Nature Connectedness, Nonattachment and Engagement with Nature's Beauty Predict Pro-Nature Conservation Behaviour

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Abstract

While research has examined factors that account for pro-environmental behaviours relating to climate warming through carbon and resource use, very few studies have investigated factors that account for behaviour that directly supports conservation of habitats and biodiversity. In particular, there remain questions as to whether nature connectedness relates to an individual's aesthetic or spiritual relationship with the objective world, or their philosophy of consciousness and selfhood. Consequently, the purposes of this study were to examine (i) the relationship between nature connectedness, engagement with nature's beauty, nonattachment and implicit theory of mind, and (ii) how each of these variables predict pro-nature conservation behaviour. A cross-sectional cohort study utilising a correlational design recruited 203 male and female English-speaking adults. Participants completed a battery of online psychometric tests that assessed each of the aforementioned variables. The data were examined using bivariate correlations and multiple regression analysis. Significant correlations were found between all pairs of variables. Furthermore, nonattachment and nature connectedness were found to be significant predictors of pro-nature conservation behaviour, while engagement with nature's beauty was of borderline significance and implicit theory of mind was non-significant. Findings provide insight into the mechanisms underlying specific psychological and philosophical outlooks that may facilitate or impair a person's inclination to actively participate in pro-nature conservation behaviours. In particular, findings suggest that practices or interventions which foster nonattachment in addition to nature connectedness may have a role in the development of effective programmes to aid nature's recovery.

Keywords: Nature Connectedness, Nonattachment, Nature's Beauty, Pro-Nature Conservation Behaviour, Dualism, Implicit Theory of Mind

Introduction

Nature is in crisis with biodiversity in decline (IPBES, 2019). Human behaviour is a key cause in the ongoing loss of wildlife and nature's recovery depends upon greater engagement in pro-nature conservation behaviours. A great deal of research has examined factors which account for pro-environmental behaviours broadly related to climate warming through carbon and resource use. However, there has been little research that examines factors that account for behaviour that directly and actively supports conservation of habitats and biodiversity. The first research in this area to use a validated scale of pro-nature conservation behaviours found they were best explained through a close and active connection with nature, measured through the psychological construct of nature connectedness (Richardson et al., 2020).

Human-nature connectedness is often viewed as having spiritual aspects regarding an individual's connection to the world beyond themselves (Nisbet & Zelenski, 2013; Trigwell et al., 2014). Some believe that there is a distinctly transpersonal or even mystical dimension to our connection with nature, and that deeper ontological questions and concepts relating to the nature of selfhood, consciousness, and their place in the world have often gone hand-in hand with pantheistic worldviews that are deeply connected to nature and natural phenomena (Deal & Bukowski, 2021; Van Gordon et al., 2018).

Various spiritual traditions from indigenous people throughout the world have involved an animism that is deeply rooted in the natural world, and where things and places are viewed as imbued with a spiritual essence or 'life force'(Nurit Bird-David, 1999). In many cultures, this animism evolved into pantheons of gods, such as those of Roman, Greek, Nordic and Egyptian civilisations, while in others, such as in Native American Indian, Shamanic and Pagan traditions, this essence is often characterised as something akin to a soul or spirit that occupies not only human beings, but all forms of life, as well as features of the

natural world. Archetypes of nature have found their way into folklore in the form of spirits or *sprites* viewed as primitive forms of consciousness imbuing, animals, plants, rivers, mountains and other natural settings, as well as the entirety of nature itself, as with notions such as *Gaia*, a hypothetical entity representing the totality of our planetary ecosystem (Varner, 2006).

This raises some interesting questions regarding whether nature connectedness relates to any particular position regarding a person's philosophy of consciousness and its relation to the objective world. The age-old mind-body problem is a crucial debate where thinkers have attempted to resolve the apparent paradox of how an inner subjective world can coexist with independent external or objective phenomena. Solutions to this problem can broadly be divided into dualist and monist perspectives. In monist perspectives, viewpoints are often adopted in which either subjective or objective frames of reference are considered primary. Physicalist (or 'materialist') positions, for example, frequently characterise consciousness as little more than an emergent property of brain processes (Davidson, 1970). Mentalist perspectives, on the other hand, reverse this relationship, placing consciousness as primary, and conceptualising the objective world as simply akin to a dream constructed out of 'mind-stuff' (Eddington, 1929).

