Reciprocal Ecotherapy: A Qualitative Exploration of Ecocentric Perspectives and Mutualistic Wellbeing in the Ecotherapies

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Alienation from nature may be deeply implicated in the global ecological crisis and its associated deleterious wellbeing impacts. This highlights the importance of research that focuses on addressing and improving human connectedness with nature. Our study aimed to investigate the human-nature connection by exploring the concept of human-nature wellbeing reciprocity in the context of ecotherapy theory and practice. A qualitative research methodology was employed and grounded in a critical realist ontology and epistemology. Participants were seven ecotherapy practitioners. Data were collected through semi-structured interviews, analysed using thematic analysis, and explored with reference to social and biological science, First Nations, ecological land management, and other literatures. Analysis constructed three themes: (1) Human-Nature Connection is Multidimensional, (2) Ecotherapy May Initiate Transactional Reciprocity, and (3) Ecotherapy May Facilitate Co-becoming with Nature. The findings suggest that the human-nature connection can be understood in diverse but ultimately compatible ways offering a multidimensional and ecocentric perspective on human-nature wellbeing. Furthermore, human-nature wellbeing reciprocity may influence ecotherapeutic outcomes and may be harnessed through ecotherapeutic practices. This research contributes to the conceptual articulation and practical application of ecotherapeutic approaches that empower mutually healing engagements of humans with nature.

Keywords: ecotherapy, human-nature connectedness, reciprocity, wellbeing

An impressive and growing body of evidence now demonstrates the health and wellbeing benefits of human contact with nature (Harper et al., 2021). These benefits may extend to nature itself, as connectedness with nature is associated with pro-environmental attitudes and behaviours (Zylstra et al., 2014). However, modern, urban, technologically dominated lifestyles diminish opportunities to interact with nature and may be reinforcing a cycle of deteriorating health and wellbeing, disaffection toward nature, and loss of motivation to care for and protect the natural world (Soga & Gaston, 2016). Thus, alienation from nature may be deeply implicated in the global ecological crisis and its associated deleterious public health impacts (Büscher, 2022; Thoma et al., 2021). These serious implications highlight the importance of research that focuses on understanding and enhancing the relationship between humans and the rest of nature—the *human-nature connection* (Ives et al., 2017).

Unfortunately, research on this topic lacks dedicated constructs, frameworks, and settings; consequently, it is fragmented by a plurality of disciplinary and conceptual perspectives, methods, and language, compromising the consolidation of findings and their practical applications (Ives et al., 2017). To address this issue, it may be necessary for researchers and practitioners to work beyond traditional disciplinary, and even cultural, boundaries (Ives et al., 2017). An effective approach may involve working across the social and environmental sciences (Cornell, 2010; Myers, 2017).

Ecopsychology is a synthesis of ecology and psychology that emerged in response to this need for interdisciplinarity (Roszak et al., 1995). Ecopsychology is more than an application of psychological strategies to environmental problems; rather, it is a transformation of psychology that re-values human physical, emotional, and spiritual bonds with the natural world that are marginalised within a mechanistic worldview and renewed by direct and experiential contact with nature (Davis & Canty, 2013).

Adjacent fields (e.g., environmental psychology) have tended to conceptualise 'people and their physical environment' in terms of a discontinuous subject-object dualism (Fleury-Bahi et al., 2017). By contrast, ecopsychology recognises both the ecological fact and the psychological experience of human interconnectedness with a living and aware web of life, ultimately calling for radical shifts in worldview and practice to address convergent eco(psycho)logical crises by conceptually reintegrating mind and matter—psyche and nature (Fisher, 2013). This project confounds Cartesian distinctions between human and nature, replacing them with a language and an ethic of mutuality and connectedness (Suchet-Pearson et al., 2013).

The applied or therapeutic practice of ecopsychology, and the way in which practitioners incorporate the natural world into a therapeutic model, has been labelled *ecotherapy* (Delaney, 2020). Buzzell and Chalquist (2009) describe ecotherapy as 'an umbrella term for nature-based methods of physical and psychological healing [that] addresses the critical fact that people are intimately connected with, embedded in, and inseparable from the rest of nature' (p. 70). A diverse generation of ecotherapeutic approaches has emerged and grown in recent years, including outdoor therapy, nature-based therapy, wilderness therapy, adventure therapy, animal-assisted therapy, garden and horticultural therapy, forest therapy, and surf therapy, among others (Harper & Dobud, 2020). The common factors unifying the field are a recognition of human-nature kinship, the centrality of experiential and embodied interaction with nature, and practices aimed at human-nature reintegration and healing (Davis & Canty, 2013).

The ecotherapies are now supported by an abundant evidence base linking their various approaches to comprehensive beneficial health and wellbeing outcomes across a broad spectrum of populations (Corazon et al., 2019; Coventry et al., 2021). Recent research indicates that ecotherapies may even improve the symptoms of clinical mental health issues such as anxiety and depression (Yeon et al., 2021), PTSD (Hediger et al., 2021), and schizophrenia (Lu et al., 2021).

However, the history of human-centred use of nature is a cautionary tale; such usage has tended to over-exploit and degrade the natural systems that support the being and wellbeing of all life on earth (Buzzell, 2016). Indeed, ecopsychologists have expressed concern that some approaches to ecotherapy may promote instrumental orientations towards nature that inadvertently perpetuate the alienation at the core of the ecopsychological crisis (Buzzell & Chalquist, 2009). Plesa (2019) has argued that attention must be focused on the mentality behind ethical and unethical engagements with nature. Similarly, Fisher (2013) recommends expanding the scope of ecotherapy by asking: 'In what ways and to what extent does a given practice address the roots of the ecological crisis?' (p. 221). Buzzell (2016) has called for approaches to ecotherapy that are grounded in an understanding of *human-nature wellbeing reciprocity*—the ecological inference that human-nature wellbeing is fundamentally reciprocal.

