

2020

## Nature Contentedness Through Nature's Affordances

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NATURE CONNECTEDNESS THROUGH NATURE'S AFFORDANCES

by

FATIMA KHAN

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Psychology  
in the College of Sciences  
and in The Burnett Honors College  
at the University of Central Florida  
Orlando, Florida

Spring Term, 2020

Thesis Chair: Daniel S. McConnell

## **ABSTRACT**

There have been many studies conducted in the realm of nature that look at explanations behind human beings' tendency to revert to nature as a way to relieve themselves from the real world while giving them feelings of well-being and positive emotions for a place. This study aimed to explore how humans feel more presence while also using this information to explore a more nature-oriented environment and the influence this has on human behavior. The present study is determining whether engaging with affordances of nature increase an individuals' sense of presence. It was hypothesized that individuals that spend more time immersed in nature and interacting with its many affordances would also be more inclined to experience positive psychological outcomes that were similarly reported by Kleiman (2017). In this study, the targeted participant group consisted of undergraduate students that were at the time attending the University of Central Florida (UCF) during the Fall 2019 semester. Surveys were administered to 238 participants through the use of Qualtrics. The scales that were utilized included the Nature Presence Scale (Kleiman 2017; 19 Witmer & Singer, 1998), the Nature Self-Esteem Scale (Rosenberg, 1965), the Nature Affiliation Questionnaire, (Crombag, 1968), the Revised Life Orientation Test (LOT-R) (Scheier, Carver, & Bridges, 1994), Five-Factor Inventory (John, Donahue, & Kentle, 1991), and demographics that included questions for gender, age, race, income, major, and others regarding an individual's amount of engagement in nature and their participation in natural environments and pro-conservation behaviors. Data analysis from SPSS revealed that statistically significant relationships were found between several variables. The variable for presence was significantly positively correlated with nature engagement, nature affiliation, optimism, and nature activation. Overall, it can be noted that nature provides

opportunities for individuals to engage with it and can lead them to gain a sense of presence, making them more affiliated with it, helping them feel more optimistic, and motivate them to participate in pro-conservation behaviors.

## **ACKNOWLEDGEMENTS**

First and foremost, I would like to express my gratitude toward Dr. Daniel S. McConnell who has continuously guided me throughout the process of my undergraduate honors thesis. I was able to pursue this opportunity to complete an undergraduate thesis in my last year attending the University of Central Florida and I am so grateful to have his constant support and wisdom in the realm of this topic. I would also like to show my appreciation to my committee member, Dr. Janan A. Smither, who's involvement was also incredibly important. This was a new experience for me from which I have learned a great deal of knowledge and new skills that I hope to apply in the future. Lastly, I would like to thank my parents, who are my anchor and push me to do my best. Thank you all for playing such important roles in my life.

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## CHAPTER 1: INTRODUCTION

People are surrounded by nature and report enjoying nature and feeling connected to it, even if they do not realize what is so special about it. What is it that makes us feel so at home with nature? There are benefits to be gained from exposing yourself to such environments. Research shows that going out into nature helps improve our moods and our health in general. In one study it was shown that when being surrounded by nature we use our senses and even some non-sensory pathways to stimulate the brain and reduce stress and negative emotions and instead increase the positive ones (Franco, Shanahan, & Fuller, 2017). There are plenty of benefits that come from participating in pro-environmental behaviors. If a person is inclined to participate in these behaviors and activities, it may lead to a new level of emotional connectedness to the place. Attitudes that develop from such actions may lead to positive emotions towards how we feel about nature (Pearce, 2019).

### The Human-Nature Relationship

A first consideration for human attachment to nature involves evolutionary approaches. The adaptations that were formed at the time of our ancestors may have laid a foundation for us to become more connected with nature. In fact, the biophilia hypothesis was proposed to explain that humans have a tendency to always revert back to nature to seek what it has to offer (Heerwagen, 2009). It goes on to describe how it is embedded in our DNA to interact with the natural world. Our ancestors were provided daily doses of resources through nature, like sunlight, water, wildlife, fresh air, vegetables and fruit, and other things to establish an

environmental economy. In comparison, our current environment can, in some instances, be deprived of these resources, we find ways to manifest them into our modern style of living. The major point to take away from this hypothesis is that the human brain evolved within an environmental economy that provided for human needs. This then affects the means by which we currently address needs in relation to our environment (Gullone, 2000). There may be specific information in nature that human brains respond better to and which affects our moods and in turn influence the way we feel about nature and how we perceive its surroundings.

