Abstract

This study explores the cognitive, affective, and evolutionary spheres that are found in the sub-field of Ecopsychology. Scientific evidence shows that nature can affect humans in these three spheres. This study also suggests that those that come from urban, suburban, and rural backgrounds score the same on average for their nature connectedness scores. Biologist E.O. Wilson said biophilia is present in humans because it stems from an evolutionary need. Looking at nature connectedness at an individual level affirms the importance of nature in our lives, even if nature is not valued aesthetically, cognitively, or through an evolutionary sphere. Humans feel connected to nature in times of personal and global crises (e.g. pandemics or poor mental health). A connection with nature helps us adapt physically and cognitively.

Keywords: Biophilia, ecowellness, ecopsychology, environmental psychology, microbiome, deep ecology, biophobia, design, environmental ethics

Introduction

This study aims to explore how nature connectedness relates to Ecopsychology. The literature on the perspectives of Native American’s connection to natural environments illustrates the significance of how one’s relationship with nature can impact the psyche. Wildcat (2000) argues that the community aspect of plants, landscapes, and animals does exist; though western paradigms often assert otherwise. Myers and Reese (2012) state that connecting with nature can lead to a sense of communion with the natural world. Maslow mentions that peak experiences are what we strive to achieve in our lifetime (Myers and Reese cited as Maslow 1973). In this research study, “nature” and the “natural environment” are the foundations of the natural world (Myers and Reese, 2012). For instance, nature includes all aspects of nature and human-built environments that express natural elements.

More often than not, traditional psychology research does not explore environmental ethics and disregards the importance of the connection between humans and nature (Perkins, 2010). The work of Harvard biologist, E.O. Wilson indicates a psychological blindspot when nature’s role in psychology is discounted. Wilson reasoned that humans have a natural tendency to feel connected to natural elements, which protect the environments we humans have evolved in (Wilson, 1984). He called this connection to nature the “biophilia hypothesis.” Humanistic psychoanalyst, Eric Fromm, used the term biophilia in 1973 and defined biophilia as the “love of life” (Gunderson, 2014). This study will focus on Wilson's perspective on biophilia. This paper indicates that nature connectedness is not dependent on the individual’s background i.e. rural, urban, or cultural variables. The biophilia hypothesis is what guides humans to feel connected to nature. Three perspectives can help us search for how we connect with natural environments (See Figure 1). There are imbalances that may be addressed by a nature prescription.
Biophilia Meets Green Design

Sustainable behavior can be taught and explored in various ways. For instance, let us begin with the visual arts. Evolutionary psychologists and biologists have accepted the pleasure effect that comes from observing the visual arts (Hickman 2016). Within this evolutionary perspective, what does it mean to have a sensory experience when we look at nature? Do humans interact with natural elements in the same way that they appreciate art? Alexandria Rupert (2018) studied the emotional responses that individuals experience at Brooklyn’s Botanical garden and why humans are affected by nature. One of her approaches was to inform the reader of relating to nature and how it can be measured at the urban botanical garden. As a designer, she explored how the botanical garden and its architecture are designed to evoke psychological and emotional reactions from the viewers. Rupert supports that affective, cognitive, and physical responses exist between humans and nature.

Designers in the art industry have their own representations of what nature means to them. Scientists discovered that humans are attracted to all fractals no matter what medium they appear in such as in math, art, or nature (Rupert 2018). The structure is organized, surreal, precise, and they are found in the entire natural world. Designers (artists or architects) can design fractals for the emotional, cognitive, and physical effects of the user’s experienced environment (Rupert 2018). Also, “nature relatedness” ties in the importance of nature even if it is not valued aesthetically (Rupert 2018). See fig. 2 and fig. 3 for examples of green design.

Environmental Ethics, Biophobia, and Considerations

Comparing multiple disciplines reveals some points of contention. Becoming familiar with a parallel field such as environmental ethics is a good start. Arne Naess has contributed by defining the terms “shallow” and “deep” ecology (Sessions, 1995). Connectedness towards nature being considered valuable to humans would affirm his point of shallow ecology. He posited that there needs to be a critical shift to move away from “shallow environmentalism” (1995). However, Naess admits that his movement is a “radical ethic” that may not be wholly understood. Fritjof Capra, the physicist, and deep ecology contributor recognized the application of ecopsychology in developing the ecological self (Capra 1996).

Moreover, Santostefano (2008) stated that ecopsychologists need to consider a dialectical-relational model. This approach is beneficial to facilitate healing from all environments, not just from interactions that intersect with the natural world. A study of the environmental psychology of aging has proven that a community garden in a nursing home resulted in improved communication and socialization for 60% of the residents (Youdin 2016). The elderly were often isolated from their family members; gardening was a nature-based intervention that facilitated healing. Furthermore, there are scenarios when people do not feel safe around their natural environment, and this is called biophobia. E.O. Wilson and social ecologist, Stephen Kellert, described the fear that one may feel from animals and wildlife (Callow cited as Wilson and Kellert 1998). Becher and Richey cited as Kellert (2008) described that a central issue is a lack of environmental education. Feeling out of touch with nature can pose
great psychological danger. Thus, it is essential to understand biophilia and its relation to longevity. The **Cognition, Evolution, and Neuroscience**

Feeling optimistic and less anxious generally leads to feeling happy. Happiness has similarities with nature connectedness that depends on personal experiences and characteristics for each individual (Capaldi, et. al 2014). According to Gifford (cited as Felston 2014), people who take walks in nature are aware of the hedonic affect afterward. Considering subjective well-being is a vital asset in environmental psychology because it supports that an environment has a therapeutic role (2014). Psychologists in this subfield will be aware of how to advocate for safe, natural living environments. There is also the neuroscientist approach to the biophilia hypothesis and why coevolution leads us to interact with nature. Our gut-brain axis drives us to quality spaces in nature to keep our immune systems healthy. In addition, the parasympathetic and the sympathetic nervous systems are responding to the experiences we have with nature to help us rest or respond to dangerous natural environment situations. See [fig. 4](#) and [fig. 5](#) to see how biophilic drive relates to us in areas of coevolution and the nervous system (Breed and Robinson 2020).

