part of the benefit of contact with the mountain landscape environment. The determination of mental wellbeing was through the perception of the restorative influence of nature [15]. Anxiousness has been associated with stress and is used to describe situations pertaining to being 'stressed out' [22]. Anxiousness therefore involves a cognitive understanding mostly focusing on the measure of an individual's subjective experience. Hence, this finding suggests the inability of individuals to perceive the efficacy of the mountain landscape features relative to the mitigation of anxiety. The finding also weakens the notion that plants, water and other natural features of the environment could mitigate anxiety. This is inconsistent with studies suggesting that nature scenes possess components that can mitigate an individual's anxiety states [25, 26]. Thus, individuals' visual assessment of the mountain landscape features indicates that the features are perceptually unable to affect the stress response system via anxiety alleviation.

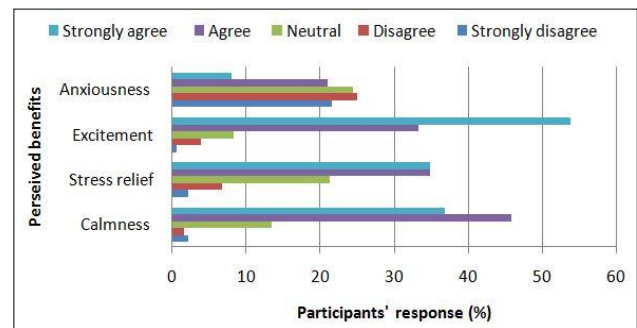


Figure 2 Perceived benefits of the mountain landscape features

Turning now to the part of the study concerned with gender difference in the perception of the benefits of contact with the mountain landscape features, the result of the paired sample t-test carried out is shown in Table 1. In retrospect, the benefits were in terms of calmness, stress relief, excitement and anxiousness. From the results, it is evident that there was no significant gender difference in the respondents perception of calmness ($t = 0.22$, $P > 0.05$), stress relief ($t = 0.53$, $P > 0.05$), excitement ($t = 0.75$, $P > 0.05$) and anxiousness ($t = 0.39$, $P > 0.05$) with regards to the benefit of their contact with the mountain landscape features. This result demonstrates that gender has no influence on the perceived benefits of the mountain landscape features with regards to calmness, stress relief, excitement and anxiousness. Possibly, the reason for this balanced outcome is the sampling imbalance of

Table 1 Gender perception of benefits of the mountain landscape features

Perceived benefits	Calmness	Stress relief	Excitement	Anxiousness
Gender	Male/female	Male/female	Male/female	Male/female
Sig. (2-tailed)	.225	.538	.753	.394
F	.225	.513	1.192	1.704

gender. The demographic report of this study indicates that the number of male respondents (n=137) was twice the number of female respondents (n=63). This finding is in accord with the suggestion of Tyrväinen, Ojala [27] that it is expedient in the process of recruitment for research data collection to avoid gender imbalance.

4.0 CONCLUSION

This study examined individual perception pertaining to the benefits of contact with a multi-stimulus mountain landscape environment with regards to human wellbeing. The study has shown that the features that make up the Obudu mountain landscape environment are capable of stimulating feelings of excitement, calmness and stress relief which are positive feelings related to human wellbeing. It was, however, found that the features could not enhance the wellbeing of individuals through alleviation of anxiousness. On the other hand, due to a sampling imbalance gender had no influence on the response of individuals regarding perceived benefits of contact with the mountain landscape features. On the whole, this finding suggests that a multi-stimulus mountain landscape environment possesses the potential to enhance wellbeing through excitement, calmness and stress relief. The study has provided additional evidence with respect to perceived restorative benefits of contact with mountain landscape environments. It supports the objective of the thesis to establish the link between restorative environments, human response and wellbeing in a mountain landscape environment.

A limitation of this study is that photographs were utilized in collecting perceptual responses hence, individual ability to imagine and perceive the scenes as beneficial was relied upon. Further studies should consider perceived responses of individuals based on experiential contact with a mountain landscape environment. The success of any landscape planning is hinged upon people's thoughts and the feelings they attribute to the landscape. It is therefore pertinent for research to be geared towards determining the attitudes and perceptions of the public in relation to different landscape features and specific environments. This will inform policymakers and landscape architects in decision-making concerning the development of mountain landscape environments and the provision of landscape features for specific environments. Another limitation of this study is the convenience sampling method adopted. Because of the imbalance in gender, the outcome of

this study pertaining to gender perception of the mountain landscape features cannot be generalized. It is therefore recommended that a balanced gender sample should be engaged in future studies.