There are two additional theories that are of importance and they also support the idea that nature affects human emotion and cognition. These are known as Attention Restoration Theory (Kaplan, 1995) and Stress Recovery Theory (Ulrich, 1991). Though both theories provide different explanations, they both have the same underlying conclusion about the effect that nature has on our well-being and how it contains restorative components that we rely upon. As the names imply, the Stress Recovery Theory explains the role that nature plays to help a person cope with stress and inevitably reduce it, while the Attention Restoration Theory explains how nature restores and refreshes cognitive functioning (Berman, Jonides, & Kaplan, 2008). There have been many studies conducted to show the validity of both of these theories. One study focused on the Attention Restoration Theory. They used the backwards digit-span task to show improvements in working memory after participants were asked to take a walk in nature compared to an urban environment (Reference). The second experiment found similar results after the participants viewed pictures of nature or urban areas (Reference). From this study, it is clear to see how much of an impact nature has on cognitive functioning and how it provides us with restoration and boosts attention, so we focus better on tasks requiring directed attention.

Many other studies have found results similar to this study (Ohly, 2016; Hartmann, Apaolaza, & Alija, 2013; Berto, 2005).

Aside from the theories mentioned above, there might be alternative possibility for why nature is restorative and gives us feelings of well-being and positive emotions for a place. Presence is a concept that refers to the extent of connectedness you feel in a place. In one light, presence can be seen as “being there” (Slater, Mel & Usoh, Martin & Steed, Anthony 1994). This can be better described as your physical or social involvement in a place to the point where you cannot distinguish your present reality from “true” reality. Though several studies done on presence were directed more towards virtual environments, there is still valid information to be gained about presence through these studies. In many of these studies presence is known as the amount of engagement that takes place when you are immersed in a virtual reality experience. The goal tends to examine the extent to where a person can no longer distinguish virtual realities subjective experience from “true” realities experiences (Sheridan, 1999). As it is, we can step away from the virtual environment and instead use the concept of presence to relate to more nature-oriented environments. The term can be mainly be used to describe a person’s physical connection to nature based off how involved they become with the environment (Ijsselsteijn, Wijnand, Ridder, Huib, Freeman, Jonathan, Avons, Steve, 2000)

Involvement and presence with one’s environment require a person to be able to interact with the resources that it has to offer. The term affordance was created by James. J. Gibson (1979) to refer to the opportunities that are provided by the environment and organism to interact. Gibson describes affordances as the interaction between the environment or objects in the environment with an organism to form a relationship. It would be wise to clarify that

affordances are not exclusive to the environment or object itself, rather an affordance takes into account the qualities of both the environment and the organism so that they can utilize the other's opportunities (Chemero, 2003; Gibson, 1979). Further, the affordances of a place define it and may be responsible for giving that feeling of connectedness and presence with a place (McConnell & Fiore, 2017). In this case, using the affordances of nature may yield positive emotions for the place. What are the affordances of nature? These may be the items which constitute a natural economy, such as the view, fresh air, water and food, and the relevant activities that place people in contact with these resources.

This view is consistent with Gibson's (1979) ecological approach to perception, which emphasizes that perception is direct and unmediated by mental representations. This way of perceiving our surroundings leads organisms to be more direct and pursue the action possibilities, which are what we seek out in the environment (Heft, 1989). It would be good to know that different natural environments offer different affordances, and in accordance to this that we seek out specific environments that contain the affordances that suit our needs. Depending on our needs and purposes, we might look towards exploring nature to meet those needs (Ben-Zeev, 1981). Affordances do not convey the same effect on every organism, rather every organism pursues different opportunities to appeal to them and so different environments provide a variety of opportunities. Environments all provide affordances, and this simply means all environments are meaningful. When organisms seek out an environment, it is due to what it offers the organism to make use of and this brings out meaning to the place (McConnell & Fiore, 2017; Withagen & Chemero, 2012). Thus, when people go to nature, they go in search of environments with affordances that are personally meaningful to them. This might include going

to the forest, beach, or just going to a park. Each of these environments offer affordances that a person might look for, like how the beach gives people the opportunity to go in the water, play in the sand, or even go swimming. Others might seek this environment for another purpose, like cleaning up trash at the beach. The purpose of each environment changes based on the usefulness of it to the person and so the meaning changes as well.

