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RESEARCH ARTICLE

# 'A deep, empathetic, wondrous connection': Autistic adults' definitions and experiences of nature connection

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## Abstract

1. Connection to nature is an important concept for understanding human-nature relationships, interests in nature and pro-environmental behaviours. However, conceptualisations of this relationship thus far have excluded autistic perspectives.
2. Through this reflexive thematic analysis of survey responses from 108 autistic participants in the UK, we sought to understand how autistic people define and experience connection to nature.
3. Towards this aim, we developed three themes: 'feeling that you benefit nature and nature benefits you'; 'connecting with something ancient to which I nevertheless belong'; and 'it makes me a little sad tbh.' Across many participants in this sample, nature was not something they saw as separate from themselves (or from humans more generally), and so connection to nature was not a simple, unidirectional relationship nor a clear-cut binary.
4. Through this work, we hope to contribute towards the effort to imbue ecopsychology and related fields with the influences of critical disability studies.

**KEYWORDS**
autism, connection to nature, critical disability studies

## 1 | INTRODUCTION

Despite misconceptions that autism is associated with a lack affective empathy, many autistic people report feeling strong empathy for others and for non-human living things (Davidson & Smith, 2009; Fletcher-Watson & Bird, 2020; Nygren, 2023). While there is considerable variability in how autistic people feel about nature (Friedman et al., 2023b), among these varied perspectives are those autistic people who have strong relationships with the natural and more-than-human world (Davidson & Smith, 2009). However, little, if any, empirical research exists which explores autistic people's experiences of connection to nature (Pellicano et al., 2022).

To contribute to efforts to 'crip' research related to experiences in nature (Schmidt, 2023), in the present study, we explore the perspectives of 108 autistic adults in the UK regarding their definitions and experiences of connection to nature ('Crip' is used here as a reclaimed term from the disparaging sense of 'cripple', and it is used to signify pride or defiance at concepts of disability that marginalise or pathologise individuals according to perceived physical, sensory, cognitive, or emotional 'impairments'. Crip Theory centres this and other experiential understandings to challenge marginalisation according to the intersection of disability, gender, sexuality, and race. See, for example, Robert McCruer's *Crip theory: Cultural signs of queerness and disability* [McCruer, 2006]).

### 1.1 | Connection to nature

Connection to nature is an amorphous concept that is defined and operationalised in various ways; most commonly, it is used to refer to the psychological relationship that a human feels with non-human living things and environmental features (Schultz, 2002) and is also sometimes referred to as nature relatedness (Nisbet et al., 2009). Connection to nature is an important concept for understanding human-nature relationships, interests in nature and pro-environmental behaviours. Pro-environmental behaviours are those which seek to minimise the negative impact an individual might have on the environment and maximise opportunities to benefit the environment (e.g. recycling, efforts to conserve biodiversity; DeVille et al., 2021; Tian & Liu, 2022). In general population samples, connection to nature positively predicts the likelihood that someone will engage in pro-environmental actions (Liu et al., 2022); thus, encouraging this relationship with nature could have important implications for a sustainable future. Connection to nature is also related to improved well-being in both children (Friedman et al., 2022) and adults in the general population (Nisbet et al., 2020).

It is important to note, though, that the concept of a relationship with nature assumes that humans are separate from nature. As described by Beery et al. (2023), the conceptualisation of nature as something from which humans can be disconnected is rooted in one specific perspective that is not shared by all cultures and belief systems (see also Fletcher, 2017). Additionally, Fletcher (2017) suggests that many of the efforts to 'reconnect' humans with nature serve to increase the perception that nature is something entirely separate from humans. Thus, in this paper, we take the perspective that the value in understanding such a relationship can be seen through a sustainability (Ives et al., 2019) and planetary health perspective (Zelenski et al., 2023) while recognising that many people see themselves as being inherently integrated with nature and therefore unable to be disconnected.

Research on the relationship between nature and wellbeing often does not consider factors like demographic characteristics, geographic location and disability (e.g. Gallegos-Riofrío et al., 2022). Thus far, calls for increased diversity of perspectives within ecopsychology have focused primarily upon the need for racial diversity (e.g. Woodward, 2012), gender diversity (e.g. Arora-Jonsson & Ågren, 2019) and geographic diversity (Selinske et al., 2023); meanwhile, these calls often neglect to acknowledge a group which is often present in natural spaces, environmental and outdoor education programmes including forest schools and in nature-based interest groups: autistic people.