Dualistic conceptualisations of this relationship, on the other hand, such as the one famously proposed by Descartes, assert that mental and physical classes of events are somehow ontologically distinct, but struggle to reconcile them (Atmanspacher, 2012; Benovsky, 2016; Chalmers, 2019). In the most notable and popular dualistic worldview, *substance dualism*, the human mind is viewed to be literally a "ghost in the machine" (Ryle, 1949, p. 15) – a fundamentally different order of substance coexisting with a physical body. Attempts to resolve this cartesian divide involve either a kind of interactionism by which these two levels communicate at some mysterious juncture (Popper & Eccles, 1977), or a

parallelism through which both remain perfectly synchronised through some preordained universal harmony (Lodge & Bobro, 1998). A rapprochement on these positions has been attempted through what might be viewed as a compromise wherein monism is preserved, but the ontological nature of reality is framed as a mysterious "third stuff" from which both levels arise, often referred to as dual-aspect monism (Atmanspacher, 2012). The Cartesian view where the object is seen as separate from the subject is reflected in nature connectedness through considering the extent to which nature is included within an individual's view of self (Schultz, 2002). The self in this context reflects a key construct in Western thinking, with the disembodied Cartesian self a common notion in Western societies (Bragg, 1996). With regard to the state of the natural world, Bateson (1972, p. 337) saw Cartesian dualism as a key part of the destruction of the natural world and stated that if humans continue to think in that way "it is doubtful whether a species having both an advanced technology and this strange way of looking at its world can endure". Bateson (1972) also asserted a closer relationship with nature could allow us to develop the more holistic relationship.

Important contributions on dualism can also be found within Buddhism – a system of thought based on the teachings of Siddartha Gautama over 2,500 years ago. Buddhist practise is concerned primarily with the application of spiritual and meditative principles to the understanding and transforming of suffering. In Buddhist thought, suffering (Pāli: *dukkha*) is brought about by a cycle of craving, disillusionment and pain that results from our attachment to impermanent states and things (Shonin et al., 2014). In Buddhism, *dukkha* is one of the three marks of existence; alongside this is the truth of the impermanence of all things (Pāli: *anicca*) and the truth that all things, including human beings, are devoid of an inherently existing self (Pāli: *anattā*) (Van Gordon et al., 2017). Ignorance of these truths is viewed as the primary cause of this cycle of suffering or dissatisfaction (Pāli: *Saṃsāra*). By engaging in dualistic behaviours such as grasping at things we desire and rejecting their opposites, this

cycle of suffering is perpetuated (Chah, 2011), while transcendence of this cycle involves the cultivation of *nonattachment*.

Cultivating nonattachment in the context of Buddhist practise involves a deeper meditative enquiry into the nature of all phenomena as they arise and pass within the mind. This enquiry is intended to bring about a realisation of the lack of inherent existence not only of the self but of all manifest forms, through which the duality of self and other can be undermined, thus cultivating a non-dualistic mode of being that gradually leads to *nirvana* (Van Gordon et al., 2021). This non-dualistic mode of awareness is particularly relevant to understanding consciousness, as it directly tackles the duality of subject and object. As with dual-aspect monism, this mode of experiencing the world involves transcendence of subject and object through a paradoxical "third-stuff" which encompasses and embodies these complementary (yet also contradictory) frames of reference (Van Gordon et al., 2018). The Buddhist perspective could therefore be viewed as essentially monist in this respect, and akin to pantheistic or panpsychist perspectives; here, everything is viewed as permeated by a numinous essence – both immanent yet transcendent – which embodies a quintessence of consciousness which is both the container of, yet contained by, worldly phenomena. Nonattachment therefore is a central concept of Buddhism, and since the Buddhist perspective on consciousness is essentially monist (or non-dualistic), one might tentatively hypothesise that the Buddhist notion of nonattachment might be more associated with monist rather than dualistic beliefs regarding consciousness, and that higher levels of nature connectedness would be associated with greater pro-nature conservation behaviours (Richardson et al., 2020).