A place offers affordances that help provide organisms with a feeling of presence. There are many instances where a person may become so absorbed in what they are doing, and this state is known as flow. The way to reach this state is through very intensive and focused concentration as well as your actions and awareness becoming merged (Capaldi, Dopko, & Zelenski, 2014). Your environment contributes to how involved you are with your state of flow. Some may say that nature forces us to pay closer attention to our surroundings and this triggers us to engage with it. Some factors that play a part in triggering us include the novelty, complexity and unpredictability of nature (Nakamura & Csikszentmihalyi, 2009). Engagement of a particular activity activates flow; however, this is not enough to maintain it. Flow requires utmost concentration of the individual and tends to be rewarding and enjoyable for them. Ultimately, this starts a cycle for the organism in which they become so absorbed in the task at hand. This ties into nature connectedness when the application of flow occurs in nature where affordances offer individuals opportunities to become immersed in their surroundings.

Momentary experiences may bring such vividness to a person's life. Peak experience was a term coined by Abraham Maslow to describe instances in which a person is at the "highest levels of happiness and fulfillment" (Maslow, 1962, p. 69). There are certain activities and settings that may ignite these feelings, including but not limited to, relaxing, yoga, meditation,

prayer, and even sensing your surroundings in nature (Maslow, 1959). In the case of nature, the affordances provided allow the perceiver to acquire restoration from the environment to alleviate things like stress, which in turn lead to peak experiences. Studies from positive psychology have established that nature has properties that reduce stress (McDonald, Wearing, & Ponting, 2009). The studies go to show the positive effects nature have from their affordance that people utilize.

### Hypothesis

In the present study, it is hypothesized that individuals that spend more time immersed in nature and interacting with its many affordances would also be more inclined in experiencing positive psychological outcomes that were similarly reported by Kleiman. Kleiman (2017) had discovered that individuals who possessed a sense of presence on a college campus were also associated with an increased level of connectedness with the campus. In relation to this, people who then spend an increased amount of time associating with nature should inevitably feel more connected with it, as assessed by nature connectedness. It is proposed that the actions of the individuals in relation to using nature's affordances is connected to the positive improvements and influences in their behavior, which would explain pro-conservation beliefs and exhibitions of biophilic tendencies.

## CHAPTER 2: METHOD

### Participants

The sample consisted of 338 undergraduate students attending the University of Central Florida (UCF) during the Fall 2019 semester. Participants were recruited through the SONA research participation system, which linked them to the surveys in Qualtrics. The study protocols were approved by the IRB prior to the start of data collection. All participants voluntarily participated in exchange for points for class credit.

Of the 338 participants collected in the sample, 100 of these participants were removed for not meeting certain requirements. These include missing any catch questions placed throughout the surveys and not meeting a minimum time requirement of 6 minutes to complete the surveys. Based off these necessities, there were 238 remaining participants used for the purpose of this study. There were 128 female participants and 110 male participants. Average participant age was ( $M = 19.34$ ,  $SD = 2.68$ )

### Measures

**Nature Presence Scale.** Presence was measured using the modified presence scale adapted towards a more nature focused scale for the purpose of this study (Kleiman 2017; Witmer & Singer, 1998). This scale is located in Appendix B.

**Nature Self-Esteem Scale.** This second scale was based off of the original Rosenberg self-esteem scale. The purposefulness for the scale was meant to calculate how confident an

individual is about themselves in certain situations (Rosenberg, 1965). This scale is located in Appendix C.

**Nature Affiliation Questionnaire.** The next scale was administered using statements that examined each individual's level of connectedness with nature (Crombag, 1968). This scale is located in Appendix D.

**Revised Life Orientation Test (LOT-R).** The following scale was intended to determine the optimistic and pessimistic attitudes for each individual through the allotted statements (Scheier, Carver, & Bridges, 1994). This scale is located in Appendix E.

**Five-Factor Inventory.** In this scale, participants had rated statements that relate to their emotional tendencies in most situations and aided in examining personality traits (John, Donahue, & Kentle, 1991). This scale is located in Appendix F.

