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# Investigating Environmental Identity, Well-Being, and Meaning

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## Abstract

*The present article is concerned with the relationships between the natural environment and identity, emotional well-being, and meaning. In a sample of university students, it was hypothesized that frequency of experience of the natural environment and the degree of meaning obtained from such experience would positively predict both well-being and environmental identity. Both hypotheses were partly supported. It was also hypothesized that participants who grew up in a rural location would report more meaning, stronger environmental identities, greater frequency of experience, and more positive well-being than would participants who grew up in urban and suburban environments. All these hypotheses were supported. The strengths and omissions of the present research and potential avenues for practical applications of the findings are discussed.*

## Introduction

### *Experience of the environment*

According to historical anecdotal accounts, encounters with the natural environment may have beneficial psychological rewards (Emerson, 1836/1982; Muir, 1901/1992). More recently, it has been stated in the biophilia hypothesis that we, as a species, have an innate need to affiliate with nature due to our long evolutionary development within it (Wilson, 1993). Some evidence suggests that people with stronger biophilic tendencies exhibit greater psychological well-being and hold more positive conservation ethics than those without (Kellert, 1993). It has been argued, however, that the genetic bond may well be a weak one, requiring the addition of learning,

culture, and *experience* of nature to optimize biophilic tendencies (Kahn, 1997; Kellert, 2002). Experience of, and encounters with, the natural environment generally refers to direct, visceral contact such as visiting gardens and gardening through to camping and hiking in wilderness areas.

In relation to the biophilia hypothesis, there has been recent empirical interest in how the natural environment, in its many forms, may be able to exert a positive influence on various states of well-being, in its many forms (Groenewegen, van den Berg, de Vries, & Verheij, 2006; Herzog & Strevey, 2008). For instance, Han (2009) demonstrated that students in a classroom containing green shrubs showed a greater preference for the classroom setting and reported more comfort and friendliness than did those students in a classroom without the addition of plants. In addition, it has been argued that there is a strong positive relationship between how psychologically restorative an environment is perceived to be and preferences for that environment (Korpela, Hartig, Kaiser, & Fuhrer, 2001; van den Berg, Hartig, & Staats, 2007).

From a broader social perspective, well-being differences have been reported between people living in rural and urban areas. After controlling for a multitude of confounding variables (e.g., physical health, access to a car, employment, age, gender, marital status, ethnicity, overcrowding, structural housing problems, and income based socioeconomic status), rural people, in comparison to urban people, reported significantly lower rates of depression and anxiety (Weich, Twigg, & Lewis, 2006).

In addition to highlighting the beneficial impacts on well-being, research has also focused on how the experience of nature and the natural environment may positively affect proenvironmental orientations (Chawla, 1999; Kahn, 2002). It has been found in a number of studies that outdoor recreationists tend to display greater proenvironmental attitudes and behaviors than those who do not engage in those activities (Teisl & O'Brien, 2003; Theodori, Luloff, & Willits, 1998). Similarly, early childhood experiences

of nature have been shown to predict proenvironmental beliefs (Ewert, Place, Sibthorpe, 2005; Lohr & Pearson-Mims, 2005), and people with a rural childhood have been found to have more positive orientations toward the natural environment than those with an urban childhood (Bunting & Cousins, 1985; Hinds & Sparks, 2008). It has also been suggested that it is the emotional attachments that people form through experiential encounters with nature that are instrumental in developing commitments to nature (Milton, 2002).

### *Environmental identity*

It has been argued that people will identify with what they care about (Frankfurt, 1988) and that “we generally tend to identify most with those entities with which we are often in contact” (Fox, 1995, cited in Milton, 2002). From a variety of research perspectives, there has been the recognition that people’s sense of their own identity has important implications for proenvironmental attitudes and environmental behaviors such as energy efficiency (Clayton & Opatow, 2003), green consumerism (Sparks & Shepherd, 1992), recycling (Mannetti, Pierro, & Livi, 2004), and environmental activism (Fielding, McDonald, & Louis, 2008). Some of these perspectives emphasize the inclusion of nature within people’s cognitive representations of the self (Schultz, 2002; Schultz, Shriver, Tabanico, & Khazian, 2004), and some use the notion of environmental identity (e.g., Clayton & Opatow, 2003) or environment identity, defined as “the meanings that one attributes to the self as they relate to the environment” (Stets & Biga, 2003, p. 406).

