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RESEARCH PAPER

Evaluation of a Nature-based Psychological Intervention: Dose of Nature Young People's Programme

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Abstract

Background: With growing mental health and environmental concerns, the interest in the wellbeing and pro-environmental benefits that connection to nature brings is increasing, making mental health interventions that engage individuals with nature on the rise. This study examines a nature-based mental health intervention, DoN's young people's programme (15 to 25 years old), aiming to understand what it is about the intervention that benefits mental wellbeing. Evidence is needed to understand the underlying mechanism of the benefits brought about by these interventions.

Methodology: In this qualitative study, 1-to-1 interviews were conducted with 10 DoN clients and analysed with Thematic Analysis.

Results: Three themes underpin successful nature prescriptions: Connecting with Oneself (sub-themes: Self-Restoration and Self-Expression), Connecting with Others (sub-themes: Meaningful Relationship with Guide and Meaningful Relationship with Community), and Connecting with the Environment (sub-themes: Engaging the Senses and Emotional Bond to the Environment). The most present elements are Self-Expression and Emotional Bond to the Environment.

Discussion: Findings highlight the clinical value of a relationship to the natural world. There are a couple of limitations to the study: participants' arguments could have been influenced by a social desirability response bias; and the present study cannot draw long-term conclusions on the benefits of the intervention. A randomized control trial with long term follow-up should be conducted for this purpose.

Conclusion: As most nature-based interventions focus on nature contact and knowledge-based activities, the current study provides valuable insight into an alternative approach, focused on fostering a relationship with the community and the natural world.

Keywords: *Mental Health Crisis, Environmental Crisis, Young People's Health, Service Evaluation, Nature-Based Interventions, Nature Prescriptions*

BACKGROUND

Nature-based interventions (NBI) are programmes, activities or strategies that aim to engage people in nature–based experiences with the specific goal of achieving improved health and wellbeing (Shanahan et al., 2019). This study intends to examine a nature-based psychological intervention: Dose of Nature (DoN) young people's programme, and specifically why this programme appears to be effective. DoN is a registered charity established in 2020 to promote the mental health and wellbeing benefits of engaging with the natural world, and supports people with mental health issues as well as the general population. It offers DoN prescriptions, which are one-to-one sessions, as well as groups and wellbeing workshops. It has a programme dedicated to supporting young people (YP) from 15 to 25 years old (Dose of Nature, n.d.). In this paper, Nature is understood as: "*all the animals, plants, rocks, etc. in the world and all the features, forces, and processes that happen or exist independently of people, such as the weather, the sea, mountains, the production of young animals or plants, and growth*" (Cambridge University Press, n.d.).

There is a global mental health crisis amongst young people. Although it is important to intervene at an early stage (World Health Organization, 2024), mental health services and professionals are extremely overwhelmed (Young Minds, 2024). Additionally, the current destruction of the environment caused by anthropogenic climate change and biodiversity loss is contributing to the mental health crisis, as humans depend on a healthy environment at both physiological and psychological levels (Corvalan et al., 2022). With growing evidence about the health benefits of engaging with nature, mental health interventions that consider the human-nature relationship are growing too. However, there is a need to understand why NBI show positive outcomes at a clinical level to provide evidence on how to structure and integrate them into public health systems (Gray et al., 2023). We hereby propose an exploration of why those benefits occur, examining the perspectives of DoN's young clients who recently completed the programme.

A POLYCRISIS

Mental Health Crisis

Youth mental health is a real and serious problem. Globally, depression, anxiety and behavioural disorders are the leading causes of illness and disability amongst adolescents (World Health Organization, 2024). Around 50% of mental health issues emerge before the age of 14 years old, and 75% before the age of 25 (Department of Health and Social Care, 2024; McGorry & Mei, 2018). GPs and mental health services are overwhelmed. According to Young Minds (2024) only one in three children and young people with a diagnosable mental health condition gain access to NHS care and treatment. There are different factors that contribute to this mental health crisis. First, there is increasing pressure on social, academic and professional performance (Greenwood & Gatersleben 2016; Eriksen, 2021). Second, the time children and young people spend playing indoors is increasing. In the UK, previous generations spent around 40% of their time playing outdoors, today's generations are spending only around 10% (England Marketing, 2009). There are also clear social inequalities related to how children access natural environments, with a link between the frequency of the visit and both their ethnicity and socio-economic status (Hunt et al., 2016).

Time spent playing indoors can increase the risk of loneliness and negatively affect emotional development, self-esteem and social skills (Mygind et al., 2021). Instead, outdoor play supports the development of resilience, which is the ability to positively adapt to stress and recover from adversity. In the outdoors, young people learn to deal with unpredictability, such as changes in the weather and unexpected obstacles, and to be adaptable and come up with creative solutions (Ewert & Yoshino, 2009; Neill & Dias, 2001). A pilot study investigated whether a four-week wilderness camp would increase connection to nature and promote different aspects of wellbeing, addressing how a lack of nature exposure is directly correlated with the rise in attention difficulties, obesity, and low mood. Results found that levels of nature connection, perceived safety, sense of place, sense of wholeness, enhanced social interactions all significantly improved (Warber et al, 2015). There is a need to increase the time young people spend outdoors and develop accessible and cost-effective early interventions: failing to address adolescent mental health conditions extends to adulthood affecting both physical and mental health and potentially invalidating an individual for decades (World Health Organization, 2024).