Animal-assisted therapies present opportunities for humans to experience and initiate reciprocity with the natural world. Gorman (2019) explored human-nature wellbeing reciprocity in the context of care farming (i.e., community farming engaged in intentionally therapeutic agricultural paradigms). They found that in addition to healing opportunities for both humans and animals, care farming facilitated human empathy with nature by providing

opportunities to critically engage with the subjectivity of farm animals (Gorman, 2019). The study concluded that while human-animal relationships were often human-centric, they could nevertheless result in reciprocal, though not necessarily equal, wellbeing benefits (Gorman, 2019).

However, by relegating non-human animals to a state of therapeutic utility, animalassisted therapies also have significant potential to be exploitative and damaging to the animals involved (Bradshaw, 2009). Taylor and Carter (2020) qualitatively explored human-animal relations within the context of dolphin-assisted therapy. These authors acknowledged that dolphin-assisted therapy could not be morally justified with captive dolphins, and instead addressed the circumstances of human-dependent former entertainment and research dolphins 'recommodified' (p. 77) as therapy animals (Taylor & Carter, 2020). While, this study concluded that the therapy dolphins were 'not purely commoditised' (p. 78) but rather valued as members of a mutually beneficial interspecies community (Taylor & Carter, 2020), the objectifying language suggests a disregard for reciprocity.

Human-nature wellbeing reciprocity may also be a feature of conservation activities. In addition to environmental wellbeing, active conservation can improve human wellbeing, most noticeably through the effects of outdoor physical activity (Rosa & Collado, 2019). An experimental study that allocated participants to either a beach cleaning, rock pooling, or walking activity found that all three coastal activities were associated with positive mood and pro-environmental intentions (Wyles et al., 2017). Interestingly, the beach cleaning activity was associated with perceptions of meaningfulness and higher marine awareness (Wyles et al., 2017). Unfortunately, research into the human wellbeing benefits of conservation activity is scarce.

The integration of human-nature wellbeing reciprocity into ecotherapeutic approaches may be most comprehensively developed in the First Nations literature relating to land-based healing and wellness. Indeed, Aboriginal elders insist that reconnecting people with land is a preferred mode of healing (Gooda & Dudgeon, 2018), and Indigenous Australian wellness models have long recognised *connection to country* and *caring for country* as central dimensions of identity, healing, and wellness (Gee et al., 2014).

Taylor-Bragge and Whyman (2021) explored the symbiotic links between the health of Australian Aboriginal peoples and their lands by extracting common themes from case studies of Aboriginal land management programs. The researchers reported that Aboriginal land management programs were linked to broad, positive wellbeing outcomes for people, communities, and country (Taylor-Bragge & Whyman, 2021). Similarly, Kingsley et al. (2009) explored the health and wellbeing impacts of caring for country with traditional custodians and Indigenous environmental workers. They found that caring for country benefited Indigenous participants by building self-esteem, fostering self-identity, maintaining cultural connection, and enabling relaxation and enjoyment through contact with the natural environment (Kingsley et al., 2009).

The relationship between caring for country and Indigenous wellbeing is also supported by quantitative research. A cross-sectional study of 298 Indigenous residents of an Arnhem Land community investigated caring for country and its connection with health outcomes relevant to excess Indigenous morbidity and mortality (Burgess et al., 2009). The analysis revealed significant and substantial relationships between caring for country and health outcomes (e.g., body-mass index, psychological distress, five-year cardiovascular disease risk). While a causal direction was not determined, the researchers concluded that caring for country appears to deliver both ecological and human health benefits (Burgess et al., 2009).

Thus, Indigenous caring for country, conservation activities, and animal-assisted therapies each may harness human-nature wellbeing reciprocity. Nevertheless, the concept of

human-nature wellbeing reciprocity and the ways that it might be facilitated in ecotherapeutic practice remain almost entirely unexplored in the empirical literature.

Rationale

Critiques of ecotherapy have called for a more comprehensive integration of the wellbeing of nature into ecotherapeutic approaches (Buzzell, 2016; Fisher, 2013). A more thoroughly ecological ecotherapy might emerge from an explicit consideration of reciprocal interactions between human wellbeing and that of nature.

In addition, despite robust evidence of beneficial outcomes, ecotherapy lacks comprehensive theoretical articulation, particularly regarding the role or contribution of nature, leaving the field without an explicit theory of change (Harper et al., 2021). While some researchers have indicated biomedical causal mechanisms (Frumkin et al., 2017), others have pointed to the complexity inherent in nature and the human-nature connection (Harper et al., 2021). An account of human-nature wellbeing reciprocity may contribute to an understanding of the healing pathways underlying ecotherapeutic outcomes.

Finally, the language of reciprocity may provide a more appropriate and compelling language with which to understand and express the human-nature connection (Saunders, 2003). Such an understanding may empower an approach to nature that goes beyond management, conservation, or even stewardship, instead reflecting symbiotic ethical relationships among all living organisms (Plesa, 2019). Indeed, Fisher (2013) argues that a truly ecopsychological ecotherapy would generate radical praxes transitional to a society capable of ecocentric healing.

Research Aim and Questions

This study explored the concept of *human-nature wellbeing reciprocity* with the aim of generating insights that may inform the theoretical and methodological development of ecotherapy. The study was guided by three broad research questions:

- 1. For context, what is the human-nature connection?
- 2. What is the role, if any, of reciprocity in ecotherapeutic outcomes?
- 3. How can reciprocity be harnessed in ecotherapy practice?