Beauty has also been a topic of human thought for millennia, with Western philosophy considering beauty to be a fundamental aspect of human existence that exerts an important influence on behaviour (Kaplan, 1987). Although humanity's cultural history

contains frequent references to nature's beauty, Western philosophy has tended to focus on beauty in art rather than nature's beauty (Diessner et al., 2008). The beauty of nature is a fundamental aspect of the human relationship with the wider natural world, and research into human–nature relationships has revealed the human preference for natural scenes. More recently, beauty has been identified as a pathway to nature connectedness through its relationship with moralistic values associated with care for nature (Lumber et al., 2017). Indeed, Bateson (1972) proposed that greater connection to nature and the wider ecology depended upon aesthetic experience (see also Charlton, 2008). Although a relationship between engagement with nature's beauty and wellbeing has been established (Richardson & McEwan, 2018; Zhang et al., 2014) across Western and Eastern cultures (Capaldi et al., 2017), the link to pro-nature behaviours has received little attention – partly because psychometric scales to measure pro-nature conservation behaviours have only been developed recently (Barbett et al., 2020). However, there is some evidence that engagement with nature's beauty is related to pro-environmental behaviours (Diessner et al., 2018). Meanwhile, the Engagement with Nature's Beauty scale contains items on emotional and spiritual feelings encountered when perceiving beauty in nature (Diessner et al., 2008).

The purpose of the present study was twofold. The first was to examine the relationship between nature connectedness, engagement with nature's beauty, nonattachment and implicit theory of mind. These latter three constructs, as discussed above, are particularly relevant to human spirituality and our connection to and understanding of the world: beauty, because of its fundamental place in the human-nature relationship that influences behaviour; nonattachment, because of the deeper connection with the world that it entails, and its affinity with a non-dualistic, Buddhist worldview; and implicit theory of mind because of its profound relevance to how we conceptualise consciousness and its relationship to the world. Understanding the relationship between these constructs may shed light on some key

knowledge gaps: (a) Whether nature connectedness is associated with a dualist or monist conceptualisation of consciousness; (b) whether nonattachment or engagement with nature's beauty is aligned with either of these conceptualisations (dualist or monist); and (c) the relationship between nature connectedness, nonattachment and engagement with nature's beauty.

The second purpose of the study was to examine how measures of nature connectedness, nonattachment, engagement with nature's beauty, and implicit theory of mind predict pro-nature conservation behaviour. At a time of crisis in biodiversity loss, it was hoped that these measures might provide insight into key factors at play in the conservation behaviours required for nature's recovery, and yield insights into the mechanisms underlying factors that may facilitate or impair a person's inclination to actively participate in pro-nature conservation behaviours.

Method

Design

This was a cross-sectional cohort study utilising a correlational design.

Participants

G*Power3 (Faul et al., 2007) was used to calculate the required sample size. An estimate of 200 participants was determined based on a desired power of 0.95, a significance threshold (alpha) of 0.05, and a small-to-medium effect size (r=0.25) for a correlational design employing two-tailed tests. In total, 203 participants (123 males, 77 females and 3 'other') were recruited internationally via the *Prolific* online recruitment system; each received a payment of £2.50 following participation in the survey (mean duration 17 min 44 s). The mean age for males was 24.8 years (SD=7.63; range = 18–67) and the mean age for females was 30.5 years (SD=11.64; range = 18–70). Of these participants, 164 (80.8%) reported their

ethnicity as 'White', three (1.48%) as 'Black', 10 (4.93%) as 'Asian', eight (3.94%) as 'mixed' and 15 (7.39%) as 'other ethnic group'; three participants (1.48%) responded 'not stated'. Of the 200 participants for whom location data was available, 44 (22%) were located in Poland, 33 (16.5%) in the United Kingdom, 31 (15.5%) in Portugal, 16 (8%) in Mexico, 11 (5.5%) in the United States, 11 (5.5%) in Italy, eight (4%) in Canada, eight (4%) in Spain, six (3%) in Greece and six (3%) in Hungary; the remaining 26 (13%) were located across Australia, Chile, Czechia, Estonia, France, Germany, Latvia, Netherlands, Norway, Slovenia, South Africa and Sweden. Inclusion criteria for this study were that participants should be English-speakers aged over 18 years, who do not have psychotic symptoms, neurological conditions or a substance-use disorder.