References

- [1] Grinde, B. and G. G. Patil. 2009. Biophilia. Does Visual Contact With Nature Impact On Health and Well-Being? *International Journal of Environmental Research and Public Health*. 6(9): 2332-2343.
- [2] Ulrich, R. S. 1986. Human Responses to Vegetation and Landscapes. *Landscape and Urban Planning*. 13:29-44.
- [3] Berg, A. E. 1999. Individual Differences in the Aesthetic Evaluation of Natural Landscapes. University Library Groningen. [Host].
- [4] Sevenant, M. and M. Antrop. 2009. Cognitive Attributes and Aesthetic Preferences in Assessment And Differentiation Of Landscapes. *Journal of Environmental Management*. 90(9): 2889-2899.
- [5] Herbst, H., M. Förster, and B. Kleinschmit. 2009. Contribution of Landscape Metrics to the Assessment of Scenic Quality-The Example of the Landscape Structure Plan Havelland/Germany. *Landscape Online*. (10).
- [6] Kaplan, R. 1990. The Perception of Landscape Style: A Cross-Cultural Comparison. *Landscape and Urban Planning*. 19(3): 251-262.
- [7] Pazhouhanfar, M. and M. Kamal. 2014. Effect of Predictors of Visual Preference as Characteristics of Urban Natural Landscapes in Increasing Perceived Restorative Potential. *Urban Forestry and Urban Greening*. 13(1): 145-151.
- [8] Simonič, T. 2003. Preference and Perceived Naturalness in Visual Perception of Naturalistic Landscapes. *Zb Bioteh Fak Univ Ljublj Kmet*. 81: 369-387.
- [9] Van den Berg, A.E., S.L. Koole, and N.Y. van der Wulp. 2003. Environmental Preference and Restoration : (How) Are They Related? *Journal of Environmental Psychology*. 23(2): 135-146.
- [10] Van den Berg, A. E., A. Jorgensen, and E.R. Wilson. 2014. Evaluating Restoration In Urban Green Spaces: Does Setting Type Make A Difference? *Landscape and Urban Planning*. 127: 173-181.
- [11] Cole, D.N. and T.E. Hall. 2010. Experiencing the Restorative Components of Wilderness Environments: Does Congestion Interfere and Does Length of Exposure Matter? *Environment and Behavior*.
- [12] Falk, J. H. and J. D. Balling. 2009. Evolutionary Influence on Human Landscape Preference. *Environment and Behavior*.
- [13] Simonic, T. 2006. Urban Landscape as a Restorative Environment. Preferences and Design Considerations. *Acta Agriculturae Slovenica*. 87: 325-332.
- [14] Schirpke, U., E. Tasser, and U. Tappeiner. 2013. Predicting Scenic Beauty Of Mountain Regions. *Landscape and Urban Planning*. 111: 1-12.
- [15] Holbrook, A. 2009. The Green We Need: An Investigation of the Benefits of Green Life and Green Spaces for Urban-dwellers' Physical, Mental and Social Health. Nursery and Garden Industry Australia and SORTI. The University of Newcastle.
- [16] Scopelliti, M. and M. V. Giuliani. 2004. Choosing Restorative Environments across the Lifespan: A Matter of Place

- Experience. *Journal of Environmental Psychology*. 24(4): 423-437.
- [17] Scott, M. and D.V. Canter. 1997. Picture or Place? A Multiple Sorting Study of Landscape. *Journal of Environmental Psychology*. 17(4): 263-281.
- [18] Schirpke, U., et al. 2013. Can We Model the Scenic Beauty of an Alpine Landscape? *Sustainability*. 5(3):1080-1094.
- [19] Snyder, J. and N.W. Allen. 1975. Photography, Vision, and Representation. *Critical Inquiry*. 2(1): 143-169.
- [20] Bell, P.A., et al. 2001. *Environmental Psychology*. Fort Worth. 4.
- [21] Beza, B.B. 2010. The Aesthetic Value of a Mountain Landscape: A Study of the Mt. Everest Trek. *Landscape and Urban Planning*. 97(4): 306-317.
- [22] Kaplan, S. 1995. The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal Of Environmental Psychology*. 15(3): 169-182.
- [23] Hartmann, P. and V. Apaolaza-Ibanez. 2010. beyond savanna: An Evolutionary and Environmental Psychology Approach to Behavioral Effects of Nature Scenery in Green Advertising. *Journal of Environmental Psychology*. 30(1): 119-128.
- [24] White, M., et al. 2010. Blue Space: The Importance of Water for Preference, Affect and Restorativeness Ratings of Natural and Built Scenes. *Journal of Environmental Psychology*. 30(4): 482-493.
- [25] Bratman, G.N., et al. 2015. The Benefits Of Nature Experience: Improved Affect and Cognition. *Landscape and Urban Planning*. 138: 41-50.
- [26] Ulrich, R.S. 1979. Visual Landscapes and Psychological Well-Being. *Landscape Research*. 4(1): 17-23.
- [27] Tyrväinen, L., et al. 2014. The Influence Of Urban Green Environments on Stress Relief Measures: A Field Experiment. *Journal of Environmental Psychology*. 38:1-9.