Research Design

Method

Qualitative research aims to explore how people experience and make sense of the world in order to describe, and possibly explain, phenomena (Willig, 2013). This study is designed to investigate and describe the quality and experience of human-nature connection by identifying and analysing recurring patterns of experience and sensemaking among ecotherapy practitioners. Therefore, a qualitative research method was employed.

Ontology & Epistemology

This study seeks to generate knowledge that captures the reality of the human-nature connection and the role, if any, of human-nature wellbeing reciprocity in ecotherapy outcomes. Thus, it is assumed that the human-nature connection exists and can be described; however, the role, if any, of reciprocity is not assumed. This ontological position is consistent with a realist ontology, which maintains that a real world of structures and objects with cause-effect relationships exists independently of our perceptions and meaning-making (Willig, 2013).

However, it is also assumed that participants' statements are subjective constructions and not a direct reflection of reality, though they may provide a level of insight. Moreover, it is acknowledged that the data will be interpreted by the researcher to identify, explore, and construct an understanding of the factors and forces that may be involved. It is therefore understood that the subjectivity and judgemental rationality of the researcher will also be critically involved in the construction of the research outcomes (Quraishi et al., 2022). These assumptions are consistent with epistemological relativism, which accepts that observation and description are necessarily selective, and that perception and understanding of reality is only partial (Willig, 2013).

Thus, the study integrates ontological realism, epistemological relativism, and judgmental rationality—the 'holy trinity' of critical realism (Bhaskar, 2010). This approach is recommended for its balanced synthesis of the realist ambition to better understand reality, acceptance that our critical but subjective interpretation of reality is necessarily limited, and recognition of the inherent difficulty of describing complex phenomena in open systems (Cornell & Parker, 2010).

Ethics

Ethical approval to conduct research with human subjects was sought and granted through the Charles Sturt University Human Research Ethics Committee under approval number H22131.

Recruitment

Potential participants were identified by their professional and advertising material, as well as by word of mouth, and invited to participate by email. General invitations were also sent to professional associations and interest groups related to ecotherapy. In addition, recipients were requested to forward invitations to others who may be eligible. The two criteria for eligibility were: (a) self-identify as having at least one year's experience engaged in an ecotherapeutic practice; and (b) be aged eighteen years or over.

Participants

Seven participants were recruited including four Social Workers, two Psychotherapists, two Indigenous Knowledge Holders, one Clinical Psychologist, and one Outdoor Educator (some participants identified with multiple roles). Ecotherapeutic experience ranged from one year to 15 years. The specific approaches and modalities employed included wilderness expedition therapy, bush adventure therapy, nature-based therapy, rewilding, nature connection facilitation, walk-and-talk therapy, caring for country, and equine-assisted therapy. The participants' clients were diverse, but commonly included young people and others with clinical diagnoses (e.g., ASD, ADHD, anxiety, depression, schizophrenia).

Data Collection and Analysis

Semi-structured interviewing was chosen as a data collection method due to its compatibility with the kind of information being sought. To invoke and exemplify ecopsychological principles, interviews were conducted face-to-face in convenient spaces incorporating natural elements (e.g., a foreshore, a park, by a window with a view of a garden, by a river). Where face-to-face interviewing was not practical (e.g., due to prohibitive distances) interviews were conducted via video call. Each interview was held for approximately 60 minutes, audio recorded, and transcribed. Participants were given the opportunity to review,

correct, clarify, and/or expand upon their transcripts. One participant responded with minor clarifications.

The data were analysed inductively using thematic analysis. Thematic analysis is an accessible and theoretically flexible qualitative analytic method of identifying, analysing, and describing patterns in data (Braun & Clarke, 2006). The most salient and well-developed constellations of meaning identified at the semantic level were collated into themes representing some level of patterned response in the data relating to the research questions. Themes were explored through psychological, ecological, land management, theological, Indigenous, and systems perspectives. This approach supported a holistic analysis of the material, consistent with an ecopsychological research paradigm. To engage safely with issues of particular relevance to Indigenous peoples (Dudgeon & Walker, 2015; Jones & Segal, 2018), we have been guided by the notion of 'both ways' or 'two-eyed seeing', which stresses the importance of viewing the world through an eye using the strengths of Indigenous worldviews and with the other eye using the strengths of Western worldviews, and is akin to transdisciplinarity (Bartlett et al., 2012).

Critical Language Awareness

Alienation from nature may have its roots in fundamental cultural assumptions and linguistic conventions that cannot be adequately addressed, much less overcome, within the scope of this article. Indeed, the discussion of our relationship with nature requires distinct linguistic categories that reinforce the impression of separation. As a result, diverse, competing conceptual repertoires have emerged within the nascent ecopsychological literature, while conflicting and overlapping language exists in adjacent disciplinary and cultural fields (Ives et al., 2017).

One particularly troublesome example is the word 'nature' itself, which can be understood as both inclusive of, and in contradistinction to, 'human'. Unfortunately, the available alternatives appear to have their own limitations. For example, nature appears to have a non-physical dimension (Kamitsis & Simmonds, 2017) that is not well captured by 'environment', 'earth' or 'biosphere'; ecopsychological neologisms such as 'more-than-human world' (Abram, 2013) are marginal and cumbersome; and while arguably cognate, the Aboriginal English term 'Country' has sensitive cultural associations (Dudgeon & Walker, 2015; Suchet-Pearson et al., 2013).