Environmental Crises

In addition to these global mental health concerns, the world is currently facing two other crises: human driven climate change and biodiversity loss. The World Health Organization developed the One Health approach, recognising the interdependency of

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the health of humans, domestic and wild animals, plants and wider ecosystems (World Health Organization, n.d.). Although this approach mainly focuses on physical health, evidence shows that mental health is part of this picture too (Corvalan et al., 2022). According to Lingos and colleagues (2022) environmental havoc is a significant cause of psychological disorders. Thus, progressing climate change and environmental degradation pose a serious threat to both physical and mental health worldwide. Young people worry about the future, experiencing feelings like ecoanxiety. Being involved with the complexity and inability to act upon the crisis can cause stress, low mood and even mental breakdown. This is confirmed by the British government's report on the wellbeing of children and young people over the academic year 2021 to 2022, which suggests that worries about the environment and the coming future impacts young people's feelings of anxiousness (Department for Education, 2023).

What is more, research suggests that environmental crises not only act as direct stressors but can have an adverse impact on individuals' biological, cognitive, behavioural, emotional and social pathways, increasing the possibility of developing mental difficulties (Thoma et al., 2021). A study conducted with Inuit in Canada examines how the environmental crises affect mental health within a biopsychosocial framework. The study found that the changes in the natural environment, e.g., melting ice, affect Inuit traditional ways of living, e.g., traveling and getting food (behavioural pathway), which in turn disrupts diet and patterns of activity (biological pathway), cultural identity, and sense of place and self-worth (cognitive pathway). These alterations are associated with sadness, anger or hopelessness (emotional pathway) and can affect social behaviour (social pathway) (Cunsolo et al., 2013). This study could be adapted in other places and societies, given the rising presence of extreme weather events, i.e. wildfires, floods, and droughts.

However, there is also growing scientific interest in the benefits of an environment on humans' mental health and wellbeing. An environment rich in biodiversity positively influences both mental and physical health (Sandifer et al., 2015). For example, a recent study conducted in partnership with Kew, Royal Botanic Gardens, explored the positive link between children's wellbeing and biodiverse landscape (British Psychological Society, 2023). Humans' physical and psychological wellbeing depends upon a healthy environment and the progressive anthropogenic destruction of our habitats and its negative effect on mental health must be taken seriously.

NATURE'S POSITIVE IMPACT ON MENTAL WELLBEING

It was only around 40 years ago that research on the mental health and physical benefits of nature started to be conducted with scientific rigour. A first hypothesis appeared in the 80s: according to the biophilia hypothesis, as humans evolved in nature, there is a biological need to connect with it. This implies that our health is tightly linked to the level of our connection to the natural world (Wilson, 1984). The biophilia hypothesis also informed the development of ecopsychology. According to this discipline, as humans are fundamentally part of nature, enhancing connection and developing an emotional bond to nature improves individuals' wellbeing and interpersonal relationships. An individual, social communities (both local and global), and the environment are interlinked, making their wellbeing interdependent (Roszak et al., 1995). There is now considerable research on the correlation between connection to the natural world and positive social connection (Warber et al., 2015) and social cohesion (Oh et al, 2022). In addition, from the biophilia hypothesis two theories of environmental restoration were developed. Ulrich's Stress Reduction Theory (SRT) suggests that a natural environment promotes recovery from stress whereas an urban environment inhibits it, as humans haven't had time to evolutionary adapt to highly urbanised settings. Thus, stimulating urban environments with high levels of visual complexity, noise, and movement constantly produce physiological and psychological arousal (Ulrich et al., 1991).

Attention Restoration Theory (ART) suggests a cognitive explanation for nature's restorative properties. Extended use of voluntary attention (sustained concentration) reduces our capacity to perform cognitive tasks, resulting in what is known as "attention fatigue". Contrastingly, nature's stimuli engage our involuntary attention (effortless soft concentration), restoring our ability to perform voluntary directed attention. According to ART, the cognitive process of being immersed in nature follows four principles: 1) awe: the natural environment (e.g., clouds, sunsets, the wind in the leaves) captures our curiosity effortlessly; 2) being away: it provides an opportunity to gain distance from our routine; 3) compatibility: humans are evolutionarily part of the natural environment; 4) extent: feeling immersed in nature and in harmony with a greater whole (Kaplan, 1989).