**Demographics.** The demographics questionnaire contained 19 questions, including questions about gender, age, race, income, major, and others regarding the amount of engagement and participation in natural environments. This scale is located in Appendix G.

### Procedures

The online surveys were administered through Qualtrics. Upon starting the survey, participants had been provided with a summary of the study and the informed consent form. It was required for participants to consent to the research in order to participate. Once consent was acquired, they were directed to the next page where they would complete 6 online surveys. They were presented the scales to complete in the following order: Rosenberg self-esteem scale,

followed by the nature affiliation questionnaire, then the Revised Life Orientation Test (LOT-R), the Five-Factor Inventory, the demographics questionnaire, and lastly the nature presence scale.

## CHAPTER 3: RESULTS

### Removal Criteria

Participants were removed based off the requirements that were not met when completing the study. These requirements included not meeting the minimum time allotted to complete the task, which was 6 minutes. Several catch questions had been placed throughout the survey and missing any of these questions also resulted in the removal of the participants' data. With these requirements in place, the final number of participants in the study was  $N = 238$ .

### Correlations of Variables Measured

Total scores for each scale were calculated according to the authors' instructions. Scores for nature engagement were computed based on assigning points to several nature engagement questions. Participants received specific points according to the choice they selected. In regards to the area they grew up in, they were assigned points as followed: 'Rural'=2, 'Suburban'=1, 'Urban'=0. For the time they spent in nature in a week, points were given as such: Spent 'Over 1 day'=4, 'Between 5-24 hours'=3, 'Between 1-4 hours'=2, 'Less than 1 hour'=1, 'None'=0. Accessibility to natural environments received points as followed: 'A great deal'=4, 'A lot'=3, 'A moderate amount'=2, 'A little'=1, 'None at all'=0. Participants received 6 questions about whether they engaged in certain activities, for any of these questions, 'Yes'=2 and 'No'=0. The points for all 9 questions were tallied up to form a 0-22 point scale, where "0" represented "not at all engaged with nature" and "22" represented "highly engaged with nature". It was then possible to determine an individual's nature engagement score.

Another variable being measured was Nature Activism. This measured participants pro-conservation behaviors according to a set of 5 questions participants answered. Similar to the nature engagement variable, individuals were assigned points based off the answer choice they selected. For all of these questions points were assigned as followed: ‘Yes’=1 and ‘No=0’. This made a 0-5 point scale, where “0” represented “No engagement in pro-conservation behaviors” and 5 represented “High engagement in pro-conservation behaviors”. This would establish a participants level of pro-conservation.

A series of correlations were conducted to measure the relationships between each of the variables in the study. Amongst the scales that were being examined, several of the variables consisted of significantly positive correlations with sense of presence, including those between: Nature affiliation  $r = .47, p < .01$ , optimism  $r = .21, p < .01$ , nature activism  $r = .27, p < .01$ , and nature engagement  $r = .34, p < .01$ . It was also revealed that self-esteem significantly negatively correlated with presence ( $r = -.18, p < .01$ ) and nature engagement ( $r = -.19, p < .01$ ). There was also no significant correlation found between self-esteem and nature activism. These correlations are shown on Table 1.

Table 1. Correlation amongst variables

	1	2	3	4	5	6
<b>1. Presence</b>						
<b>2. Nature Engagement</b>	.34**					
<b>3. Nature Activism</b>	.27**	.19**				
<b>4. Esteem</b>	-.18**	-.19**	-.04			
<b>5. Affiliation</b>	.47**	.26**	.33**	-.11		
<b>6. Optimism</b>	.20**	.21**	.13*	-.34**	.16*	

Correlation is significant at the 0.01 level (2-tailed). \*\*

Correlation is significant at the 0.05 level (2-tailed). \*

## **CHAPTER 4: DISCUSSION**

### Outcomes of Engaging with Nature

The purpose of this study was to evaluate the possible positive outcomes that can be gained when a person engages with a nature-oriented environment. The results of the current study relate well with the hypotheses that were originally made. It was initially expected that the more time an individual spends involving themselves with nature's affordances the more pronounced their sense of presence would be within that environment. The study was also looking at whether engaging with natural affordances and presence associated with various positive psychological outcomes and attachment to nature, like self-esteem, optimism, and nature affiliation.