### 1.2 | Autism

Autism is a form of neurodivergence which typically includes characteristics like intense and focused passions, preferences for predictability and differences in social interaction styles (Bottema-Beutel et al., 2021; Note: in this study, we adopt a social model perspective of disability rather than a medical model one. Rather than equating disability with individual impairment, the social model considers how the environment and people in it undermine someone's ability to participate fully. This perspective also considers disability to be partially socially constructed [Oliver, 1983; Shakespeare, 2006]). Autistic people have highly heterogeneous experiences, strengths, and needs which may change day-to-day. Seen through the neurodiversity paradigm, autism is a naturally occurring style of neurocognitive functioning that does not require intervention or a 'cure' (Walker, 2021); however, autistic people can experience disability when there is a poor person-sociocultural environment fit (den Houting, 2019). Research conducted through this lens, then, focuses on making adjustments to the environment and to societal norms to improve autistic people's lives and better understand their experiences of constructs and situations which are most often researched and understood through a normative lens. The goal of such work is not to Other autistic people or to draw attention to their experiences as 'abnormal'; rather, this work seeks to harness autistic voices to better understand their perspectives on topics of interest to the autistic community (Pellicano & den Houting, 2022).

While autistic people have been sharing their interests and experiences in nature for decades (e.g. Davidson & Smith, 2009; Grandin, 1995; May, 2018; McAnulty, 2021; Packham, 2016), empirical research on this topic is minimal (Pellicano et al., 2022). Davidson and Smith (2009) used autistic autobiographies to explore autistic people's relationships with the more-than-human and noted how the autistic authors expressed strong empathy and social connectedness with various natural entities. Friedman et al. (2023a, 2023b) explored autistic peoples' experiences in/of/with nature both throughout the life course and during the Covid-19 pandemic. According to participants in that research, nature supported wellbeing by providing opportunities to connect and escape and by being a less judgmental space than other social or public environments. However, not all the autistic people surveyed expressed that nature was related to improved wellbeing for them personally. Birch et al. (2020), in their work conducted with young people from ethnic minority backgrounds and deprived areas, many of whom had lived experience of mental health difficulties, assert that this heterogeneity of experiences is important as this variability underpins the need to draw from more diverse voices to learn about the relationship between nature and many outcomes, including wellbeing.

Pellicano et al. (2022) propose the use of the capabilities approach (Nussbaum, 2011) to consider autistic people's relationships with nature; using Nussbaum's framework, they suggest that relationships with nature can be one lens through which to consider autistic thriving. Importantly, Pellicano et al.'s application of the capabilities approach does not require that for autistic people to be considered thriving, they must have a strong relationship with nature and care strongly for non-human living things. Instead, this framework offers relationships with nature as one lens through which to explore autistic thriving which will be relevant to some, but not all, autistic people. This perspective supports and validates the

range of experiences and connections that autistic people will have in and with nature.

Schmidt (2023) calls for a cripping of environmental education, an effort which is relevant when considering the need for disabled perspectives of relationships with nature. Currently, attempts to make environmental education or nature-based experiences more accessible to disabled people often consider how aspects of the environment can be changed or accommodations can be found to enable the disabled person to access the space/activity. Schmidt suggests that nature-based practitioners should instead adopt a critical disability theory perspective to examine how ableism permeates environmental education (and, we argue, all areas of ecopsychology and related disciplines) at a more fundamental level which 'disrupts the compulsory able-bodiedness within the field and enables new ways of knowing and connecting to nature' (p. 255).

Concepts like connection to nature, as presently defined and operationalised, have an inherent level of ableism engrained in them (Schmidt, 2023). Thus, disabled perspectives are useful in identifying these elements of ableism and constructing meanings which move beyond these limited perspectives. Extending this line of thinking, in this paper, we seek to push beyond simply understanding autistic people's experiences in nature, as has been done before (e.g. Friedman et al., 2023a, 2023b). Instead, here, we aim to construct an autistic-led conceptualisation of connection to nature to confront the ableist ideas that have previously permeated research in this field. Additionally, we hope to validate a broad range of experiences with nature and the more-than-human to reflect that there is no single correct way to connect to nature (Bell et al., 2019).

To our knowledge, no research exists which has investigated autistic people's definitions and experiences of connection to nature. The present study explores how autistic people define and experience connection to nature to present our attempt at pushing back on the 'compulsory able-bodied/able-minded assumptions' (Schmidt, 2023, p. 251) which permeate the field of ecopsychology. We sought to answer the following research questions: How do autistic adults in the UK define connection to nature? How does this group of autistic adults experience connection to nature?

## 2 | MATERIALS AND METHODS

### 2.1 | Ethical approval and procedures

The data presented in this study were collected as part of a larger survey study on the childhood and adulthood nature experiences of autistic adults living in the UK. We received ethical approval for this study from the University of Cambridge Department of Psychology Research Ethics Committee (reference PRE.2021.073). We pre-registered the survey on the Open Science Forum repository (https://doi.org/10.17605/OSF.IO/7X9JD), and we used an institutional Qualtrics account to host the survey. The first pages of the survey contained the participant information sheet and consent form, which participants were required to complete before being able to progress through the survey.