While a more nuanced, relational, and non-dualistic terminology and discourse may be desirable, the English language, with its reliance upon dualistic categories and linear relationships, may simply be poorly suited to the discussion, particularly given the spiritual/transpersonal and the complex/multidimensional ontologies evident in the subject matter and findings. Nevertheless, the term 'nature' is preferred here as it is familiar and commonly employed in the ecopsychological literature and fields of practice, though it is usually left undefined (Ives et al., 2017). 'The rest of nature' is intended to refer to nature excluding humans, and 'human-nature' is used to indicate the overlapping zone shared between emphasising humans and the rest of nature. Moreover, by that human connectedness/relationship is with rather than to nature, it is hoped that an ecocentric sense of nature's subjectivity is conveyed. For further contextualising analysis, see *Theme 1*.

Results and Discussion

Three primary themes were constructed from the data analysis: (1) Human-Nature Connection is Multidimensional, (2) Ecotherapy May Initiate Transactional Reciprocity, and (3) Ecotherapy May Facilitate Co-becoming with Nature. In Theme 1, the essence of the human-nature connection is discussed. Potential pathways of human-nature wellbeing

Theme 1: Human-Nature Connection is Multidimensional

Theme 1 addresses participants' conceptualisation of the human-nature connection and is comprised of four subthemes: (1.1) Interpersonal Relationship, (1.2) Ecological Interdependence, (1.3) Transpersonal Self-Identity, and (1.4) Complex Intra-action. These conceptualisations are outlined, and their implications are discussed.

Subtheme 1.1. Interpersonal Relationship

The human-nature connection was characterised as an interpersonal relationship, with nature described as a therapeutic partner, a family member, a teacher, and a transpersonal other. Participants cautioned that the objectification of nature conflicts with this conceptualisation and may consequently harm the relationship.

It's a relationship between the therapist—nature; the facilitator—the psychologist/social worker; and the person. (Dora)

[Horses] are colleagues. They're not there to be used [...] In the horse world, people use horses. They're like a motorbike. (Cali)

Respect is a really big thing. If you don't respect the plant, if you don't respect nature, then you don't have a relationship. (Dora)

This view resembles ecofeminist conceptualisations of the human-nature connection. For example, Mitten (2020) noted that humans may relate to nature as an equal, a colleague/cotherapist, or a partner in treatment; an often-feminine cosmic caregiver, divine being, or supernatural force (e.g., Mother Nature); or, by contrast, as a nuisance or opponent to be overcome (e.g., by 'conquering' a mountain). This perspective similarly echoes Indigenous notions of connection to country: 'People talk about country in the same way that they would talk about a person: they speak to country, sing to country, visit country, worry about country, feel sorry for country, and long for country' (Rose, 1996, as cited in Burgess et al., 2009, p. 1).

Ecofeminism also observes parallels between human-human and human-nature relationships, highlighting correspondences between the domination and exploitation of both nature and women (Roszak, 1992). Moreover, Mitten (2017) argued that human attachment relationships resemble attachments with nature, which each have comparable influences on personal and interpersonal functioning. Pompeo-Fargnoli (2018) observes further parallels between relationships with nature, self, and the spiritual world. The essence of this relational dynamic is summarised by Xylo.

If we have a healthier relationship with nature, then we'll have a healthier relationship with ourselves. And if we have a healthy relationship with ourselves, we'll have a healthier relationship with nature too. (Xylo)

Understanding the human-nature connection in terms of *Interpersonal Relationship* appears to align with both ecofeminist and Indigenous stances and suggests that nature can be related to as an interpersonal other. Moreover, the style of relationship formed with nature may reflect and influence the quality of our other relationships.

Subtheme 1.2. Ecological Interdependence

Participants conceptualised the human-nature connection as being embedded within the broader network of relationships that constitute a living whole. The functional interdependence of humans and nature was emphasised.

Everything is interconnected. Everything is relationship. We're not separate from the natural world. (Dora)

That gum tree has a relationship with that sheoke which has a relationship with all of these species. It's not just a monoculture where there's just red gum. It's a diverse ecosystem. That little honeyeater has a relationship with every species in this, and is dependent on it for its existence, as it is dependent on us. (Erem)

The standard view in biology defines ecosystems not only by their constituent parts but by how those parts are connected and interact (Estes et al., 2013). However, this view neglects the ways in which we simultaneously create and are created by our environment (Egmose et al., 2021). A more thoroughly ecological view highlights the radical ontological interdependence of organisms, and indeed all phenomena, and hence the absence of the inherent existence of either subject or object, organism or environment (Sharma, 2015). Rubi and Mell used biological metaphors that demonstrate this interdependence.

We can't be separated from the country we're on [...] We're born in the womb, but nutrients come in that feed the foetus that then grows into a newborn baby. That cycle of everything depends on everything. (Rubi)

I think it's a little bit like saying: 'Oh, this finger that's been severed from the hand, how would it benefit the finger, and how would it benefit the hand, if we sewed them back together again?' We weren't designed to be functioning separately. (Mell)

Understanding the human-nature connection in terms of *Ecological Interdependence* accords with an ecological perspective that emphasises the interconnection, interaction, and radical ontological entanglement of parts and whole.

Subtheme 1.3. Transpersonal Self-Identity

Participants conceptualised the human-nature connection in terms of a transpersonal self, identifying personally and collectively with nature-as-a-whole (e.g., 'earth', 'biosphere', 'cosmos', 'spirit'). All participants stated categorically: 'We are nature' and referred to nature as self.