Measures

To assess nonattachment, the eight-item short form of the Nonattachment Scale (NAS-SF) was used (Chio et al., 2018). This self-report measure assesses "release from mental fixations" (Sahdra et al., 2010) and employs a six-point Likert scale from 1 ("strongly disagree") to 6 ("strongly agree"). The scale contains items such as "I can accept the flow of events in my life without hanging onto them or pushing them away" and "I find I can be calm and/or happy even if things are not going my way". The NAS-SF has a score total in the range of 8 to 48, with higher scores indicating higher levels of non-attachment. In the current study, the NAS-SF had a Cronbach's alpha of .83.

The Engagement with Beauty Scale (EBS) is a 14-item self-report scale measuring engagement with beauty (Diessner et al., 2008). For this study, a four-item short form of the scale (EBS-4) was used. The scale uses a seven-point Likert Scale from 1 ("very unlike me") to 7 ("very like me") and contains items like "I notice beauty in one or more aspects of

nature" and "When perceiving beauty in nature I feel something like a spiritual experience, perhaps a sense of oneness, or being united with the universe, or a love of the entire world". The EBS-4 has a score total in the range of 7 to 28, with higher scores indicating a higher level of engagement with nature's beauty. In the current study, the EBS-4 had a Cronbach's alpha of .83.

The Dualism Scale (DS-26) (Stanovich, 1989) is a self-report scale measuring implicit theory of mind, specifically the extent to which the respondent believes that 'mind' and 'matter' represent distinct, qualitatively different forms of reality. It employs a five-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree") and contains items such as "The mind is a special form of energy (currently unknown to man) that is in contact with the brain and affects it" and "My consciousness will survive the disintegration of my physical body". A 27th question from the original form of the questionnaire was omitted because it was deemed too long. The resultant DS-26 form has a score total in the range of 26 to 130, with higher scores reflecting higher levels of dualism. In the current study, the DS-26 had a Cronbach's alpha of .78. In a factor analytic study of an adapted, 25-item version of the Dualism Scale, Riekki et al. (2013) reported three factors corresponding to "reflective dualism" (where mind and body are qualitatively distinct), "emergentism" (where mind and body are qualitatively distinct yet interdependent) and "monism" (where mind and body are facets of the same thing), with reliability estimates (*rho*) of .87, .82, and .75 respectively.

Nature connectedness was measured using the Nature Relatedness Scale (NR6) (Nisbet & Zelenski, 2013). The NR6 is a brief self-report scale measuring a person's "interest in, fascination with, and desire for nature contact" (Nisbet & Zelenski, 2013, p. 2). It uses a five-point Likert scale from 1 ("disagree strongly") to 5 ("agree strongly") and contains items like "My ideal vacation spot would be a remote, wilderness area" and "My connection to

nature and the environment is a part of my spirituality". The scale has a score total in the range of 6 to 30. In the current study, the NR6 had a Cronbach's alpha of .82.

The Pro-nature and Conservation Behaviour Scale short form (PROCOBS-8) (Barbett et al., 2020) is a brief self-report measure to assess behaviours that support biodiversity conservation. Items are reported on a seven-point Likert scale from 1 ("never") to 7 ("always") and the scale contains items such as "When I see litter, I pick it up" and "I vote for parties/candidates with strong pro-nature conservation policies in elections". The scale has a score total in the range of 7 to 42. In a validation study, the PROCOBS-8 demonstrated high internal consistency ($\alpha = .825$) and a very high correlation with the PROCOBS long form (r=.935; p< .001; Barbett et al., 2020). In the current study, the PROCOBS-8 had a Cronbach's alpha of .82.

Procedure

Participants were directed to a Qualtrics online survey via an online hyperlink. The survey began with an information page giving details of the study. The page detailed the purpose of the study, the requirements for participation, and policy concerning informed consent, withdrawal, and data protection, as well as contact details of the principal investigator. If the participant wished to continue, they were directed to a page in which they ticked a box to consent to take part in the study; they were also given the option to provide a unique code which would allow them to withdraw their data from the study. Once consent was given, a form was presented that requested demographic information, including age, gender and ethnicity, following which, participants were invited to complete the NAS-SF, EBS-4, DS-26, NR6 and PROCOBS-8. Participants were free to complete these questionnaires at their own pace. At the end of the survey, a debrief form was presented which explained the right to withdraw and provided signposting to Samaritans and MIND as a safeguarding measure.

