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Nature Attachment Theory: Exploring the Human-Nature Bond Through an Attachment Theory Lens

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ABSTRACT

Several concepts exist to explain the human-nature relationship, including nature connection. This paper offers a re-conceptualisation of the human-nature bond, based on the infant-parent bond and attachment theory. As such, this paper draws upon research on attachment theory and environmental psychology to draw parallels between the two. Initially it looks at features of attachment theory, such as the critical period, the meeting of needs, proximity seeking, as well as disruption of attachment and explores the human-nature relationship literature for clues as to correspondence. Moreover, it presents practical implications of conceptualising the human-nature relationship as one of attachment, the importance of socialising agents in the building of this attachment and the detrimental effect of disruptions in the human-nature attachment process.

Keywords: nature attachment theory, nature connection, human-nature relationship

Exploring the human-nature relationship has increasingly become the focus of various disciplines, including psychology (Nisbet, Shaw & Lachance, 2020), health (Seymour, 2016) and education (Barrable, 2019a), as well as tourism and environmental research (Ives et al., 2017). Epitomised in the Biophilia Hypothesis (Kellert & Wilson, 1993), which put forward an innate drive that humans have to seek connection with the rest of nature, the human-nature relationship has been expanded upon by research on nature connection (Nisbet, Zelenski & Murphy, 2009). Nature connection research has focused on different types of connection, most prominently mind, place and experience (Ives et al., 2017), as well as inclusion of nature in self (Schultz, 2002). These models and conceptualisations provide a useful platform to explore the human-nature relationship, and have inspired countless research studies on nature connection (Ives et al, 2017).

The slightly separate but related concept of place attachment and place relationships have been a focus of research (Fried, 1963) looking at individual's attachment to a 'meaningful location' (Lewicka, 2011, p.207). Encompassing a variety of places, including the home or place of residence (Beckley et al., 2007), work spaces (Milligan, 1998) and places of recreation and leisure (Charleston, 2009). Attachment to place has been described as a basic human need (Relph, 1976) while Yi-Fung Tuan (1974) put forward the term *Topophilia*, examining distinct ideas such as the individual emotional, cognitive and mental connection to a specific place (Heimer, 2005). Moreover, place attachment has been explored through the lens of attachment theory, but with a very clear focus on experience of place (Giuliani, 2003). The theory presented in this paper goes beyond *place* and connection, and draws upon conceptualisations of Mother Nature to describe the human-nature relationship as an extension of the infant-parent relationship, modelled upon the Bowlby-Ainsworth attachment theory (Ainsworth, 1978). As such, the aim of this paper is to describe more fully this conceptualisation, by examining both attachment theory, on the one hand, and prior research from ecopsychology and environmental psychology in relation to nature connection. By drawing parallels between infant-parent and human-nature relationships, this paper aims to offer further impetus to prevent

disruptions in attachment early in development and highlight the importance of childhood in nurturing a healthy human-nature connection.

Attachment Theory

The Bowlby-Ainsworth Attachment Theory posits that early emotional bonds between infants and their primary caregivers are crucial for psychological development (Ainsworth, 1978). John Bowlby argued that attachment is an innate biological system evolved to enhance survival by ensuring proximity to caregivers during times of stress or danger. He identified four key characteristics of attachment: *proximity maintenance* (staying close to the caregiver*), safe haven* (seeking comfort when distressed), *secure base* (using the caregiver as a base for exploration), and *separation distress* (experiencing anxiety when separated) (Goldberg, Muir & Kerry, 1995).

Bowlby and Ainsworth proposed that these early relationships form an internal working model—a mental framework influencing future relationships and emotional regulation (Ainsworth, 1978). The theory was later supported by empirical research, including Mary Ainsworth's "Strange Situation" study, which identified distinct attachment styles: secure, anxious-ambivalent, and avoidant (Ainsworth, 1978). This work has significantly shaped developmental psychology, attachment-based therapies, and childcare practices across the western world.

Human-nature relationship as infant-parent relationship

A different way to conceptualise human-nature relationships is through a parallelism with the infant-parent relationship, and therefore use human attachment theory (Ainsworth, 1978) to human attachment theory. This conceptualisation was described by Jordan (2009), with a focus on the disruption of attachment and this paper aims to more fully delve into the parallels.

It should be highlighted that many cultures across the history of humankind have conceptualised our relationship with nature or earth as one of infant and mother. Indeed, 'Mother nature' or 'Mother Earth' is a phrase commonly used in a variety of cultures, including many indigenous ones. We often find the personification of nature as the life-giving mother, emphasising the nurturing qualities of the relationship between human and nature, but also a clear 'being part of' that deeply connects human and the rest of the natural world. Such examples can be found in South America, with *Pachamama* (Humphreys, 2017; Sampietro Vattuone et al., 2008) in North America as Mother Earth (Poitras, 2022), in various African cultures (Matholeni, Boateng and Manyonganise, 2020), in Australian Aboriginals and New Zealand Maori (Gallhofer et al., , 2000) but also historically, in European civilizations such as the Greeks and *Gaia* (Cashford, 2021) and *Amalur* in Basque mythology (Ortiz-Osés, 1985).