Once participants relayed their responses, data analysis revealed that statistically significant relationships were found between several variables. Most of these variables were intercorrelated with each other. The variable for nature engagement was significantly positively correlated with presence, optimism, nature affiliation, and nature activism. This essentially conveys that for those individuals that spent more time interacting with nature and what it had to offer, also happened to feel a greater sense of presence within nature, were more affiliated or had a greater connection with nature, they were more optimistic, and participated in more pro-conservation activities.

Results also revealed that the sense of presence an individual felt within nature was significantly correlated with nature engagement, nature affiliation, optimism, and nature activism. These correlations show that a greater presence could potentially play a role in an

individual's level of engagement with nature and promote them to interact with the environment. A greater sense of presence may also trigger them in participating in more proconservation activities. Participating in proconservation behaviors positively correlated with nature engagement, presence, affiliation, and optimism.

Most of these variables intercorrelated with one another which can be interpreted as the participation and engagement with nature can essentially support the positive outcomes from individuals towards nature and how they feel about being there, and actively involving themselves within it the greater their sense of presence is. This can help them feel more confident about nature, they also happened to have a more optimistic attitude. Additionally, it can lead to more proconservation behaviors. These variables are all interrelated which reveals that nature connectedness or the love for a natural environment, sense of presence, optimism, and proconservation behaviors all associate with spending more time in nature.

One of the variables that stood out was self-esteem. This variable was either not significantly correlating with these nature measurements and variables or was negatively significantly correlating with them. Originally it was thought that self-esteem might have correlated with the other variables, however, any psychological benefits that were originally hoped to be found were not present. This outcome can be for a number of reasons one being that the concept of self-esteem refers to a person's self-worth or how confident they are in themselves. Perhaps this means that despite excelling in the other measurements, it won't have any effect on the individual's perception of themselves. It's also possible that self-esteem is not related with the activities that are mentioned within this study. So, individuals that had high self-esteem could have had it for a number of different reasons. Those that were not as nature active

may have had high self-esteem for other reasons, like engaging in some other meaningful activity. Another reason may be that self-esteem is a more genetically determined factor, which would account for the lack of positive correlations observed (Neiss, Sedikides, & Stevenson, 2002).

### Limitations

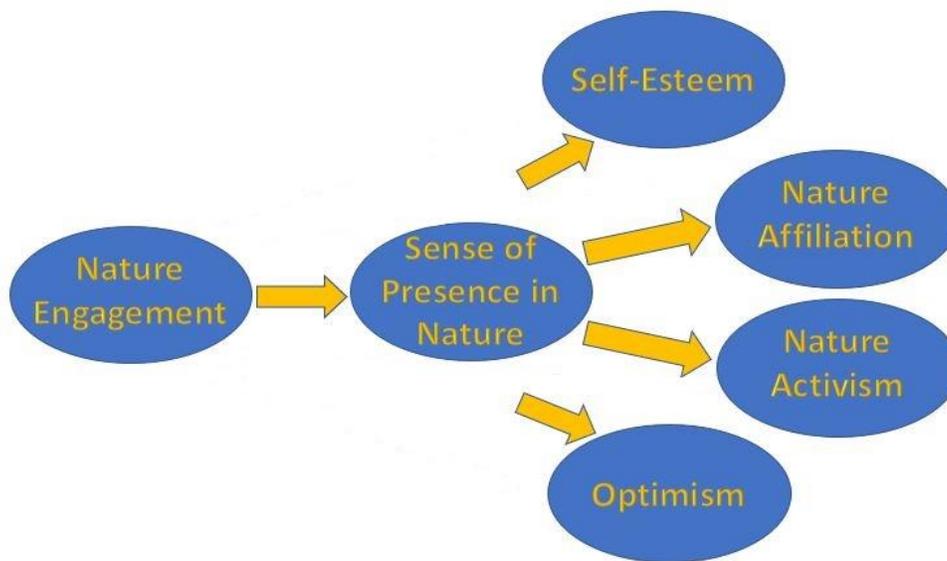
This study contains some possible limitations that need to be addressed. The participant sample used in this study consisted of all college students that were attending UCF at the time. This may have influenced the results because it does not bring in as much variation in the activities they can participate in or how much time these individuals can allot to being involved with nature. It is possible that being a college student limits them to the type of activities they can participate in based on money, time, and responsibilities like school or work. Another limitation could be accessibility to variety of natural environments. Perhaps if this group of participants had more access to places in other regions, the results may have been different. They may have been able to participate in activities that related to self-esteem.