Moreover, it has been suggested that experience of the natural environment plays an invaluable part in the construction of environment-related identities (Bragg, 1996; Holmes, 2003; see also Loughland, Reid, Walker, & Petocz, 2003). For example, in one recent study, environmental identity was found to increase significantly for adolescents after an immersed (3 days) experience in woodland (Hinds, 2009). Similarly, the frequency of being in nature has been found to be moderately and positively related to a measure of nature relatedness (Nisbet, Zelenski, & Murphy, 2009) and place attachment (Vorkinn & Riese, 2001).

### *Environment and affective well-being*

There is some indication that environment-related identities are strongly related to an affective connection to the natural environment (Hinds & Sparks, 2008; Milton, 2002). Mayer and Frantz (2004), for instance, argue that their connection to nature scale (CNS) captures an individual’s personal affective experience of nature. In fact, it is becoming increasingly apparent that emo-

tions are an important part of people’s motivations to advocate and engage in environmental protection (Kals, Schumaker, & Montada, 1999; Schultz & Tabanico, 2007). Research indicates that even indirect exposure, and subliminal (unconscious) exposure, to natural environments tends to elicit largely positive affective reactions (Korpela, Klemettilä, & Hietanen, 2002; Schultz & Tabanico, 2007).

However, importantly for the purposes of the present study, there is some degree of evidence to suggest that experience of the natural environment can elicit strong positive affect. For example, participants active in various voluntary environmental protective behaviors such as maintenance of localized natural environments have reported that experience of the natural environment produced “an amazing feeling of happiness” and an “inner sort of calm,” and feeling “really satisfied,” more relaxed, and more like themselves (Eigner, 2001, pp. 191–192). Similarly, residential trees in inner-city and suburban environments may be related to greater feelings of safety (Kuo, Bacaicoa, & Sullivan, 1998) and to how relaxed and comfortable people feel (Kaplan, 2001).

### *Environment and meaning*

Psychological well-being has been argued to be partly reliant on having a degree of meaning in life (e.g., Morgan & Farsides, 2009). For example, Frankl (1963) believed that meaning in life was necessary to avoid *noogenic neurosis*, a condition characterized by apathy, boredom, and a lack of fulfillment.

Both research and theory have suggested that early (childhood) nature experiences may bring personal meaning to people’s lives (Gross & Lane, 2007; Kahn, 2002). Looking at sunsets and mountains while enduring the most inhuman and desperate situations can, for certain individuals, instill a sense of meaning and well-being (Frankl, 1963). Lohr and Pearson-Mims (2005) found that, in a retrospective study, participants with even minimal childhood experiences of planting trees and caring for indoor plants, compared to those participants who reported never having experienced these things, were more likely to perceive trees as having a calming effect and as having personal and symbolic meaning. Similarly, direct experience of the natural environment has been shown to have a positive impact on participants’ sense of self-meaning (Hinds & Sparks, 2009).

### *The present study*

Based on the considerations reviewed above, in the present study we were primarily interested in the relationship of environmental identity (as an indicator of environmental orientation) to positive affect and a sense of meaning (as indicators of psychological well-being). Specifically, we proposed

6 hypotheses in the present study: (a) environmental identity would be predicted by environment-related meaning and frequency of environmental experiences and that (b) subjective well-being would also be predicted by these variables. It was further hypothesized that rural participants would, in comparison to both urban and suburban participants, report greater (c) environment-related meaning, (d) well-being, (e) identity, and (f) frequency of experience of the natural environment.

## Methods

Participants representing a convenience sample were 36 undergraduate psychology students (33 females; 3 males; mean age = 20.1 years; range 18–29 years) at the University of Sussex, United Kingdom. Participation was in exchange for course credit.

### Materials

Participants received two article-based questionnaires. The first ascertained (among other measures) to what extent participants agreed or disagreed with statements relating to environmental identity. The second questionnaire contained items which were concerned with how participants related 10 natural environments (forest, mountain, farmland, park, garden, woodland, valley, river, beach, and hill) to a sense of meaning, affective well-being, and frequency of experience. All responses were on a fully anchored 7-point scale unless otherwise indicated (end points are indicated in parentheses). Reverse coding of items was carried out where necessary. Aside from other demographic information, participants were required to indicate in what type of environment they spent most of their childhood: rural, suburban, or urban.

### Environment-related identity

Environment-related identity (adapted from Stets & Biga, 2003) was measured by a series of 10 items framed as “to what extent do you think of yourself as [X] from the natural environment” where [X] represents the attributes: detached, connected, interested, respectful, concerned, indifferent, passionate, independent, caring, and related (1 = *not at all X*, to 5 = *extremely X*). The mean of these items ( $\alpha = .80$ ) was used to form a measure of environment-related identity.