Participants were asked to respond to 13 open-ended questions (text boxes that allowed for any length of written response) and 13 close-ended questions (binary and nominal questions). In the current study, we selected one of the open-ended questions and analysed participant responses using Braun and Clarke's (2006, 2019, 2021) style of reflexive thematic analysis. The survey question of focus in this study is: *What does the term 'connection to nature' mean to you? There are no right or wrong answers. Answer based on your personal knowledge and experiences*. In answering this question, most participants went beyond a simple definition and described how connection to nature looks in their own lives or how they experience this relationship. As such, the findings we developed reflect both an attempt to define this relationship and participants' explanations and experiences of connection to nature in their own lives.

At the start of the survey, as recommended by one of the autistic community members involved in developing the survey, we defined *nature* so that participants were operating from a shared understanding: 'For this survey, nature is defined as anything in the physical world including outdoor green spaces, animals, other landscape features like mountains and rivers, and plants'. We did not ask participants to provide their own definitions or understandings of *nature*, though this could have provided interesting insight into the similarities and differences in what the term meant to participants. We also recognise that while we aimed to be broad in our conceptualisation of *nature*, by providing a definition of nature, we might have shaped participant responses. However, we felt that the increased accessibility provided by being clear about what we were asking was more important than the risk of influencing responses.

### 2.2 | Recruitment and participant demographics

The survey was open for approximately 1 month, from 28 October 2021 to 25 November 2021. Participants were recruited through social media (e.g. Twitter), through personal connections (e.g. asking prominent autistic advocates to share the survey recruitment message with their network), and through the newsletters of several autistic advocacy organisations (e.g. Autistica). In the present study, we analysed 108 responses from autistic adults living in the UK. See Table 1 for participant information. Responses ranged from 3 words to 264 words, with a median of 25.5 words and a mean of 38.5 words. Data extracts included in the Results and Discussion are largely unedited, barring minor corrections to grammar or missing words to improve readability.

### 2.3 | Community involvement

The survey was co-created with an autistic consultant, the third author, RN, making this study an example of participatory research by way of consultation (Fletcher-Watson et al., 2019); RN was paid

**TABLE 1** Participant demographics.

| | Total participants ($n = 108$) | |
|---|---|---|
| | % | *n* |
| Gender | | |
| Women | 63.9 | 69 |
| Men | 24.1 | 26 |
| Non-binary | 8.3 | 9 |
| Other | 3.7 | 4 |
| Age | | |
| 18–24 years old | 17.6 | 19 |
| 25–34 years old | 18.5 | 20 |
| 35–44 years old | 22.2 | 24 |
| 45–54 years old | 24.1 | 26 |
| 55–64 years old | 13.9 | 15 |
| 65–74 years old | 3.7 | 4 |
| Employment | | |
| Full or part-time | 40.7 | 44 |
| Not employed | 10.2 | 11 |
| Student | 15.7 | 17 |
| Retired | 2.8 | 3 |
| Unable to work | 16.7 | 18 |
| Other | 13.9 | 15 |
| Location | | |
| England | 81.5 | 88 |
| Scotland | 11.1 | 12 |
| Wales | 3.7 | 4 |
| Northern Ireland | 2.8 | 3 |
| Prefer not to answer | 0.9 | 1 |

for their time at the rate recommended by the National Institute for Health and Care Research. RN provided input regarding what topics the survey should cover, how to phrase questions, and how to increase the accessibility and inclusivity of the survey. The first author, SF, and RN developed a complete draft of the survey and sent it to two autistic community members who volunteered to pilot the survey and provide feedback through email and/or Zoom; these community members were given a voucher to thank them for their time piloting the survey. We amended the survey further following suggestions from these community members, which included advice on how to make the survey more concise and less redundant, preferred language and phrasing throughout the survey and when examples of the types of responses we were looking for were needed. Community involvement was fundamental in shaping the resulting survey. To recognise their contributions, RN is included as an author on this paper and was invited to contribute to the analysis but did not choose to do so. In future, we intend to extend community involvement through the analysis and writing up phases of the study. However, while the autistic community members involved in creating the survey did not participate in the analysis, members of the authorship team, who contributed to the analysis, are autistic.