### Conclusion with Suggestions for Future Research

More questions have arisen from carrying out this study. Future research should consider incorporating a more diverse sample of participants from different ages and regions to get data that is varied. It would also be smart to take any of the limitations from this study and use them to improve the type of data that would be collected. Another possibility is the utilization of Structural Equation Model (SEM) which would serve to study the relationship

between the variables as a whole and to determine if the model used for this study is valid. This model is seen below on Figure 1. It is proposed essentially that an individual engaging with nature would also have a stronger sense of presence within nature which could be a leading factor to other positive outcomes that were being measured in this study, including, optimism, nature affiliation, nature activism, and self-esteem. This is represented by the model below on Figure 1. Notice that researchers can also take the Nature Presence scale used here in this study and complete a factor analysis of the scale which would be helpful in determining its value for the purpose of the study.

Figure 1. Nature Engagement Flow Chart



This study investigated how being in a natural environment and interacting with it can lead to a number of positive outcomes. The variables that were being studied included nature engagement, sense of presence, optimism, nature activism, nature affiliation, and self-esteem.

The majority of the hypotheses that were originally made were supported by the data and most of the variables significantly correlated with each other. There was, however, the variable for self-esteem didn't support the hypothesis as it was originally hoped to have which could be for a number of reasons as stated earlier. Overall, it is clear that engaging with nature and the different affordances that are within that environment can lead to a greater feeling of connectedness with nature and contributes to a positive attitude towards nature, as well as more positive outcomes as the data suggests.

## APPENDIX A: FIGURES AND TABLES

Figure 1. Nature Engagement Flow Chart

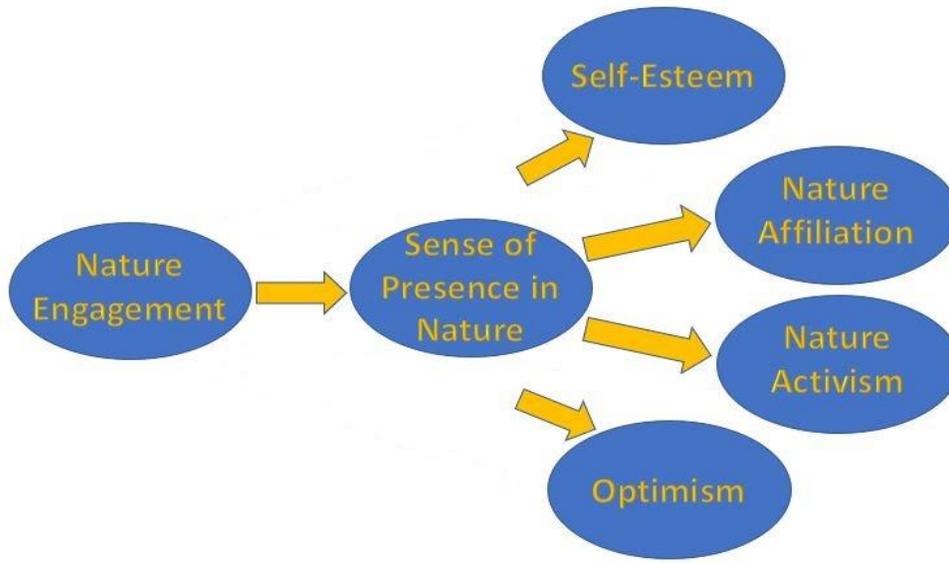


Table 1. Correlation amongst variables

	1	2	3	4	5	6
1. Presence						
2. Nature Engagement	.34**					
3. Nature Activism	.27**	.19**				
4. Esteem	-.18**	-.19**	-.04			
5. Affiliation	.47**	.26**	.33**	-.11		
6. Optimism	.20**	.21**	.13*	-.34**	.16*	

Correlation is significant at the 0.01 level (2-tailed). \*\*

Correlation is significant at the 0.05 level (2-tailed). \*

## APPENDIX B: NATURE PRESENCE SCALE

Instructions: When answering the questions below, think about how you feel on a typical day spent in nature.