An innate drive

As per the Bowlby-Ainsworth attachment theory the bond between the infant and their primary caregiver, most commonly the mother, is innate. As such the relationship between the infant and their mother is driven by innate predispositions and behaviours (Hazan & Shaver, 1992). The behaviourist ideas of the cupboard love theory, describes a transactional relationship of mother and infant, whereby the relationship is driven by the fact that the mother feeds the child (Van Der Horst, Van der Veer & Van Ijzendoorn, 2007). Contrary to that, the Bowlby-Ainsworth attachment theory posits that the infant is hardwired and driven to emotionally bond to the mother or other primary caregiver. The innateness of such an attachment drive can be explained in evolutionary terms, and Bowlby highlighted the clear evolutionary advantage of seeking and attaining proximity to the caregiver (Granqvist, 2021). Similarly, the term *Biophilia* (Wilson, 1984) which described this innate drive to feel affinity with the natural world has underpinned a lot of the nature connection literature. More recent research has tried to establish Biophilia as an evolutionary process, with clear adaptation advantages (Barbiero & Berto, 2021), furthering the parallels between attachment to a parental figure and nature attachment.

A sensitive period

There are diverging views as to whether attachment theory includes the idea of a critical period, with some researchers suggesting that it does (McLeod, 2009) while others claiming that it does not (Sroufe, 1988). The existence of such a critical period would suggest that disturbance of attachment at that stage would have life-long effects. Empirical research into the effects of prolonged maternal deprivation in early childhood by Bowlby himself (Bowlby, 1953a) suggest that such a sensitive period exists, while later research presented by Rutter (2002) being more nuanced, with a heterogeneity of outcomes observed. In reality, such research is difficult and unethical to undertake and a lot of previous research is based on natural experiments and unfortunate circumstances such as the study of Romanian orphans (Rutter et al., 2007), with challenges in disentangling the effect of maternal deprivation from other extenuating factors. However, recent research in neuroscience and more specifically studies in developmental neurobiology suggest provides a mechanism of action to explain a *sensitive* rather than a critical period, and suggests there may indeed exist a critical period where an infant's brain is primed to create attachments with caregivers (Schore, 2017), and during which maternal deprivation, or other disturbances can have life-long consequences.

When applying this sensitive period premise to nature attachment theory, a host of indications can be found in the literature to suggest that it may exist. For example, Wells and Lekies (2006) presented strong evidence to suggest that adult's relationship to nature, including pro-environmentalism, had its roots in childhood. Other important studies trace adult relationships to nature to childhood experiences (Chawla, 1999; Ewert et al., 2005), suggesting that whether a sensitive period exists, a strong relationship/attachment to nature in childhood has an impact on the individual's relationship to nature in adulthood. It should be noted that all of these studies rely on adult retrospective self-report, and therefore have some limitations.

Another interesting point when looking and thinking about nature attachment as a developmentally sensitive process is that of adolescence. Adolescence,in general, is identified as a period of intense psychological adjustment (Ilioi & Golombok, 2015; Stocker et al., 2017) as well as the time of identity formation (Phinney et al., 1990). Individuation, the adolescent's need to assert their own identity and separate from the family, is a distinct stage of adolescence (Allison & Sabatelli, 1988). As such, a healthy and desirable separation – based on a strong and enduring connection – can be observed in adolescence (Ponappa et al., 2014). A similar and corresponding separation can be observed in the nature connection literature at this age, commonly referred to as the 'adolescent dip' (Keith et al., 2021; Price et al.,2022). Drawing a parallel between child-parent and human-nature attachment may be able to explain some of this dip.

Disruption – maternal deprivation and nature deprivation

Following from above, maternal deprivation and other disruptions in the building of a healthy attachment bond with their putative long-term effects, can be mirrored in the human-nature relationship too. Nature deprivation, or in Richard Louv's term of 'nature-deficit-disorder' (2008). While not a recognised psychological disorder, separation from nature, both in experiential and affective terms, can have an impact on psychological wellbeing as well as cognitive outcomes (Driessnack, 2009). On the contrary, regular nature exposure in childhood has been linked to a variety of positive developmental outcomes (Islam et al., 2020) with some studies putting forward a sensitive period for such exposure (Engemannet al., 2018). In this latter study the researchers identify that "Accumulated green space from birth to age 10 also showed a stronger association with schizophrenia risk than green space exposure at any given age" (Engemann et al., 2018, p. 146). Nature deprivation, therefore, and the lack of opportunity to develop a relationship with the natural world at an early age, can lead to a variety of adverse psychological outcomes in adulthood (Larson et al., 2010). Nature attachment theory should, therefore, drive early childhood sustained and meaningful engagement with nature, with a focus on building positive attachments (Barrable, 2019b). Accepting nature attachment theory could be the basis of moving our relationship with nature from a transactional one, where we are solely focusing on being the recipients of nature's resources and benefits, to a more relational one, based on reciprocal care and affection. Drawing from literature from nature connection (Lumber, Richardson & Sheffield 2017), ways to achieve a deeper and less transactional relationship can be through contact, emotion, compassion, meaning and beauty. These pathways mirror a closeness and a reciprocity seen in relationships of parent-infant.

