



# Spirituality mediates the relationship between engagement with nature and psychological wellbeing



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## ABSTRACT

Engagement with nature, through both direct sensory exposure and a sense of connectedness, has been shown to have a positive effect on psychological health; although the mechanisms mediating these effects remain obscure. Spirituality, which has been posited within ecopsychology frameworks to be experienced in and through a sense of relationship with nature, may be one such mediating variable. The aim of the present study was to determine the extent to which engaging with nature, through both exposure and connectedness, influences psychological health, and the role of spirituality in this relationship. 132 females and 58 males with a mean age of 36.8 years ( $SD = 13.1$  years) completed surveys comprising (1) the Nature Exposure Scale, (2) the Connectedness to Nature Scale, (3) the Mysticism Scale, and (4) the psychological health subscale of the WHOQOL-BREF. Nature exposure and connectedness to nature were positively associated with psychological wellbeing and greater reported spirituality. Furthermore, through the implementation of a hierarchical regression and mediation analysis, positive relationships between both nature exposure and connectedness to nature with psychological wellbeing, were significantly mediated by spirituality. It is concluded that spirituality can be an important aspect of one's experience of nature and, as a consequence, the positive effects derived from it.

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## 1. Introduction

Exposure to nature has been found to have a positive association with psychological aspects of wellbeing, including positive affect (Mayer, Franz, Bruehlman-Senecal, & Dloiver, 2009), cognitive functioning (Kaplan, 2001; Taylor, Kuo, & Sullivan, 2001; Wells, 2002; Wells & Evans, 2003), and increased self-esteem (Pretty et al., 2007). Additionally, having a sense of connectedness with nature has also been positively related with psychological health outcomes (Hennigan, 2010; Mayer et al., 2009). While some studies have examined how and why engaging with nature impacts positively on psychological processes, such as, the ability to maintain attention (Berman, Jonides, & Kaplan, 2008; Kuo, 2001), our understanding of this relationship could be enriched through further investigation.

Generally assumed by theorists within ecopsychology to be experienced in and through a sense of connectedness with nature (Fox, 1995; Roszak, 1995; Winter, 1996), spirituality may be relevant to further explaining the positive effects of nature on psychological

wellbeing. Within ecopsychology theory, development of an individual's 'ecological self' occurs in response to the experience of a broad sense of biophysical and spiritual interconnectedness to the natural environment (Bragg, 1996; Wilson, 1996). This development embodies a change in self perception, a movement beyond individualistic construal's of self, the 'I' dominant in Western psychology (Gergan, 1985; Markus & Kitayama, 1991), and leads to an "expansive or field like sense of self, which ultimately includes all life forms, ecosystems, and the earth itself" (Bragg, 1996, p. 95). With respect to ecopsychology theory, this study aims to examine the involvement of this form of spirituality in observed effects of exposure and connectedness to nature on psychological wellbeing.

The World Health Organization (WHO) defines wellbeing as an optimal state of health essentially characterized by an individual's realization of their fullest potential physically, psychologically, socially, spiritually and economically (Smith, Tang, & Nutbeam, 2006). The primary focus of the present study is on the psychological aspect of wellbeing, which implies the absence of symptoms pertaining to anxiety, depression, and general psychopathology (Murphy, Herrman, Hawthorne, Pinzone, & Evert, 2000). In addition, it entails the presence of positive emotional and cognitive functioning, an appropriate balance between positive and negative affect, and the capacity to live a full and productive life (Strauser, Lustig, & Ciftci, 2008).

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The link between the human–nature relationship and psychological wellbeing is identified by a small, robust set of studies demonstrating that exposure to nature (i.e. direct physical and/or sensory contact with the natural environment) can increase positive affect and cognitive capacity, and decrease negative mood states (Mayer et al., 2009). For example, using a longitudinal design whereby 17 low-income urban children were assessed prior and after moving to new housing, in a well-controlled study, Wells (2002) found that an increase in the amount of nature present within the home environment had a profound effect on cognitive functioning. Although these children also experienced improvements in housing quality, this explained (nonsignificantly) only 4% of the variance in post-move cognitive function scores, versus 19% of variance explained by increased exposure to the natural environment (Wells, 2002). In addition, Wells and Evans (2003) found that among 337 rural children, those with more nature near the home exhibited less psychological distress, and that proximity to nature served as a moderator to the effects of negative life events on distress. These findings were consistent with those of earlier studies by Ulrich (1981, 1984) and Ulrich et al. (1991), demonstrating that people are more relaxed and recover faster from the negative effects of stress when exposed to images of natural as oppose to built settings, and subsequently reaffirm Ulrich's (1983) Psycho-evolutionary Theory, which postulates that exposure to nature can increase the speed at which one recovers from the emotional, attentional, and physiological aspects of stress.

Similarly, among 188 residents in six low-rise apartment communities, Kaplan (1995) found that having window views of a natural setting (i.e. trees, landscaped gardens, mowed lawns) strongly predicted psychological wellbeing, attentional functioning, and residential satisfaction. The results further supported Kaplan's (1993) Attention Restoration Theory, which asserts that natural environments assist people in maintaining better cognitive focus and attention.