Ethical approval for the study was provided by the Research Ethics Committee of the University of [Redacted], UK.

Data Analysis

Data from each of the aforementioned measures were analysed using SPSS Version 26 (SPSS Inc., Chicago, IL, USA). The data were examined using bivariate correlations and a multiple regression analysis.

Results

To investigate the relationships between the predictor items of interest (nonattachment, engagement with nature's beauty, dualism, nature connectedness) and the dependent variable (pro-nature conservation behaviour), bivariate correlations were performed between each of the variables. Means, standard deviations, skewness and kurtosis values for these variables are shown in Table 1. All skewness and kurtosis values were between -1 and 1, suggesting that scores for each variable were normally distributed and thus suitable for correlation analysis using Pearson's *r* (Gravetter & Wallnau, 2012). As illustrated in Table 2, there were significant correlations between all pairs of variables except for nonattachment and dualism.

[Table 1]

To further examine the extent to which the four variables predicted pro-nature conservation behaviour, a multiple regression was performed using the enter method. In addition to the four variables of interest, age, gender and ethnicity were also entered as predictors. The assumptions for lack of multicollinearity and independence of errors were met (VIF = 1 – 1.83; Tolerance = .55 - .99; Durbin-Watson = 1.93), as was the assumption of homoskedasticity (Breusch-Pagan = 5.09, df = 7, p = .065). A Shapiro-Wilk test confirmed the assumption that the underlying residuals were normally distributed (W = .99, p = .082), and a one-sample Kolmogorov-Smirnov test confirmed that the dependent variable, pro-nature conservation behaviour, was normally distributed (D = .062, p = .055).

[Table 2]

As shown in Table 3, the model was significant ($F(7,192) = 12.34$, $p < .001$, adj. $R^2 = .29$), with nonattachment ($t = 2.15$, $p = .033$), and nature connectedness ($t = 4.26$, $p < .001$) found

to be significant predictors of pro-nature conservation behaviour. Engagement with nature's beauty was of borderline significance (t = 1.97, p = .051).

[Table 3]

Discussion

The primary purpose of this study was to examine the relationship between nature connectedness, engagement with nature's beauty, nonattachment and implicit theory of mind. Though theories of mind have been examined and discussed extensively (Chalmers, 1997), there has been no research that we are aware of in which implicit theory of mind has been examined in relation to associated constructs relating to spirituality and with the human-nature relationship.

Because nonattachment is a central concept of Buddhism, it was tentatively speculated that since other core Buddhist concepts, such as *nirvana* and non-self, embody an essentially monist (or nondualistic) perspective, then nonattachment might be associated more with monist, and less with dualist beliefs, regarding the nature of consciousness and phenomena. Therefore, it might be expected that high nonattachment scores would be associated with lower scores on the dualism scale. However, it could also be argued that just because nonattachment is a core feature of Buddhist philosophy, it does not mean that individuals who score high on non-attachment necessarily subscribe to a Buddhist philosophical outlook or its essentially monist (or non-dualistic) outlook. Thus, a likely alternative would be that there is little or no significant correlation in this respect. Our results support this latter possibility: there was a nonsignificant relationship (r=.12; p=.09) between scores on dualism and nonattachment. There was a weak relationship (r=.26; p<.001)

between scores on dualism and engagement with nature's beauty, and a weak relationship (r=.20; p<.01) between scores on dualism and nature connectedness.

Thus, regarding, (a), the question of the relationship between nature connectedness and dualism, there appears to be a weak, but statistically significant positive relationship between these two measures. Regarding (b), whether nonattachment or engagement with nature's beauty is aligned with a dualist or monist conceptualisation of mind, the findings suggested no significant relationship between nonattachment and dualism scores, but a weak, positive relationship between engagement with nature's beauty and dualism scores. The finding of a positive relationship between a dualistic concept of mind, and appreciation of nature's beauty is an interesting finding. The association between dualism and engagement with nature's beauty might relate to the notion of beauty involving some fundamental interplay between subject and object.