## 2.4 | Analysis

We used Braun and Clarke's (2006, 2019, 2021) style of reflexive thematic analysis to analyse these qualitative data, and our analysis was primarily informed by a constructivist approach which considers reality to be subjective and individual (Finlay, 2021). SF began the process of data analysis through familiarisation by reading through the data multiple times and making initial notes. SF conducted an initial round of coding independently; the second author, SM, then did the same. Coding was primarily conducted inductively (i.e. data-driven rather than theory-driven), though our coding included elements of deductive analysis as well. This is because the coding was informed, both consciously and unconsciously, by our knowledge of relevant literature (e.g. related to connection to nature), the paradigm from which we operate (i.e. the neurodiversity paradigm), and our own lived experiences and academic disciplines. As we did not become aware of Schmidt's (2023) work on applying critical disability studies to environmental education until after the coding and theme development stages of analysis were complete, this work did not directly inform our analysis (though it did inform our writing up and presentation of the analysis which, according to Braun & Clarke, 2006, is still considered part of the analysis). Additionally, coding was primarily semantic in that the surface meaning of the data was taken at face value. However, given the active role of the researcher in reflexive thematic analysis, our own perspectives coloured our interpretation of the data's meaning; therefore, coding can also be considered latent (Byrne, 2022).

SF and SM then discussed the codes that each developed to reach a consensus on the list of codes to inform the development of themes. SF and SM developed candidate themes to address the research questions and continued to revise the themes throughout the process of writing up. We developed themes by considering the list of codes we developed and beginning to group codes together that we felt were tied together in some way. For instance, we noticed that we had developed numerous codes around spirituality, religion, ancestry, and connection to a higher being. We collapsed these codes into a theme that reflected how some participants' relationships with nature were about much deeper than simply enjoying nature. As we undertook this process, we had ongoing conversations around where certain codes fit or if they should be discarded. The fourth author, AS, provided input on the clarity of the themes and their connections to extant literature and theory; AS also contributed to the process of writing up the manuscript.

## 2.5 | Positionality

Braun and Clarke (2021) note the importance of researcher transparency as one marker of quality and rigour in qualitative research.

We acknowledge that our experiences and personal beliefs have shaped our interpretation of the participants' responses as we developed the themes, which we will discuss below. As such, we find it important to explicitly describe our positionality. SF is an autism researcher who focuses on how nature might support wellbeing in autistic people; she is a qualified forest school leader. SM is an autistic and disabled public sociologist currently working alongside other autistic women to investigate whether feminist ideas are useful for them, and she is interested in ensuring autistic people's voices are included whenever autistic people's needs are being discussed. AS is an interdisciplinary medical humanities researcher.

## 3 | RESULTS AND DISCUSSION

We developed three themes to represent the varying definitions and experiences of connection to nature amongst this group of autistic adults: 'feeling that you benefit nature and nature benefits you'; 'connecting with something ancient to which I nevertheless belong'; and 'it makes me a little sad tbh.' These themes reflect both the positive and negative elements of having a close relationship to nature and represent the first insights into autistic adults' conceptualisations of connection to nature.

### 3.1 | Theme 1: Feeling that you benefit nature and nature benefits you

Many participants defined connection to nature by explaining the affordances offered by nature and the ways that nature served them; we use the term affordances to refer to the possibilities for action, both positive and negative, available to a person through their relationship with the environment (e.g. broadly aligned with Gibson's (1979) definition). In this way, participants' psychological relationship with nature seemed to be based, at least in part, on what they perceived that they gained from natural spaces and non-human living things. Affordances included a sense of belonging:

> Feeling as if you are part of the system with nature, like you understand it, can instinctively interact with it, feel safe with it, feeling that you benefit nature and nature benefits you.
>
> (non-binary person, 18–24 years old, England)

This sense of belonging could be linked to a lack of judgement, noted previously by autistic people (Friedman et al., 2023b) and by a group of young people with lived experience of mental health difficulties (Birch et al., 2020). In both groups, the ability to connect and escape in nature supported their wellbeing and was perhaps in part related to their ability to exist safely in nature without feeling judgement. However, it is important to note that this feeling of safety, particularly as it pertains to physical safety, might be especially reflective of the experiences of this group of participants living in the UK, where there are fewer dangerous species compared to other locations in the world. Some participants described interacting closely with plants and animals, and it seems that this would be less likely in areas of the world where these interactions could cause more harm:

> To me, connection to nature means surrounding myself in nature, preferably by myself. When I notice any fascinating details about the surrounding plants or animals, or when I observe an animal and try to understand its behaviour, I feel most connected to nature. It's like entering in a world that just belong[s] to me.
>
> (woman, 18–24 years old, England)

For some, this sense that 'nature is almost this entity that provides safety and joy and belonging' (unknown gender, 25–34 years old, Scotland) also came with an opportunity to engage in a sensory experience that is stress reducing, rather than stressful, as many other sensory environments tend to be (MacLennan et al., 2022). One participant described an ability to 'melt into the sounds and smells of nature and lose a sense of whole being' (man, 45–54 years old, England) and another defined connection to nature as an ability 'to just experience my senses and smell the petrichor or the salt air' (non-binary person, 35–44 years old, Northern Ireland). In this way, connection to nature might also relate to improved wellbeing, as suggested in extant literature on connection to nature in the general population (Capaldi et al., 2014; Pritchard et al., 2020):