More corresponding characteristics of infant-parent and human-nature attachment

Meeting needs

Bowlby (1953b) highlights the need for a 'warm, intimate and continuous relationship' (p. 43). Being responsive to and meeting the infant's needs in a consistent manner is key to the building of a secure infant-parent attachment bond (Schore, 2001) and this can find correspondence in the human-nature attachment bond too. Nature can meet many of the physical and psychological needs of the individual, including physical needs for water and food, shelter and safety, recreation and relaxation. However, nature's ability to provide for our basic needs goes beyond the merely physical and into the psychological realm too (Landon et al., 2021). In this way our relationship to nature moves away from the purely transactional, as described in the cupboard love theory and into a deeper relationship as is described in attachment theory, including one with cognitive, affective and experiential elements. Finally, this deep psychological need to build an attachment to nature, has been put forward by previous literature, where the authors present strong arguments on a nature relationship as a basic psychological need for humans (Baxter & Pelletier, 2018; Hurly & Walker, 2019).

Proximity in attachment theory

Proximity seeking and proximity maintenance are key features of attachment theory (Lamb, 1976). As such, in a securely attached relationship the infant seeks to be close to the parent and exhibits behaviours that promote proximity maintenance. In this instance too we can draw a parallels with human-nature relationships, and examine the effect that different attachment styles, developed in childhood, may have to our adult relationship to nature, and our seeking of proximity to the natural world. For many, feeling a closeness to the natural world (in the cited study operationalised as nature relatedness) is positively associated with seeking to be close to and in natural spaces (Nisbet et al., 2009). Moreover, and rather unsurprisingly we can see that people who are disconnected from the natural world, possibly due to disrupted attachment processes or nature deprivation in childhood, do not enjoy spending time in it (Barrable & Booth, 2022; Barrable et al., 2024).

Implications

Looking at our relationship to nature through the lens of attachment theory is not merely an academic exercise, but should have direct implications as to the importance we place on supporting our own and our children's innate drive to attach to the natural world. It can further motivate policy and practice to realise the potential of all children to build an attachment to nature early on in their lives. We need to further examine, through empirical studies, the mechanisms by which young children can form secure attachments to the natural environment, including through a framework based on attachment theory, proximity and the meeting of needs. Previous research on nature connection in childhood tends to look at leisure or educational activities, occasionally examining specific environments (Barrable & Booth, 2020a). However, through the lens of nature attachment, research needs to go further than examining activities and environments, and look closely at the meeting of needs: physical and psychological. In fact, nature attachment theory may explain why different ways to engage with the natural world may be more effective. For example, forest school, which can support the individual's basic psychological needs (Barrable & Arvanitis, 2019) has been found to be effective in building a closer relationship to nature (McCree et al., 2018). Other types of close interactions and interaction patterns, and their building of attachment should be examined too (Kahn, Weiss & Harrington, 2018). The potential for a critical period in early childhood should also be examined.

The role of the socialising agent in this endeavour for attachment should not be minimised. Parents, guardians and educators are gate-keepers to children's relationship with the natural world, and as such need to realise children's innate potential towards nature attachment. Previous studies recognise the close association between a positive parental relationship to nature and that of the child (Barrable & Booth, 2020b; Passmore et al., 2021; Wu et al. 2023) over and above contact or proximity.

Further to promoting attachment in early childhood, attention should also be focused on disrupted attachment and its impact. As such, studies of disconnected individuals (Barrable & Booth, 2022) can offer insights into different types of attachment, and how the disruption of attachment in childhood can impact the future relationship with the natural world, turning it into a purely transactional relationship, or one of avoidance. Avenues to mitigate such disrupted attachment in childhood should also be explored.

Beyond a transactional relationship with nature to nature attachment

Conceptualising our relationships to nature as one simply predicated on needs that nature meets, such as the benefits of nature contact on our physical and psychological health (Chawla, 2015; Frumkin et al., 2017) misses an opportunity to explore our deeper attachment to the natural world.

Just as challenging the 'cupboard love' theory led to the development of attachment theory (Grossmann et al., (2013) and a deeper connection to our caregiver, this paper urges professionals in psychology, education and beyond, to go beyond a transactional relationship with the natural world, and to seek the formation of a life-long attachment, starting in childhood. Using concepts and tools designed for attachment theory, we can support children's innate drive to attach to the natural world, and promote secure attachments from an early age, thus shaping human-nature relationships into the future. Moreover, going beyond nature connection, as is broadly conceptualised in the literature (Tam, 2013) and re-conceptualising our relationship to nature as that of infant-parent, as well as utilising anthropomorphic elements, especially those associated to the parent or mother, can re-orient our approach to pro-environmental behaviours (Liu et al., 2019) in that of mutual care and respect.

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