### Personal meaning

Using a working definition (“the quality of having great value or significance”), personal meaning in relationship to each of the 10 environments was measured using the item “please rate how personally meaningful being in each type of environment below

would be for you” (1 = *not at all meaningful* to 7 = *extremely meaningful*). The mean of these items ( $\alpha = .64$ ) was used to form a measure of personal meaning.

### Affective well-being

Affective well-being was measured for each of the 10 environments with the items, “To what extent would you expect to feel each of the following”: relaxed, freedom, refreshed, connectedness, alive, serenity, contemplative, awe, and empathy (1 = *not at all* to 7 = *extremely*). The mean of these 90 items ( $\alpha = .97$ ) was used to form a measure of affective well-being.

### Frequency of experience

Frequency of experience was measured with the item “Please indicate how often you are actually in each of the following types of environment” and was followed by the ten environments (1 = *very often* to 5 = *never*). The mean of these 10 items ( $\alpha = .75$ ) was used to form a measure of frequency of experience.

## Results

Means, standard deviations, and intercorrelations for the study variables are provided in Table 1. There were no overly high relationships between variables (i.e., ruling out multicollinearity; Field, 2009). Interestingly, the matrix represents a significant positive manifold, thus suggesting the importance of their interrelationship.

A multiple regression was carried out to test the hypothesis that environment-related identity would be predicted by both frequency of experience and personal meaning. In addition to these two variables, dummy variables were also computed for childhood location (Dummy Variable 1, rural vs. urban; Dummy Variable 2, rural vs. suburban) and included in the model.

The model was a significant predictor of environment-related identity,  $R = .56$ ,  $F(4, 31) = 3.59$ ,  $p = .016$ : Frequency of experience was the only significant predictor of environment-related identity,  $\beta = .40$ ,  $t = 2.17$ ,  $p = .038$ , indicating that greater frequency of experience was associated with higher levels of environment-related identity.

A similar regression tested the hypothesis that affective well-being would also be predicted by both frequency of experience and personal meaning. Again, as above, the model included of childhood location. The model was a significant predictor  $R = .63$ ,  $F(4, 31) = 5.10$ ,  $p = .003$ . Personal meaning was the only significant predictor,  $\beta = .39$ ,  $t = 2.32$ ,  $p = .027$ , indicating that

**Table 1. Descriptive Statistics and Intercorrelations for the Study Variables (N = 36)**

	1	2	3	4	5	M	SD
1. Childhood Location	–	.47***	.48***	.25*	.45***	1.92	0.55
2. Personal Meaning		–	.50***	.36**	.56****	3.91	0.74
3. Frequency of Experience			–	.50***	.42***	2.89	0.47
4. Environmental Identity				–	.25*	3.33	0.46
5. Affective Well-Being					–	4.09	0.71

\* $p < .08$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

greater meaning obtained from being in the natural environment was associated with more positive affective well-being.

Tests of differences for the three levels of childhood location (rural vs. suburban and urban) using ANOVA was also carried out. Homogeneity of variance is assumed unless otherwise stated. Results indicate that there were significant (or marginally significant) differences for childhood location for all the study variables: environment-related identity,  $F(2, 33) = 2.97, p = .065$ ; frequency of experience,  $F(2, 33) = 5.69, p = .008$ ; personal meaning,  $F(2, 33) = 4.85, p = .014$ ; affective well-being, Welch's  $F(2, 7.23) = 3.47, p = .088$ .<sup>1</sup>

Moreover, there were significant effects for planned comparisons comparing rural with both suburban and urban participants (see Table 2). The following  $p$  values had a factor of 2 applied to them due to the stated directional (one-tailed) hypotheses. In comparison to suburban and urban participants, rural participants reported greater frequency of experience:  $t(33), = -3.26, p = .002$ ; greater personal meaning,  $t(33), = -2.90, p = .004$ ; stronger environment-related identity,  $t(33), = -2.32, p = .014$ ; and more positive affective well-being,  $t(3.21), = -2.30, p = .05$ .<sup>1</sup>

### Discussion

The present findings support the hypothesis that environment-related identity can be related to experience of the natural environment. Given the imperative for building stronger human-environmental relationships (e.g., Milton, 2002), the present research may have important implications for how to implement a closer relationship with the natural environment. Moreover, the present research supports previous research using other populations, such as adolescents from deprived backgrounds, which has used direct experience of the natural environment and found similar results (e.g., Hinds, 2009).