> I think it's feeling part of it…my senses feel even more heightened in nature as it is so peaceful, and I find that all of the noises, smells, etc. in nature are ones that appeal to me, so I love to spend time just soaking it all in, and when I do that, I feel calm and peaceful. I find it very grounding.
>
> (woman, 35–44 years old, England)

The sensory affordances of nature were not always unidirectional, as one participant described 'experiencing the environment in a multi-sensory way and feeling that it is communicating with me' (woman, 55–64 years old, England). While the mention of sensory needs in relation to connection to nature were largely positive, findings from a different analysis with this same group of participants indicate that for some people, spending time in nature can also contribute to sensory overload (Friedman et al., 2023b), illustrating that individual experiences will vary.

A few participants referenced their autistic identity as being centrally relevant to their conceptualisation of connection to nature and the way they experience nature:

> …we are products of nature and, as I'm autistic, it's natural to enjoy solitude in green open spaces too—it's a kind of silence and break from human voices that I'm sensitive to. It's a deep, empathetic, wondrous

> connection of the sort that probably gets filtered out in neurotypical people who spend a greater part of their time in the socially-connected sphere where they find their bearings.
>
> (man, 45–54 years old, Scotland)

Another participant also shared that they believed neurodivergent people might connect with nature differently:

> I feel that neurodivergent people, asd, adhd, bi-polar, have a unique connection to nature that people without neurological conditions will never fully comprehend…I can hear insects and electricity. I can feel vibrations in the ground, I can smell the weather in the air. I think that is why I have such a strong connection to nature, because I can see, hear, feel and smell things that most people can't and because it soothes me as sensory stimuli.
>
> (woman, 25–34 years old, England)

That autistic identity is central to some autistic people's connection to nature supports the need to understand autistic people's conceptualisations of this concept in a way that does not Other autistic experiences (Stenning, 2020). Further, this framing of autism as a reason for a deeper connection to nature stands in contrast to previous work which has placed autism and other forms of disability/madness as a cause of disconnection and harm to the environment, as described by Schmidt (2023). A shift towards viewing autism as a 'value added difference' (Schmidt, 2023, p. 257) when considering how we relate to and protect nature is an important step towards seeing ecopsychology and related fields through a critical lens. Further, in contrast to existing narratives that autism and other forms of disability are related to environmental degradation (Schmidt, 2023), some autistic theorists suggest that neurotypicality may be disproportionately responsible for climate destruction (see Nygren, 2023; Stenning, 2023).

Additionally, the assertion that autistic people may relate to nature differently could find support in the perception first/environmental attunement model of autism. This model suggests that autistic people could get more sensory information from the environment than non-autistic people do (van Es & Bervoets, 2021). Within this view and allied perspectives (see, for example, Bogdashina, 2003; Donnellan et al., 2013; Markram & Markram, 2010; Pellicano, 2013) autism is regarded as 'gradually distributed sensorimotor differences' and 'aligns with common experiences reported in self-advocacy and qualitative research focusing on sensory sensitivity', rather than 'traditional, ethically problematical, views predicated on social-cognitive deficits' (van Es & Bervoets, 2021, pp. 395–397). Sensorimotor differences amongst autistic people result in a tendency to attend to the '"here and now" of their sensory environment' rather than 'the sensorily less pronounced cues associated to what is typically seen as socially salient' (van Es & Bervoets, 2021, p. 399). This explains why interacting with everyday nature may be crucial to conveying what is distinctive about an autistic individual's life compared to more neurotypical peers (see also Stenning, 2023).

For many participants, these affordances were not only available to them from spending considerable amounts of time physically in natural spaces. Instead, other forms of nature like pets, plants, photos and videos of natural spaces/things seemed to offer the same opportunities for connection: 'To an extent I think you can also connect to nature just by having house plants and pets' (woman, 18–24 years old, England). Previous literature has suggested that these non-traditional means of engaging with nature can support wellbeing, connection to nature and pro-environmental behaviour (van Houwelingen-Snippe et al., 2020). To increase the accessibility of nature and to promote relationships with nature, these alternative forms of access should be seen as equally valid.