On a spiritual level, [ecotherapy] reconnects us to our authentic self. (Dora)

We didn't come to the earth; we came out of the earth. And we can consciously choose to return to ourselves. (Rubi)

Ecopsychologists similarly describe the entanglement of self and nature as a transpersonal self-identity that dissolves or transcends human-nature boundaries (Davis & Canty, 2013). Roszak (1992) introduced the concept of the *ecological unconscious* which links the individual's psyche to that of the living world. Similarly, Fisher (2019) understands the

The transpersonal quality of the human-nature connection was also associated with a deeply felt intuitive knowing.

We are nature. Our view is, and our knowing is, we are the spirit, we are the earth, we are nature. (Erem)

We're the cosmos discussing itself right here, right now on this park bench. I don't even believe that; I know that. I feel it. (Rubi)

Kamitsis and Simmonds (2017) similarly found that ecotherapy practitioners conceptualise the human-nature connection as spiritual in essence. The associated expansion of identity is discussed by Fisher (2013) who likens the experience to a process of psychospiritual growth into alignment with ecological realities.

In this way, the *Transpersonal Self-Identity* conceptualisation of human-nature connection, and its associated psychospiritual experience, parallels the notion of self in transpersonal psychology wherein humans and the rest of nature are understood as a transpersonal whole (Davis, 2013).

Subtheme 1.4. Complex Intra-action

Participants rejected a simple dichotomy of humans and nature. While relying on semantic distinctions (e.g., using concepts like 'environment', 'natural', 'external,' 'outside,' 'non-human', 'organic', 'natural world', 'wild nature', 'unnatural', and 'the human sphere'), they nevertheless affirmed a holistic stance overall.

It's tricky, when we think about nature connectedness, because we have one planet, one universe, and everything that we consider unnatural still comes from what was naturally here. (Euca)

If you're being fed by nature, and being clothed, and housed by nature, being warmed by these entities and aspects of nature, then the boundary between the us—the human sphere—and what goes on elsewhere [...] that starts to blur a little bit more. (Mell)

The apparently contradictory quality of the human-nature connection may nevertheless be consistent with complex systems theory, wherein many entities are understood to embody contradiction in their simultaneous position as both wholes and parts of larger wholes (Allen & Giampietro, 2014). However, this conceptual move causes such entities to become undefinable (Allen & Giampietro, 2014). Thus, the difficulty experienced when discussing the human-nature connection may be a function of its complex multidimensionality. Highlighting the limitations of English when discussing this complexity, Erem nevertheless demonstrates a synthesis of the *Interpersonal Relationship*, *Ecological Interdependence*, and *Transpersonal Self-Identity* conceptualisations of human-nature connection.

We're sitting here now with the blood running through our veins of mother earth—the river. (Erem)

The *Complex Intra-action* conceptualisation also appears to be consistent with Indigenous Australian notions of country, which consists of people, animals, plants, minerals, waters, and dreamings in co-constitutive relationship. Rose (2005) describes an Indigenous philosophical ecology that recognises a 'mutually life-enhancing dynamic [...] sustained by

synergistic flows of benefits through time, living things, and place' (p. 301). Indeed, as Rose (1996) asserted, 'Country is multi-dimensional' (as cited in Burgess et al., 2009, p. 1). Accordingly, Dora and Rubi note the relevance of Indigenous ways of knowing and being in ecotherapy practice.

Part of reconnecting back to nature and doing nature-based therapy is understanding Indigenous ways of being and doing. (Dora)

I focus on Indigenous approaches because I think that's a higher priority for practitioners, particularly for Australian-based practitioners. It's not just about right practise, but right state of being. (Rubi)

In summary, the *Human-Nature Connection is Multidimensional* theme constructs participants' views on the human-nature connection, which while potentially undefinable, may feature interpersonal, ecological, transpersonal, and complex qualities, broadly aligning with ecofeminist, ecological, psychological, complex systems, and Indigenous theories. Via *Complex Intra-action*, the *Human-Nature Connection is Multidimensional* theme permits a holistic synthesis of the *Interpersonal Relationship*, *Ecological Interdependence*, and *Transpersonal Self-Identity* subthemes.

This theme describes the context within which human-nature wellbeing reciprocity is assumed to function. Reciprocity may evolve from, or be influenced by, the human-nature connection conceptualisation adopted; for example, reciprocity experienced in human-nature relationships may reflect or be reflected in other interpersonal relationships (Pompeo-Fargnoli, 2018). Moreover, certain conceptualisations (e.g., nature as a partner, system, or transpersonal self) contrast with subject-object conceptualisations of nature (e.g., nature as a commodity, drug, or mechanism), with potentially contrasting influences on ecotherapeutic outcomes. Human-nature wellbeing reciprocity may also be understood, from the transpersonal perspective, as the earth caring for itself, as asserted by Dora:

We're caring for self. If nature's us, then we're self-healing. (Dora)

Clinebell (1996) similarly argued that caring for the earth was 'enlightened self-interest' (p. 9). In addition, wellbeing may emerge through complex multidimensional intra-actions (Egmose et al., 2021; Sharma, 2015).

This theme also highlights the confounding influence of the English language and dualistic conceptual categories. More appropriate models of the human-nature connection and wellbeing reciprocity may therefore draw from complex systems theory and Indigenous ways of being and knowing.

Theme 2: Ecotherapy May Initiate Transactional Reciprocity

Theme 2 describes a possible pathway of human-nature wellbeing reciprocity characterised as an exchange of wellbeing benefits. However, participants indicated discomfort with the potential consequences of this understanding and questioned its compatibility with ecotherapy.

Participants consistently affirmed that reciprocity was a feature underlying ecotherapeutic outcomes.