Regarding (c), the relationship between nature connectedness, nonattachment and engagement with nature's beauty, there was a weak, positive relationship between scores on nonattachment and engagement with nature's beauty (r=.36; p<.001), and a weak, positive relationship between scores on nonattachment and nature connectedness (r=.30; p<.001). There was also a strong, positive relationship between engagement with nature's beauty and nature connectedness (r=.61; p<.001). This result was in line with previous findings suggesting a positive relationship between engagement with nature's beauty and nature connectedness (Diessner et al., 2013; Richardson & McEwan, 2018), and provides further evidence that noticing nature and its beauty is a route to increased nature connectedness (Lumber et al., 2017; Richardson & Sheffield, 2017).

The secondary purpose of this study – but arguably the most important in terms of the practical implications for the service of nature conservation – was to examine how these

variables (nature connectedness, nonattachment, engagement with nature's beauty, and implicit theory of mind) predict pro-nature conservation behaviour. In this respect, two main findings were evident. First, nature connectedness was the strongest predictor of pro-nature conservation behaviour scores ($t = 4.26$, $p < .001$), followed by nonattachment ($t = 2.15$, $p = .033$) and then (of marginal significance) engagement with nature's beauty ($t = 1.97$, $p = .051$), with dualism being non-significant. Though the first of these is not especially surprising, it is reassuring in that the relationship previously identified (Richardson et al., 2020) appears to be quite robust, suggesting that higher scores on nature connectedness are reflected in higher levels of pro-nature conservation behaviour. Richardson et al. (2020) found that underlying nature connectedness and engaging in simple nature activities, which help build nature connectedness, emerged as the largest significant contributor to pro-nature conservation behaviours. Further, building on the link to pro-environmental behaviours found by Diessner et al. (2018), we believe this is the first link between engagement with nature's beauty and pro-nature conservation behaviours specifically. As Diessner et al. (2018) note, appreciating beauty leads to valuing the object of beauty.

Bateson (1972) felt that the Cartesian dualism, and a world view that sees people set apart from the environment was a key factor in the destruction of the natural world, therefore one might have tentatively hypothesised that higher scores on dualism predict lower scores on pro-nature conservation behaviours; however the results of the regression analysis suggested no significant relationship. Furthermore, the finding of a small but significant correlation between dualism and pro-nature conservation scores (r=.22, p<.001), also did not agree with this prediction and suggested a more complex relationship.

The positive relationship with non-attachment is interesting. The fact that nonattachment appears to predict pro-nature conservation behaviour raises some interesting

questions about the relationship between these two variables. Due to the correlational design of this study, it is not possible to infer a definite causal role of nonattachment on the behaviours in question, however, it suggests the intriguing possibility that Buddhist practices which foster nonattachment may also promote pro-conservation behaviours, adding to the findings of Richardson et al. (2020). Future research examining the impact of Buddhist-derived interventions might also include measures of pro-conservation behaviour to examine whether such practises do indeed promote more pro-nature behaviours. Such work could inform and strengthen interventions designed around the 'Green Care Code' – to stop, look, listen and enjoy nature every day – proposed by Richardson et al. (2020).

Recommendations for practising such Buddhist non-attachment techniques in the context of deepening pro-nature attitudes and behaviours have been proposed by Van Gordon et al. (2018). An example includes using either direct observation or visualization techniques to become aware of the non-attachment properties of a given nature-based phenomenon, such as a mountain, cloud, flower, the sky, a wave or a lake. In the case of a mountain, Van Gordon et al., (2018, p. 1657) explain that while observing the mountain, "we should see that it is unfazed by the changing weather it encounters. Storms, rain, and strong winds beat upon the mountain's side, but it remains centered and calm … [The mountain] is not attached to agreeable weather and understands that, like all things, weather fronts and seasons come and go."

Van Gordon et al. (2018) explicate that to be effective as a means of cultivating non-attachment, after noticing and contemplating how the nature-based phenomenon embodies non-attachment principles in its natural environment, instead of relating to it as something separate or outside of themselves, the individual should start to see themselves as the nature-based phenomenon in question:

> "As we breathe in, we should experience that the mountain slightly expands, and as we breathe out, we should experience that the mountain slightly contracts. If we encounter turbulent winds of thoughts and feelings when visualizing ourselves as a mountain, we should remember that we are deeply rooted in the earth and should try to remain calm, centered, and stable. We can also use the mountain's altitude to survey and rise above the landscape of the mind. From this elevated position, we can observe the processes that are unfolding in the mind but we can remain unattached to those processes and understand that our mental landscape is changing on a moment-by-moment basis" (p.1657).