In addition to these reported benefits of the direct physical-sensory experience of nature, studies have also suggested that as direct exposure increases so do people begin to experience a sense of connectedness to nature, or an internal sense of feeling part of the natural environment; and that this feeling of connectedness to nature may itself also be associated with positive psychological functioning (Hennigan, 2010; Mayer et al., 2009; Nisbet, Zelenski, & Murphy, 2011). Mayer and Franz (2004) were the first to operationalize this sense of connection with nature with the Connectedness to Nature Scale (CNS), which Mayer et al. (2009) then used to explore the associations between nature exposure, connectedness, and psychological aspects of wellbeing. They reported that among 76 introductory psychology students randomly assigned to two groups, those exposed to a nature reserve reported a significantly more positive mood than those exposed to an urban area, and that these effects were partially mediated by connectedness to nature.

Expanding on these findings, Nisbet, Zelenski, and Murphy (2009) proposed a new construct, Nature Relatedness (NR), to describe an individual's connectedness to the natural environment, as well as their appreciation for nature and understanding of environmental issues. In a subsequent study using the Nature Relatedness Scale (NRS), they demonstrated that positive affect, autonomy, and personal growth, as measured using the Psychological Well-being Inventory (Ryff, 1989), were positively associated with NR (Nisbet et al., 2011). In addition, having a sense of purpose in life, and more self-acceptance were also characteristics identified by people who were more related to nature (Nisbet et al., 2011).

Despite evidence suggesting a positive impact of exposure to and connection with nature on psychological wellbeing, research exploring for the potential mechanisms that underlie this relationship is limited. The theoretical model of the ecological self

purports, that the wellbeing of both the human self and the natural world are interwoven, and that this relationship is embedded within a form of engaged spirituality (Baillie, 2003; Kaza, 1993). The study of spirituality within broadly conceived models of resilience is a growth area in psychology, with recent studies suggesting that the 'meaning-making' implied by a spiritual orientation can impact significantly on psychological aspects of wellbeing (Laubmeier, Zakowski, & Bair, 2004). As such within the theoretical context of the 'ecological self' model, spirituality may play a mediating role.

In essence, spirituality can be defined as an individual's inner experience and/or belief system (Burris, 1999), that gives meaning to existence, and subsequently allows one to transcend beyond the present context (Burkhardt, 1989). Endorsement of some form of spirituality has been consistently found to be positively related to psychological health and wellbeing (Labbe & Fobes, 2010; Revbeim, Greenberg, & Citrome, 2010). In a study of relationships between spirituality, personality and stress, Labbe and Fobes (2010) found that participants with higher ratings of spirituality, when exposed to a stressor event, exhibited lower state anger and respiration rates, and were characterized by more health-protective personality traits – extroversion, agreeableness, and conscientiousness. Among low income rural women, Gill, Minton, and Myers (2010) found that spirituality and religiosity accounted for 39% of variance in wellness, which was best explained by the specific components of purpose and meaning in life, unifying interconnectedness, and private religious practice (Gill et al., 2010).

Kirby, Coleman, and Daley (2004) explored the effects of a spiritual orientation on the psychological wellbeing of 233 older adults (>65 years). The study also aimed to evaluate the effects of frailty on wellbeing, which was measured using the Frailty Measure (Strawbridge, Shema, Balfour, Htgby, & Kaplan, 1998), and whether a spiritual orientation moderated this relationship. Results indicated that spirituality was a significant predictor of psychological wellbeing. In addition, frailty had a significant negative effect on wellbeing, while spirituality was found to moderate and reduce these negative effects.

This conceptualization of spirituality as a component of resilience is further supported by the research of Laubmeier et al. (2004), in which, among 103 patients diagnosed with cancer over a period of five years, spirituality was associated with less distress and better quality of life, irrespective of perceived life threat. In this study, it was the existential component of spirituality, as opposed to religious functioning, that accounted for the greater amount of variance in outcome variables (Laubmeier et al., 2004). These studies indicate that maintaining some form of a spiritual orientation not only brings about positive psychological health outcomes, but can also promote resilience in individuals whose physical health may be deteriorating.

As illustrated by cultures such as the Native Americans (Horesh, 1998), and Australian Aborigines (Armstrong, 2002), a strong spiritual connection with nature is an important feature of the psychology of Indigenous peoples across the world. For example, Australian Aboriginal spirituality is founded on the notion of a deep interconnectedness between all elements of the earth and the universe, whereby people, animals, plants, and landscapes are essentially interrelated (Grieves, 2009). Among developed, contemporary cultures, although quantitative empirical research is limited, there is some qualitative evidence suggesting that nature may be an initial source for people to experience a sense of spirituality (Dossey, Keegan, & Guzzetta, 2005; Lincoln, 2000; Zinnbauer et al., 1997). For example, in drawing on the voices of women who experienced wilderness as empowering, one of the distinct components explored by Powch (1994), was the spiritual healing effects of a sense of connectedness with the power of the earth. In a further study that explored the spiritual understandings of 12 Appalachian

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