You care for it, and it cares for you. (Cali)

If I care for country, country will take care of me. (Rubi)

It nurtures us. We need to keep doing those ceremonies—song, story, dance, language—to nurture it. (Erem)

For some participants, experiencing the wellbeing benefits of ecotherapy may lead to a more aware, respectful, caring, or protective approach to the rest of nature.

A side effect can be someone having more respect for wild areas. (Euca)

When people are more well, they are more effective [...] I can imagine that there would be climate benefits from people having the mental energy to care about the environment. (Xylo)

This view is supported by Clinebell (1996) who proposed a model intended to harness reciprocal healing called *the ecological circle* wherein (1) individuals experience being nurtured by nature, which (2) inspires awareness of nature's healing power, enhancing love for the natural world, deepening positive bonding with the earth, and potentially adding an earthly grounding to spirituality. This in turn motivates and empowers (3) engagement in proenvironmental behaviours. For Clinebell (1996), completing the ecological circle 'can heal persons and heal the living environment that is in them as they are in it' (p. 9).

Reversing this process, participants also indicated that actively caring for nature (e.g., gardening, ecological restoration, conservation, advocacy, land management) can lead to human wellbeing benefits.

When we create a garden, a sensory garden, space for nature to thrive, we're giving to nature, we're rejuvenating nature, but we're receiving too. (Dora)

There are practitioners in this space who do that quite explicitly through either gardening or clean-ups. Part of their nature-based practice is that they're explicitly doing that reciprocity stuff and modelling that. (Xylo)

Interestingly, horticulture and gardening have been applied as therapeutic interventions since at least the 19th century (Haller, 2020). Among the ecotherapies, horticulture and gardening therapies are unique in that they explicitly include active care for nature as a major aspect of the work (Haller, 2020).

Thus, both passively receptive and actively caring ecotherapeutic activities may initiate an exchange (i.e., giving/receiving) of wellbeing benefits between humans and the rest of nature. In this way, *Transactional Reciprocity* may operate like *reciprocal altruism* (Nowak & Sigmund, 2005). However, participants expressed some discomfort with this transactional understanding of human-nature wellbeing reciprocity, as it appears to operate like a trade or market exchange and may therefore reinforce a counterproductively instrumental and egocentric orientation toward the rest of nature.

That's a give-and-take relationship, which is typically not a great way to think about nature. (Euca)

Reciprocity is quite transactional in a way. I get why we want to explain it to people that way, like, 'Hey, there's something in it for you.' (Mell)

Accordingly, Mell attempted to re-establish a more holistic and systemic narrative of human-nature connection.

I much prefer the perspective where we're just saying: 'Actually, something's become separate from the whole. How can we heal that? How can we whole it again? Help things to become whole and remove these unnecessary divisions within a system?' (Mell)

Participants further contrasted ecotherapeutic principles with instrumental or alienating forces exemplified by 'logical-rational mind' (Mell), 'techno-rational framework' (Euca), 'mastery and materialism' (Erem), 'colonisation' (Dora), 'colonised mind' (Rubi), 'medicalised and corporatised' (Xylo), 'capitalist forces' (Xylo), institutional and economic 'procedures' (Cali), and 'the system' (Erem), expressing scepticism that ecocentric approaches to wellbeing were compatible with current mainstream healthcare perspectives and structures.

If [a client is] coming in to treat a mental health problem and they have a mental health care plan through their GP that I have to be accountable for, I'm not just going to be like, 'Okay, well, stuff your anxiety, we're gonna go clean up trash.' Even though they could well be linked in my brain. (Xylo)

We don't want nature to be put into a mainstream system. We are a system within ourselves. Nature has always been here, before mainstream healthcare. We don't have to adapt; mainstream healthcare has to adapt to nature. (Dora)

In summary, the *Ecotherapy May Initiate Transactional Reciprocity* theme addresses the second and third research questions by constructing a linear pathway of human-nature wellbeing reciprocity characterised by an exchange of beneficial wellbeing outcomes. Experiencing the wellbeing benefits of connectedness with nature may motivate or otherwise support humans to reciprocate with nature. Conversely, activities that aim to deliver wellbeing benefits to nature may create opportunities for humans to enjoy complementary wellbeing outcomes. However, transactional conceptualisations of reciprocity may promote counterproductive perceptions of human-nature dichotomy and may ultimately be incompatible with an ecocentric ecotherapeutic paradigm.

Theme 3: Ecotherapy May Facilitate Co-becoming with Nature

Theme 3 constructs an alternative pathway by which ecotherapy may lead to reciprocal human-nature wellbeing by facilitating ecologically informed and aligned human functioning. This non-linear pathway is termed 'co-becoming with nature,' reflecting *Theme 1* and especially *Subtheme 1.4*, and following Suchet-Pearson et al. (2013) who described *Yolŋu* connection with country and caring for/as country as a 'co-becoming, a mutually constitutive *intra-action*' (p. 191). While 'interaction' implies pre-existing organisms that then participate in action with each other, 'intra-action' acknowledges the impossibility of any absolute separation or classically understood objectivity (Barad, 2007).

Participants described nature as a 'teacher' and a source of information (e.g., 'lessons', 'messages', 'law/lore') which frequently related to the needs and processes of a healthy ecosystem.