(Not at all)    1        2        3        4        5        6        7 (Completely)

1. How completely were all of your senses engaged?
2. How much did the visual aspects of the environment engage you?
3. How much did the auditory aspects of the environment engage you?
4. The way time passed seemed to be different from normal.
5. I was not concerned with what others may have been thinking of me.
6. Things just seemed to be happening automatically
7. How involved were you in the experience?
8. How well could you concentrate on the activities or events taking place?
9. Were you involved in the activities to the extent that you lost track of time?

*Items 1-3: Sensory subscale*

*Items 4-6: Distraction/isolation subscale*

*Items 7-9: Distraction/involvement subscale*

*Negative scoring items: 4, 6.*

## APPENDIX C: ROSENBERG SELF-ESTEEM SCALE

Instructions: Please read the following statements and rate how they pertain to yourself.

**Strongly Agree      Agree      Disagree      Strongly Disagree**

1. I feel that I am a person of worth, at least on an equal plane with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

*For items 1, 2, 4, 6, and 7:*

Strongly agree = 3

Agree = 2

Disagree = 1

Strongly disagree = 0

*For items 3, 5, 8, 9, and 10 (reversed in valence):*

Strongly agree = 0

Agree = 1

Disagree = 2

Strongly disagree = 3

The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem.

## APPENDIX D: NATURE AFFILIATION QUESTIONNAIRE (CAQ)

Instructions: Read each statement carefully and decide which response best applies to you.

(A = Not at all like me) (B = A little like me) (C = Like me) (D = Very much like me) (E =

Exactly like me)

1      2      3      4      5

Strongly disagree

Neutral

Strongly agree

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 nonhuman, 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.

## APPENDIX E: REVISED LIFE ORIENTATION TEST (LOT-R)

Instructions: Please answer the following questions about yourself by indicating the extent of your agreement. Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

**(0 = Strongly disagree, 1 = Disagree, 2 = Neutral, 3 = Agree, 4 = Strongly agree)**

1. (\_\_\_) In uncertain times, I usually expect the best.
2. (\_\_\_) It's easy for me to relax.
3. (\_\_\_) If something can go wrong for me, it will.
4. (\_\_\_) I'm always optimistic about my future.
5. (\_\_\_) I enjoy my friends a lot.
6. (\_\_\_) It's important for me to keep busy.
7. (\_\_\_) I hardly ever expect things to go my way.
8. (\_\_\_) I don't get upset too easily.
9. (\_\_\_) I rarely count on good things happening to me.
10. (\_\_\_) Overall, I expect more good things to happen to me than bad.

### Scoring:

1. Reverse code items "3, 7, and 9 prior to scoring (0=4) (1=3) (2=2) (3=1) (4=0).
2. Sum items 1, 3, 4, 7, 9 and 10 to obtain an overall score.

*Note:* Items 2, 5, 6, and 8 are filler items. They are not scored as part of the revised scale.

## APPENDIX F: FIVE-FACTOR INVENTORY

Instructions: Rate each statement according to how well it describes you. Base your rating on how you really are, not how you would like to be.

**(1 = Very Inaccurate) (2 = Moderately Inaccurate) (3 = Neutral) (4 = Moderately Accurate)**

**(5 = Very Accurate)**

1. I often feel blue.
2. I feel comfortable around people.
3. I believe in the importance of art.
4. I have a good word for everyone.
5. I am often down in the dumps.
6. I make friends easily.
7. I tend to vote for liberal political candidates.
8. I believe that others have good intentions.
9. I am always prepared.
10. I dislike myself.
11. I don't talk a lot.
12. I have a vivid imagination.
13. I make people feel at ease.
14. I pay attention to details.
15. I have frequent mood swings.
16. I am skilled in handling social situations.

17. I carry the conversation to a higher level.
18. I respect others.
19. I get chores done right away.
20. I panic easily.
21. I am the life of the party.
22. I enjoy hearing new ideas.
23. I accept people as they are.
24. I carry out my plans.
25. I rarely get irritated.
26. I know how to captivate people.
27. I am not interested in abstract ideas.
28. I have a sharp tongue.
29. I make plans and stick to them.
30. I seldom feel blue.
31. I have little to say.
32. I do not like art.
33. I cut others to pieces.
34. I waste my time.
35. I feel comfortable with myself.
36. I keep in the background.
37. I avoid philosophical discussions.
38. I suspect hidden motives in others.