Though the present study has yielded some interesting findings and highlighted some potentially fruitful avenues of exploration regarding factors that may increase pro-nature conservation behaviour, it is important to acknowledge some limitations. As previously mentioned, correlation does not imply causation, and further research is needed to establish a clearer picture of the causal relationships at play among the factors under examination. The scales used in the current study were also not administered in randomised order, which may bring into play order effects. Furthermore, demographic data for this study were collected prior to administration of the scales, which may have introduced priming effects.

Conclusion

Though much has been written on implicit theory of mind – a subject that has important implications for how we conceptualise ourselves and our relationship with the world around us – the question of how this is associated with nature connectedness, pro-nature conservation behaviour and nonattachment has not been previously examined. Given the important role of nonattachment in Buddhism, and the essentially monist conceptualisation of consciousness

underpinning Buddhist thought, we hypothesised either a negative correlation between nonattachment and dualism, or else little or no correlation due to the indirect nature of the relationship. This prediction was indeed supported by the findings of no significant correlation between these variables.

The small positive correlations observed between dualism scale scores, and both appreciation of nature's beauty and nature connectedness, however, is an interesting and curious finding, as it seems to disagree with Bateson's (1972) view of Cartesian dualism being associated with a negative relationship with nature. The findings in this respect suggest a more complex relationship which may be an avenue for further exploration.

Of particular interest in terms of pro-nature conservation behaviour is the finding that nature connectedness, nonattachment and engagement with nature's beauty appear to predict scores on pro-nature conservation behaviour. There is a need to aid nature's recovery through pro-nature conservation behaviours. The biodiversity of domestic and community gardens managed by the public has a role to play, and this requires encouraging more people to engage in such actions. Previous research has shown that these pro-nature behaviours can be improved through increasing nature connectedness and engaging people in simple nature activities. The current research builds on this and suggests that Buddhist practices which foster nonattachment, and engaging people's appreciation of nature's beauty may have a role in the design of the most effective programmes to aid nature's recovery.

Declarations

Conflicts of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article.

Data Availability

The dataset for this study is available from a public repository (ResearchGate).

Ethics Approval

Ethical approval for the study was provided by the Research Ethics Committee of the University of [Redacted], UK.

Consent to Participate

Informed consent was given by all participants.

Consent to Publish

Informed consent included consent for publication of reports using data from this study.

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Table 1.

Mean, Skewness and Kurtosis values (and standard deviations) for the main variables of interest

	Mean	SD	Skewness	Kurtosis
Nature Connectedness	20.86	5.08	-.40	-.48
Nonattachment	30.91	6.97	-.24	.37
Engagement with Nature's Beauty	20.66	4.99	-.70	.11
Dualism	74.13	10.71	-.55	.78
Pro-nature conservation	26.73	10.17	.37	-.47

Table 2.

Pearson correlations (2-tailed) between the main variables of interest. The p values have been adjusted using the Bonferroni-Holm method.

	1. Nature Connected-ness	2. Nonattach-ment	3. Engagement with Nature's Beauty	4. Dualism	5. Pro-nature Conservation
1. Nature Connectedness	-	.30***	.61***	.20**	.48***
2. Nonattachment		-	.36***	.12	.30***
3. Engagement with Nature's Beauty			-	.26***	.43***
4. Dualism				-	.22**
5. Pro-nature Conservation					-

** $p < .01$, *** $p < .001$

Table 3.

Standardised regression coefficients predicting pro-nature conservation behaviour

	B	SE	β
Gender	.11	.07	.10
Age	.20	1.37	.01
Ethnicity	-1.84	1.61	-.07
Nature Connectedness	.65	.15***	.32
Nonattachment	.21	.10**	.14
Engagement with Nature's Beauty	.33	.17*	.16
Dualism	.10	.06	.10
Adjusted R^2		.29	
F		12.34	

**p<.1; **p<.05; ***p<.001*