Nature has these intrinsic messages that are just a part of the natural world. Things like connectedness, or diversity, or cycles of light and dark, and that those are healthy and normal and a part of the world. (Xylo)

Learning comes from when you look at what nature needs. (Dora)

All of the species, whether it's malleefowl or crow or tea tree or spinifex, they all teach us lessons. (Erem)

Rose (2005) similarly suggests that principles are articulated by and through nature in the form of patterns, which convey information about 'how life really works' (p. 301). This view

Dora and Xylo spoke about applying an ecosystemic model of wellbeing in their ecotherapeutic practice, and Xylo compared the approach to *biomimicry* (i.e., the emulation of biological forms, processes, systems, and patterns to solve complex human problems; Vincent et al., 2006).

Our body is an ecosystem. Lungs are for air, right? The forest. Our liver and kidneys are a river system, a lake. What happens if you pollute the river, if you put too much alcohol or drugs in there? If we smoke too much cigarettes or ice—what happens to your lungs? No different to what happens to the earth. So, we start to think more about our own health when we start to think about the health of the planet. The two are interconnected. (Dora)

A lot of psychological and interpersonal distress and problems in the world, I feel, are because we've become quite disconnected from the importance or the validity of those things. We've forgotten about how important connection is, or we are trying to have light all the time and not making any room for dark, or we're creating monocultures or monocrops—literally and metaphorically—if we're only making room for one type of thing and then there's no room for anything else. There are global messages that nature has in spades that I think could go a long way if we can integrate those into our own lives and into the world more broadly. (Xylo)

Duncan (2018) similarly proposed that an understanding of ecological processes can inform psychotherapeutic approaches. Moreover, ecological literacy is often identified as a potentially beneficial outcome of ecotherapies (e.g., Wyles et al., 2017). Laszlo et al. (2017) proposed that the development of a new educational paradigm 'relevant to the living context of our planet' (p. 1) might take cues from ecosystem studies and biomimicry, and training in biomimicry has been used to promote sustained, intrinsically motivated, pro-environmental behaviours in corporate research and development employees (McInerney & Niewiarowski, 2022).

Nature was also described as a source of information specific to an individual's 'role', 'purpose', 'context', or 'place' in nature. Aligning with this information was understood to be inherently beneficial to human-nature wellbeing. By contrast, misalignment was associated with egocentricity and harm to human-nature wellbeing.

People are an important part of the environment. We are the environment. We have an important role [...] It's not a prescriptive thing. No, she'll give you—they'll all give you—the law/lore of the land. It's individual because it aligns with your purpose, your gift, and the actions you need to implement. [...] The red gum is a red gum tree and doesn't do what sheokes do because they've got a different thing. That benefits nature by it being it and playing its part [...] You benefit the bush and ecology by doing what you do. (Erem)

Like a cancer cell that's no longer connected to the rest of the body, it's not obeying the rules of apoptosis, it's just going to carry on forever replicating and demanding resources and doing whatever it wants even if that means the death of the wider system. [...] when we're blind to our context, then

problems ensue; just like when a cell is blind to its context. Nature can't help but benefit when we get back into alignment with the wider context. (Mell)

Ungunmerr-Baumann et al. (2022) similarly discussed 'knowing your place', describing it as integrating practical wisdom and co-authorised relationships. Ungunmerr-Baumann et al. (2022) suggested that deeply lived experience, transformational exchanges, and ongoing adjustments to the ebb and flow of life in an Aboriginal community may offer opportunities to know your place, both on country and within community.

Erem described ritual and ceremonial practices that may facilitate insights and reinforce learning around an individual's place in nature.

[By] imagining what that landscape used to look like full of water, that's dreaming what's in the past. Then we challenge people while we're there and say: 'Okay, what's your dreams for the future?' And get them to connect with the spirituality of the place and try and connect with the old people and talk to the old people about shaping where they need to go when they go back into the rat race. (Erem)

Yungadhu, the malleefowl, when it comes out of that egg, it flies away into the nearest tree to get away from predators and it never sees its parents. It knows its gift already [...] We do the malleefowl ceremony [...] to deepen and strengthen that one lesson around purpose. Then people start thinking about their purpose and their role on this landscape [...] That's a really good way to reinforce the values—through the ritual. (Erem)

Participants reported that receptivity to nature-based learning could be enhanced through specific practices. The necessity of adequate time and space to feel safe and comfortable when in natural settings was emphasised.

Once there's room to feel safe, to feel freedom, and adventure, and mystery, and the pride of some more autonomy in their lives, and there's less restriction, the 'wall of green' starts to break down and they start to recognise individual trees. (Mell)

That landscape is vast and open. The [urban] landscape is convoluted and cluttered [...] So, we take clutter and shit to an open landscape. That landscape's got a different personality, so it'll actually empty you out. (Erem)

If it's wet and rainy, are we as the facilitators also helping that person stay warm and dry so they can have an experience of feeling safe while listening to the patter of the rain on their tarp or the tent they're sleeping in? (Euca)

Given adequate time, space, safety, and comfort, participants suggested that access to relevant information could be facilitated though mindful and embodied engagement with nature. Here, participants again emphasised Indigenous ways of being and knowing.

Just got to get out of your head and go light a fire and listen to her. Of course, that's how our old people did it. [...] Deep meditation in the bush is really crucial. Just sit and be connected. Listening to all the sounds, taking in all the smells, and taking in all the lessons that nature teaches. (Erem)

When you do nature-based mindfulness, you're really sitting tuning into your five senses. What that does is it then tunes you into your sixth sense, which is your intuition and knowing—that Indigenous knowing and being arises. (Dora)

Most of the time, it's about observation and deep listening because when we listen, we might actually learn something. (Rubi)

The relevance of mindful and embodied engagement is supported by Ungunmerr-Baumann et al. (2022) who described the application of *dadirri*—the art, practice, healing way, methodology, quality, and/or way of life often translated as 'deep listening'. According to Ungunmerr-Baumann et al. (2022), *dadirri* is being present, being still, connecting with yourself, and connecting with the environment in such a profound way that it creates space for relationships built on trust, respect, and reciprocity. Similarly, participants suggested that nature-based insights and learning could accompany the contemplation of vast space and time in nature, which may elicit profound experiences of awe or transcendence.