**Figure 4.** The abiotic and biotic features, the internal and external microbial communities give feedback to the host. The biophilic drive is influenced by the microbiome. The host can select for natural environments that are helping them stay healthy.

**Figure 5.** The nervous system
Defining the EcoWellness Model

Counseling professionals can approach clients with new modalities to activate healing by using natural environments as a tool. Myers and Reese (2012) mentioned that EcoWellness counseling expands the therapist’s toolkit. Researchers break this model down into three dimensions: Access to nature, environmental identity, and transcendence. The quality and accessibility of green spaces are considered by Ecopsychologists when they invite their clients to the natural world.

Negative and positive environments are easier to discern depending on the depth of ecological identity. This identity helps one establish their relationship with cities or areas with minimal industrialization (Myers and Reese 2012). This holistic toolkit can potentially bring new beliefs and connections to natural life. Another role of nature is to enhance a feeling of transcendence. Myers and Reese’s implementation of the EcoWellness model with a boy named Kaleef was proven to be successful in adjusting his behavior and overall well-being (2012).

The phenomenon of “nature deficit disorder” results in various diseases from a lack of quality natural elements. There has been a recent trend with public health issues such as depression, anxiety, asthma, diabetes, and inflammatory bowel disease, which intersect with the lack of quality, natural, green spaces. There is research asserting that this trend comes from industrialized areas with dense populations (Breed and Robinson 2020). Urban environments lack biome diversity, which leads to microbiome dysbiosis and stunts the overall immune system function on the host. Breed and Robinson’s model helps policymakers to understand that quality natural environments are essential to keep public health stable over time. See Fig. 6 made by Breed and Robinson (2020).

Figure 6. Increasing quality green spaces is important to address public health

Conclusion

Further research is strongly recommended to expand the literature review in ecopsychology. Overall, biophilia stems from psychological, biological, and effective efforts to help humanity survive and adapt to the uncertainty of various crises. Researching biophobia may also help the field understand how this unbalance is found within environmental demographics (urban, suburban, and rural). Nature is a stepping-stone to our affective, cognitive, and evolutionary perspectives

Methods

Participants: 151 valid participant responses were scored on SPSS. Participants were recruited from Amazon's Mechanical Turk (Mturk). Their responses were recorded by the format given on Qualtrics. Participants used a computer or intelligent device to begin the External Human Intelligence task. They are asked to state whether they come from urban, suburban, or rural backgrounds. Everyone is a U.S resident and at least 18 years of age.

Procedure: Participants who agreed to the consent form are asked by the survey to answer a few demographic questions and look at photos of nature before they take the Connectedness to Nature Survey (See fig. 7 and fig. 8). After submitting, a text box will appear to describe what they observed with a few words or sentences. There are 14 items on the survey that is scored by a 6-point Likert-scale (1=strongly disagree, 2, 3=Neutral, 4, 5=strongly agree, 6=prefer not to answer) that will ask about their behaviors, attitudes, and values about the natural world. Participants will have to answer each question in the way that they generally feel. There will be no identifiers in this study. After the survey was submitted participants were given an incentive of $1.00 for providing a completion code. This is the the typical amount is given for taking a 10-minute survey on Mturk via Qualtrics.
Results: The data were analyzed to determine if there were no differences in attitudes, values, and beliefs on nature connection based on demographic backgrounds. The assumption of Homogeneity was met Levene’s $F(2, 151)= .673$, n.s. A between-subjects ANOVA was conducted and found no significant differences amongst demographic backgrounds (urban, suburban, rural), $F(2, 151)= 1.732$, $MSe= .691$, $p > .05$ (See Table 1).

Another variable was analyzed to determine if there were no significant differences in demographics and the time spent looking at the nature images that the participants looked at before taking the Connectedness to Nature Survey. The assumption of Homogeneity was met Levene’s $F(2, 151)= .140$, n.s. A between-subjects ANOVA test also determined no significant differences amongst time spent looking at photos and whether people came from urban, suburban, and rural backgrounds, $F(2, 151)= .518$, $MSe= 724.548$, $p > .05$ (See Table 2).

Table 1. ANOVA Summary Table

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Table 2. ANOVA Summary Table with Time

The time spent looking at nature photos and nature connection scores were analyzed to see if time spent looking at natural elements is related to nature connectedness. The variables show no linear relationship with a Pearson’s value of -.084 As shown in Figure 7, there is no linear relationship with Nature connectedness scores and time spent in seconds looking at four photos of nature (See figure 8).

Table 8. Means and time in seconds
Discussion and Limitations

As humans, we're called to employ quality and safe natural elements to adapt in times of personal or global crisis. Whether it’s hiking for depression or the “green” design of a high-rise. Through our cognitive, affective, or evolutionary spheres, nature creates a middle ground among these aspects that reminds us to adapt and stay healthy with new interventions. Limitations in correlational studies should be considered for future research. The sample size of this study was not sufficient to represent the general public in the United States.

References