Interestingly, the effects of personal meaning in the prediction of environment-related identity were nonsignificant. However, the zero-order correlation between environment-related identity and personal meaning was moderately positive which suggests that the role of personal meaning in the prediction of environment-related identity may be masked by the strong relationship between frequency of experience and personal meaning.

For the prediction of affective well-being, the opposite appears to be true. Personal meaning, but not frequency of experience,

**Table 2. Means and Standard Deviations for the Study Variables by Childhood Location Showing Planned Comparisons Significance Levels (Rural vs. Urban and Suburban)**

	RURAL ( $n = 4$ )	URBAN ( $n = 7$ )	SUBURBAN ( $n = 25$ )
	M (SD)	M (SD)	M (SD)
Personal Meaning	4.73*** (1.07)	3.41 (0.64)	3.92 (0.61)
Frequency of Experience	3.48*** (0.44)	2.60 (0.41)	2.88 (0.41)
Environmental Identity	3.83** (0.67)	3.30 (0.48)	3.26 (0.38)
Affective Well-Being	5.04** (0.97)	3.76 (0.34)	4.04 (0.63)

\*\* $p < .05$ . \*\*\* $p < .01$ .

was found to be a significant predictor of affective well-being. This suggests that it may be the personal meaning obtained from being in the natural environment that is the important aspect of obtaining a sense in affective well-being, rather than just the experience itself. It is not beyond the realm of possibility that personal meaning mediates the effect of experience on affective well-being. Indeed, the wording of the meaning items on the scale is such that it explicitly asks participants to rate how personally meaningful being in each natural environment is for them.

However, we would of course be hesitant to draw any general conclusions from the present findings because of, for example, the relatively small sample size. Moreover, the present findings were based on a largely female sample with a degree level education, and presumably a reasonably high socioeconomic status. These variables should be given consideration by future research as they may bias results. While helping to substantiate anecdotal opinion and the small but growing body of empirical research regarding identity and the natural environment (e.g., Hinds, 2009) and well-being (e.g., Kuo et al, 1998), there is a need for further research to use larger, and perhaps more representative, samples. This would go some way to counter critiques of this and other related research that highlight the restrictiveness of studying specific populations (e.g., groups of self-selected individuals and students) and relatively small sample sizes.

Some caution may also be necessary when interpreting the findings due to the aggregation of data across environments for the variables personal meaning, frequency of experience, and affective well-being. It may be the case that some environments are responded to in different ways, with the aggregation of data masking these differences. With the exception of personal meaning, the variables show strong interitem reliability indicating that aggregation may not be such a problem. Nevertheless, the reliability statistic for personal meaning is not strong, suggesting that personal meaning for the different environments may vary somewhat. This requires further investigation.

Another issue that requires comment is the possibility that direct experience, rather than the retrospective or imaginative processes that has been investigated here, may have differential effects or exhibit a differential pattern of results. Previous research concerned with direct natural environment experiences would seem to show, however, a similar pattern of results in terms of well-being, identity, and meaning (Eigner, 2001; Gross & Lane, 2007; Hinds, 2009), thus giving some degree of both validity and reliability to the present findings.

Finally, the present research has undoubtedly omitted variables that would have some important predictive utility: the variance explained for both prediction models, although adequate, still left

more than half of the variance unexplained. Future research should consider the literature and include other relevant predictors such as the role of aesthetics (e.g., Averill, Stanat, & More, 1998) to build on the current research and provide more complete models.

The present research suggests that a reciprocal relationship may exist between the natural environment and the people who engage with it: experience of the natural environment may be able to simultaneously promote affective well-being on the one hand and proenvironmental orientations on the other. Although the benefits to well-being of contact with the natural environment have been proposed and articulated for many years, it is only relatively recently that these ideas and anecdotes have received empirical support in terms of quantitative findings. The present article accomplishes three things. First, it contributes, in a positive way, to the small but growing research regarding the well-being benefits of the natural environment. Second, it highlights the dual nature of environmental encounters by suggesting that experience of the natural environment also positively impacts natural environmental orientations, specifically environmental identity. Finally, the present article gives quantitative credence to the use of the natural environment for practical interventions aimed at building stronger human-environment relationships and promoting more positive well-being.

### Author Disclosure Statement

No competing financial interests exist for either of the authors.

### Note

1. Corrected value for heterogeneity of variance (Levene's Statistic).

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