Some participants said that their connection to nature was linked to their ability to meet their sensory needs using nature-based stimuli like audio recordings, photos and videos, again demonstrating the utility of alternative forms of nature contact. This engagement with nature also served as a way of meeting focused interests, too; the ability to engage with these interests and passions could have positive implications for wellbeing (Grove et al., 2018):

> I like to engage with nature with all my senses, including feel, touch, smell and hearing. I like to feel the wind and rain, the sun, sunrises and sunsets and also the dark of night. I like to find new plants and see animals and birds, different geological formations and types of environment[s] and then to research them and learn about them.
>
> (man, 65–74 years old, England)

These experiences of connecting to nature through somewhat non-traditional means—that is, not through time spent physically in natural spaces—raise important questions about access to nature and its relationship with building connections to nature. Several participants described how their relationships with nature were developed through these other means, suggesting that connection to nature might not require wild spaces, which are often inaccessible for various reasons, and instead can be cultivated in other ways. For instance, participants sought to bring elements of nature into their homes:

> My plan is to change my wallpaper to one of a waterfall with lots of plants and trees. I want to wake up to this, so I can start the day by opening my eyes in nature, as I feel safe, happy, and [it's] always been a place I feel I belong since I was a kid.
>
> (woman, 45–54 years old, Scotland)

Importantly, it seemed that participants used these alternative forms of nature contact both as a substitute for more traditional forms of nature contact (e.g. time physically in nature) and as a complement to these other forms of nature contact. This suggests that

alternative forms of nature contact cannot always be used as a like-for-like replacement for traditional nature experiences, and opportunities to physically spend time interacting with nature should be made more accessible for those who wish to engage with nature in this way. Validating a wide range of ways to experience and connect with nature helps to counter exclusionary narratives which suggest that there is one correct way to interact with nature (Bell et al., 2019).

Expanding conceptualisations of nature to include a broader view as the default could be one important insight gleaned from these autistic participants to make progress towards:

> …making sure that everyone is given the opportunity and the access to natural spaces, including giving far more effort into creating disabled access for people. So many have so little interest and respect for nature and have lost their connection to nature.
>
> (woman, 25–34 years old, England)

### 3.2 | Theme 2: Connecting with something ancient to which I nevertheless belong

For many participants, connection to nature meant something far deeper and broader than merely spending time in natural spaces or liking natural things and instead represented, 'a reaching beyond myself, an answering of something inside of myself' (woman, 45–54 years old, Scotland). Some participants described the beyond-human relationships that they felt were central to their connection with nature, and they conceptualised this as a closeness to a religious being: 'I also see a spiritual aspect to it, as I feel a connection with God through nature' (woman, 18–24 years old, England). Other participants said that relating to nature, for them, was a form of non-religious spirituality and a welcome perspective-giver:

> To be a part of nature, from seeing the small details and changes with the seasons to realising how life on earth is connected. I am not religious, but I find nature, animals and music gives me a "spiritual" experience. It can be overwhelming in a positive sense.
>
> (woman, 45–54 years old, England)

The integration of religion or spirituality into experiences in nature is not new, and previous studies have found that connection to nature and greater spirituality are positively associated (Kamitsis & Francis, 2013; Ruf et al., 2018). For those participants in the present study who described a spiritual experience, nature could offer an alternative to organised religions, with which many autistic people have a complicated relationship (Waldock, 2023; Waldock & Sango, 2023). Nature connection could be an outlet through which autistic people could feel and express their spirituality that does not rely on formal institutions which have historically excluded them (van Ommen & Endress, 2022). In an analysis of literary fiction and poetry by autistic authors, Nygren proposes that 'the autistic sense of the more-than-human is at once a response to the oppressive view of the autistic as less-than-human—a way of finding one's allies outside the realms of human civilization—and a special kind of autistic worldly spiritualness' (2023, p. 93); this insight could also explain some participants' spiritual experiences of nature.

Additionally, given how 'society changes but nature remains' (woman, 35–44 years old, England), participants described that having a relationship with nature was a way for them to connect with their ancestry and ancient elements of the world: 'I enjoy the idea that much natural scenery has changed very little over centuries, and that I am connecting with something ancient to which I nevertheless belong' (man, 18–24 years old, England).

The enduring temporal aspect of these deep relationships with nature seemed important to many participants and has been noted in previous research on encounters with therapeutic landscapes (Bell et al., 2023). While many things about our modern world look vastly different to even several decades ago, some natural systems remain largely unchanged, and participants took solace in that:

> I think it's about feeling in a relationship with nature, a sense of oneness that is bigger than me as an individual. A sense of connectivity to the timelessness of nature, to the way others must have experienced nature centuries ago, following the seasonal cycles like watching migratory birds appear is soothing and is a way of stepping out of day-to-day concerns. Being in nature feels good for the soul.
>
> (woman, 35–44 years old, Scotland)

Some participants described a connection to nature that was rooted in a specific place and involved a combining of identities with that place:

> I spent my life savings on buying woodland. I will restore it in my lifetime and have left it to the Woodland Trust so that it will be protected in perpetuity. My ashes will be scattered there when I die. When you own land[,] you feel that you are the land and the land is you.
>
> (man, 45–54 years old, England)

Participants also expressed that they felt that it was difficult to describe connection to nature because they saw humans as being inextricably intertwined with nature and having 'an innate affinity, respect for nature and recognition of our role as part of nature' (non-binary person, 25–34 years old, England); another participant said that 'experiencing that interconnection is one of the deepest joys I know' (non-binary person, 25–34 years old, England).