Looking up at the stars and seeing how small we are in comparison to things helps to put into perspective our place in the world. Having an experience of awe or profoundness is like a reset in some ways and can enable us to take a look over our life in a more global way. (Xylo)

Having the ability and time and space to reflect and have self-awareness to step out of the busyness of your own colonised mind, you see that this is just a small sliver of what humans and the earth have gone through. (Rubi)

Nature can be considered an inducer of awe, in particular through perceptions of personal smallness relative to the scale of nature, initiated for example when contemplating mountains, vistas, storms, or the fractal patterns in waves, trees, and clouds (Bethelmy & Corraliza, 2019; Gandy et al., 2020). Indeed, the experience of awe is itself linked to enhanced wellbeing, nature relatedness, and ecological behaviour (Zhao et al., 2018).

Some participants suggested that psychedelics may also facilitate and reinforce naturebased lessons by synergistically enhancing receptivity, stimulating awe-inspiring or transcendent experiences, and eliciting similar insights.

Look at mushrooms and psilocybin and different plants. Plants come with purpose and they're medicinal. They have a role to play. [...] Plants can take us to a certain level of consciousness and beyond the physical realm and into the spiritual realm or different realms of existence which we always are in, but we're not taught how to do that. (Dora)

A lot of the time, the realisations that people have with psychedelics are quite similar to the things that we notice from nature. They might realise in a very deep way that everything is connected, or the importance of reciprocity. There's an intrinsic overlap between the messages that people receive, or the kind of things that people come to through psychedelic experiences, and what is there on offer in nature. (Xylo)

The potentially synergistic contribution of psychedelics is supported by Gandy et al. (2020) who found that psychedelic experiences incorporating nature contact enhanced mindfulness-related capacities, heightened states of awe, and potentiated increases in nature

In summary, *Ecotherapy May Facilitate Co-becoming with Nature* addresses the second and third research questions by constructing a non-linear pathway of human-nature wellbeing reciprocity. 'Co-becoming with nature' integrates and applies ecological literacy and an understanding of one's place and role within the ecological matrix in a way that is non-transactional, inherently aligned with human-nature wellbeing, and may be harnessed in ecotherapy practice. Dora summarised the process:

You're opening your relationship and connection to your natural environment, whether it's the bird over there or other life that might be around and, further to that, I think it's about learning from that observation. How does nature work? How does the ecosystem work? What is nature teaching you from your observation? And then, how do you apply that teaching to your current situation or state of mind? (Dora)

Ecotherapeutic approaches that promote mindful embodied engagement with nature may facilitate access to profound insights relevant to co-becoming with nature. Effective practices might therefore incorporate ecosystemic models of personal wellbeing, biomimicry, Indigenous methods of being and knowing such as *dadirri*, ritual and ceremony, awe, and psychedelic experiences.

General Discussion

This analysis suggests that the human-nature connection can be understood in diverse but ultimately compatible ways that, taken together, offer a multidimensional perspective of human-nature wellbeing as a pattern or property of a complex living system. Ecotherapeutic approaches characterised by an instrumental orientation towards nature may fail to integrate this complexity subsequently reinforcing human-nature alienation and thereby limiting humannature wellbeing reciprocity. However, informed by nature-based insights into the wellbeingpromoting processes of healthy ecosystems and one's place and role therein, inherently mutualistic responses aligned with ecological realities may emerge. Thus, by harnessing reciprocally beneficial non-linear change pathways that recognise the multidimensionality of the human-nature complex, ecotherapists may be empowered to practice a profoundly ecosystemic approach to wellness.

Ecocentric ecotherapeutic approaches might involve practices that ensure adequate space and time to promote a sense of safety and comfort in natural settings, mindful observation, embodied/sensory engagement, ecosystemic models of personal wellbeing, biomimicry, awe, and transcendent experiences that reinforce a sense of identity with nature. The development of these practices might be informed by culturally appropriate engagement with Indigenous ways of being and knowing, strengthening the integration and crossfertilisation of applied ecopsychology and Indigenous healing practices. Furthermore, ecotherapies might draw from emerging psychedelic-assisted therapies, as nature-based psychedelic experiences may synergistically facilitate awe, insight, and mindful embodied engagement.

These findings may further contribute to the conceptual and theoretical articulation of ecopsychology by illuminating a potential property and pathway of nature's contribution to ecotherapeutic outcomes—*human-nature wellbeing reciprocity*. This insight may eventually inform an ecotherapeutic theory of change. In addition, the language of reciprocity and complex systems may contribute to a more appropriate and compelling discourse with which to discuss the human-nature connection, resist alienation, and affirm ecocentric approaches to

wellbeing. Ecofeminist, Indigenous, and systems theories may be particularly relevant in this regard.

Conclusion

The findings of this study contrast with perspectives that construct nature as an object to be exploited, conserved, or stewarded for human wellbeing. Instead, this study reinforces the compelling notion that human wellbeing is entangled with that of nature. The concept of human-nature wellbeing reciprocity may therefore empower engagements with nature that go beyond pro-environmental behaviours to reflect our ethical relationship, interdependence, identity, and intra-action. Ecotherapies that incorporate these insights may present a powerful response to the ecopsychological crisis by challenging alienation and inviting us into active and informed participation in our mutual co-becoming.

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