- 39. I find it difficult to get down to work.
- 40. I am not easily bothered by things.
- 41. I would describe my experiences as somewhat dull.
- 42. I do not enjoy going to art museums.
- 43. I get back at others.
- 44. I do just enough work to get by.
- 45. I am very pleased with myself.
- 46. I will select neutral for this
- 47. I don't like to draw attention to myself.
- 48. I tend to vote for conservative political candidates.
- 49. I insult people.
- 50. I don't see things through.
- 51. I shirk my duties.

**Scale scoring (“R” denotes reverse-scored items):**

Extraversion: 2, 6, 11R, 16, 17, 21, 26, 31R, 36R, 46R

Agreeableness: 4, 8, 13, 18, 23, 43R, 48R

Conscientiousness: 9, 14, 19, 24, 29, 34R, 39R, 44R, 50R

Neuroticism: 1, 5, 10, 15, 20, 25R, 35R, 38, 40R, 45R

Openness: 3, 7, 12, 22, 27R, 32R, 37R, 41R, 42R, 47R, 49R

Note: Items 28, 30, 33, and 46 were not factored into the final scores

## APPENDIX G: DEMOGRAPHIC QUESTIONNAIRE

Instructions: Please answer the following anonymous demographical questions.

1. What gender do you identify as?
  - a) Male
  - b) Female
  - c) Other: \_\_\_\_\_
2. What is your age? \_\_\_\_\_
3. What is your major? \_\_\_\_\_
4. What is your household income range?
  - a. Less than \$24,999
  - b. \$25,000 to \$49,999
  - c. \$50,000 to \$99,999
  - d. Over \$100,000
5. What is your race?
  - a. American Indian or Alaskan native
  - b. Asian or Pacific Islander
  - c. Black/African American
  - d. Hispanic/Latino
  - e. White/Caucasian
  - f. Other \_\_\_\_\_
6. What type of are did you grow up in?

- a. Rural
  - b. Urban
  - c. Suburban
7. How many hours do you spend in natural settings within a week?
- a. Over 1 day
  - b. Between 5-24 hours
  - c. Between 1-4 hours
  - d. Less than 1 hour
  - e. None
8. How accessible are you to natural environments?
9. Do you go to the beach? Yes or No? \_\_\_\_\_
- a) How many days per month? \_\_\_\_\_
  - b) How many hours at the beach do you spend during a typical excursion? \_\_\_\_\_
10. Do you go out to the forest for walks or hikes? Yes or No? \_\_\_\_\_
- a) How many days per month? \_\_\_\_\_
  - b) How many hours do you spend during a typical excursion? \_\_\_\_\_
11. Do you go out to the forest to go camping? Yes or No? \_\_\_\_\_
- c) How many days per month? \_\_\_\_\_
  - d) How many hours do you spend during a typical excursion? \_\_\_\_\_
12. Do you go to the springs to go tubing, boating, paddle boarding, kayaking, canoeing, etc.? Yes or No? \_\_\_\_\_
- e) How many days per month? \_\_\_\_\_

- f) How many hours do you spend during a typical excursion? \_\_\_\_\_
13. Do you go out to natural environments to go hunting or fishing? Yes or No? \_\_\_\_\_
- a) How many days per month? \_\_\_\_\_
- b) How many hours do you spend during a typical excursion? \_\_\_\_\_
14. Do you go to natural environments for reasons other than listed above? Yes or No? \_\_\_\_\_
- a) Specify.
- b) How many days per month? \_\_\_\_\_
- c) How many hours do you spend during a typical excursion? \_\_\_\_\_
15. Do you conserve water? Yes or No? \_\_\_\_\_
16. Do you recycle? Yes or No? \_\_\_\_\_
17. Do you ride your bike to conserve energy? Yes or No? \_\_\_\_\_
18. Do you have an electric or hybrid car to prevent? Yes or No? \_\_\_\_\_
19. When voting, do you allow nature to influence who or what you vote for?  
Yes or No? \_\_\_\_\_

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