For participants who felt similarly, connection to nature goes beyond a simple relationship formed by proximity to nature and instead captured something much more significant and longer lasting:

> Connection to [nature] means that you are one with the universe and that you are one with all beings on the planet and you feel connected and integrated into that system[,] and as I found it difficult to integrate into the normal world[,] this world is a lot more comforting and accessible to me [than], say, going to the supermarket which is absolutely the worst thing that I can do.
>
> (woman, 45–54 years old, England)

However, for another participant, the interconnection between humans and nature had a more practical explanation:

> Some people feel a sense of spirituality in the outdoors, especially in wild areas rather than cultivated parks and lawns. Other people[,] like my partner[,] don't seem to feel that. I'm made of organic substance so perhaps I feel more belonging surrounded by other organic stuff rather than by processed materials like bricks, plastics and refined metals.
>
> (non-binary person, 35–44 years old, England)

These examples coincide with the corpus of published life writing by autistic authors which frequently convey how non-human nature and the material environment are sources of both joy and ethical value (see, for example, Stenning, 2023).

### 3.3 | Theme 3: It makes me a little sad tbh

While connection to nature is often considered in the context of its associated individual benefits, like an increased likelihood to enact pro-environmental behaviours (Liu et al., 2022), having a strong psychological relationship with nature is not always a positive thing; indeed, for some participants, increased connection to nature sometimes amplified feelings of eco-grief or eco-anxiety, though this was often described using different terms. Eco-grief and eco-anxiety are emotions of sadness, worry and/or despair associated with climate degradation (Pihkala, 2020). In contrast to participants in Theme 2 who expressed that the enduring and unchanging essence of nature formed a central part of their conceptualisation of connection to nature, other participants shared that their experience of connection to nature was in some way influenced by the ways that nature changes, particularly as it relates to climate change.

While many participants described the individual elements of their relationships with nature, participants also reflected on the uncomfortable tension between humans' inextricable link with nature and the collective human actions which are contributing to its demise, noting that 'we are part of an ecosystem we are knowingly destroying' (woman, 45–54 years old, England). Another participant echoed this frustration and the role that humans play in harming nature:

> It just means me, innately. It means tending to the natural world around me, keeping it natural…It means being aware of consequences of human's unnatural doings, and aware of how much life there is in every patch of land, however unseen it may be…I think many people assume thoughtlessly that being unnatural is a human want and gift, and are blind to the consequences.
>
> (woman, 55–64 years old, England)

Increased connection to nature is often correlated with being more knowledgeable about or having more awareness of harm being done to nature and the climate, and this relationship can therefore be associated with poorer wellbeing, too (Capaldi et al., 2014). However, just as some people view humans as an inextricable element of nature, this downside to a close human-nature relationship might also be impossible to avoid. One participant noted that being connected to nature also means acknowledging the parts of nature which are seen as negative or undesirable:

> We are products of, and a part of, nature, so in some ways it is impossible to not be connected to nature. The term 'natural' is often used to indicate health and wholesomeness, but this is misleading. Malaria is natural, as are earthquakes. Human activity is also natural. We are not connected to nature, we are one aspect of it. I sometimes think that the human race is actually a kind of natural disaster because of the damage we cause.
>
> (man, 35–44 years old, England)

For some participants, this knowledge of both the positive and negative elements of nature connection prompted them into action:

> My personal connection to nature meant I bought a house and land to be in nature—I have tried to improve it for the benefit of wildlife—planted 50 trees, habitat for birds and mammals…I planted and restored 3 acres of gardens to increase biodiversity—without biodiversity we are all dead. I took a BSc environment studies degree to learn more about the natural world and write science articles about technology for my new job…So you could say my connection to nature is everything—I have no room or time for people or places that make me feel disconnected.
>
> (woman, 45–54 years old, England)

There were also a small number of participants for whom connection to nature did not mean anything. Participants shared, 'this term seems so vague to me that I don't really know how to define it' (woman, 25–34 years old, England), 'the term doesn't mean much to me' (man, 35–44 years old, England) and 'this makes no sense to me' (woman, 25–34 years old, England). In addition to those who did not

have an existing definition of connection to nature, there were also those who felt that they lacked a connection to nature or that it was not important to them due to their personal preferences around the outdoors. One participant shared they 'don't feel any connection to nature as I prefer the city life' (man, 25–34 years old, England) while another said the term:

> ...makes me think of hippy type people who like to sit out in woods and meditate which is not something I would ever do, I don't like the outdoors, I really dislike bugs.
>
> (woman, 35–44 years old, England)

Acknowledging the reality that not all people value nature or desire a relationship with nature in the same way, some participants expressed that the fact that other peoples' lack of connection impacts them: 'It makes me a little sad tbh [to be honest]. We are part of nature, it shouldn't be considered an optional thing' (woman, 35–44 years old, England). Disconnection from nature is a concept receiving more empirical and theoretical attention in ecopsychology research (e.g. Barrable & Booth, 2022; Beery et al., 2023) given the increasingly common stance that human-nature relationships do not exist on the simple binary that has previously dominated scholarship in this area (though it is important to note that human geographers have long been grappling with questions about how human relationships with and conceptualisations of nature are socially constructed; for example Castree, 2013; Castree & Braun, 2001). The perspectives of these autistic participants lend support to Beery et al.'s (2023) calls for a more nuanced understanding of this relationship, which is unlikely to be unidirectional, and the individual and society-level influences (both of which, we propose, are relevant to disability) which inform how a person experiences this relationship.

### 3.4 | Limitations

This study represents the perspectives of 108 autistic adults resident in the UK. Of course, this does not reflect the experiences or views of all autistic adults, in the UK or otherwise. Autistic people's experiences in nature likely vary depending on a number of variables, including geographic location, age, ethnicity/race and socioeconomic status. We did not capture participants' race/ethnicity, and this is a limitation of this study, as we cannot accurately ascertain the diversity of our sample. This might unintentionally contribute to the over-amplification of white autistic people in autism research (Malone et al., 2022). Future research should capture these important demographic data and could consider the ways that participant responses vary (or not) across different groups.

Additionally, this study is limited by the constraints inherent in survey research, like challenges with recruitment and retention and recruiting only those participants who have access to internet and time to complete a survey (McInroy, 2016). Additionally, some autistic people might prefer to communicate in other manners that survey methods do not allow for. However, there were also benefits to using an online survey, particularly one created in consultation with autistic people. The survey allowed for participants to accessibly explain their answers in as many words as they would like, which helped generate rich data. The online platform also allowed the survey to reach other areas of the UK, drawing perspectives from people beyond our immediate networks.

## 4 | CONCLUSION

Through this analysis of 108 responses from autistic participants in the UK, co-produced with autistic consultants, we sought to understand how autistic people define and experience connection to nature. In doing so, we hope to contribute towards the effort to imbue ecopsychology with the influences of critical disability studies, inspired by Schmidt's (2023) scholarship. Across many participants in this sample, nature was not something they saw as separate from themselves (or from humans more generally), and so connection to nature was not a simple, unidirectional relationship nor a clear-cut binary; this echoes increasingly critical work examining the complexity of human-nature connection (Beery et al., 2023).

This study has implications for the field of ecopsychology and related disciplines and for practitioners of environmental education and nature-based learning. By drawing upon autistic perspectives to develop new understandings of connection to nature, nature-based practitioners can support the cultivation of human-nature relationships in innovative ways that extend beyond simply spending time in nature to reflect the diversity of experiences which exist. Similarly, by centring perspectives derived from the experiences of autistic and otherwise disabled and neurodivergent people, researchers and practitioners can help dismantle the inherently ableist views which permeate these fields (Schmidt, 2023).

Cognitivist perspectives on autism in particular, while being premised on universality and amenable to large scale studies, do not provide researchers and practitioners with a framework that encompasses either the heterogeneity of autistic people's experiences of non-human nature, nor the potential that nature connectedness can play in the individual's sense of identity and ethical purpose. Furthermore, autistic people's stories about nature are seldom uncritical towards societal discourses that construct nature connectedness and pro-environmental behaviour as individual responsibility, rather than collective endeavour that require large-scale sociocultural changes. This paper finds evidence for understanding autism not as limitation at the level of individual subjectivity but as an affordance for thinking about the limitations on our existing constructions of nature connectedness.

### AUTHOR CONTRIBUTIONS

Samantha Friedman and Roan Noble conceived the ideas and designed methodology; Samantha Friedman collected the data;

Samantha Friedman and Sara McHaffie analysed the data; Samantha Friedman and Anna Stenning led the writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication. Our study brings together authors based in the country where the study was carried out (UK). We sought to include the views of autistic people, the population of interest in this study, throughout all stages of the study from design and data analysis to writing up the manuscript. Whenever relevant, literature published by scientists from the region was cited; efforts were also made to include relevant work published by autistic researchers and writers.

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## CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

## DATA AVAILABILITY STATEMENT

We do not have ethical approval to make the survey data from this study publicly available. Please contact the first author for more information about data access.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**Data S1:** Supporting Information.

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