These past 40 years saw an exponential growth in scientific research on the wellbeing benefits brought by engaging with nature (Richardson, 2023). Today there is solid evidence that nature engagement brings a wealth of psychological benefits, as it

reduces stress, depression and anxiety symptoms, improves mood and restores attention, increases social connection and reduces isolation; and physiological benefits, as it lowers blood pressure and sugar levels, decreases levels of lifestyle diseases, boosts the immune system and reduces inflammation in the body (Department for Environment, Food & Rural Affairs (DEFRA), 2018; Kuo, 2015; Martin et al., 2020; Mygind et al, 2021; Sandifer et al, 2015). Additionally, individuals who are more connected to nature tend to have higher levels of eudaimonic well-being, experiencing positive emotions linked to self-acceptance, purpose, and authenticity (Pritchard et al., 2020), and hedonic wellbeing, the state of feeling good (Capaldi et al, 2014).

What's more, the psychological construct of nature connection has been developed with the aim of measuring an individual's sense of their relationship with the natural world (University of Derby, n.d.). Nature connection is an important predictor of ecological behaviour and subjective well-being (Lengieza et al., 2023; Mayer & McPherson Frantz, 2004; Martin et al., 2020). Yet even though individuals' relationship with nature is present in many different aspects of life, it has started to be studied with scientific rigour fairly recently (Thoma, 2021). For instance, the period of indoor isolation brought by the COVID-19 pandemic in 2020 has been a turning point, highlighting people's need to spend time in green spaces to relax, exercise and socialise (Ugolini et al., 2020).

The University of Derby's Pathways to Nature Connection is a framework aimed at fostering a meaningful relationship with nature. Their research identified five pathways that nurture this connection. 1) Contact: engage with nature through the senses (e.g., smelling flowers, feeling the wind on the skin); 2) Emotion: develop an emotional bond with nature, notice the emotions that arise when in contact with nature; 3) Compassion: caring, extending the self to include nature and develop a moral and ethical concern for nature; 4) Meaning: thinking about how the meaning and sense of nature relates to the self (e.g., using natural symbolism, metaphors); and 5) Beauty: appreciate the aesthetic qualities of nature (e.g., appreciating natural scenery or connecting through the arts. There is the need to move beyond superficial contact or focussing only on knowledge and identification when promoting a relationship with nature (Lumber et al., 2017).

Around the same time, other researchers developed a framework to understand when and how children (people below 18 years old) connect to nature: the Assessment Framework for Children's Human Nature Situations (ACHUNAS). This study identified 16 qualities of nature engagement that foster connection (e.g., "awe", "engagement of senses", "involvement of mentors", "creative expression", "child driven" or "self-restoration") (Giusti et al., 2018). These are useful frameworks to guide the design and assess pedagogical or health approaches aimed at fostering human-nature relationships.

NATURE-BASED INTERVENTIONS & DOSE OF NATURE

Given today's social and environmental disruption, there is the attempt to develop regenerative and sustainable practices, making NBI on the rise. Psychology can promote and establish clinical interventions that support both humans and the natural world (Charles et al., 2018, Williams et al., 2023). NBI benefit general mental wellbeing and face rising mental health issues caused by the environmental crisis as they foster a sustainable human-nature relationship based on mutualistic support (Corvalan et al, 2022; Krzanowski, 2021). However, this type of support is still outnumbered and mainly happens in private practice due to cultural and organisational barriers in public health, with the need to therefore develop accessible NBI in public practice (Cooley et al., 2020). Natural England produced a report aiming to provide directions for developing, evaluating, and commissioning NBI at a national level, a common language between services and organisations is needed. There are many different types of NBI and most interventions take the form of a green social prescription, such as social and therapeutic horticulture or green exercise (Bragg & Atkins, 2016). A NBI is the focus of this research: DoN.

The south-west London charity DoN offers an alternative to both conventional psychological therapy and medication within British Public Health. After a self or GP referral, clients meet with a DoN psychologist. They discuss their mental health needs and what the intervention involves. Then, clients are matched with a trained volunteer, a DoN Guide, and can benefit from a DoN prescription. Once a week for approximately 8 weeks, clients meet with their DoN Guide for an hour and also spend time in nature independently. In this person-centred intervention, the Guide encourages and supports the client to spend time and engage with their senses in nature through activities and reflections. As part of their recovery, clients have the option to engage in groups in nature with other people in receipt of a nature prescription (Dose of Nature, n.d.).

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The charity's own unpublished monitoring suggests that clients' symptoms of depression and anxiety reduce over the course of the programme. This is consistent with evidence from other, similar interventions (Warber et al., 2015). What is less well researched is why such improvements in wellbeing take place. The positive impact of nature engagement is an existing but very marginal topic within clinical psychology (Thoma et al., 2021), and the underlying benefits impacting individuals at a psychosocial level aren't adequately explained. It is here intended to examine the relationship between humans and the rest of nature at a clinical level and understand which aspects of a NBI increase mental wellbeing according to DoN young clients.

Research Question: How do DoN young clients perceive the impacts of a DoN prescription on their mental health and wellbeing?

METHODS

Design

This study adopts a qualitative research design, gathering data through semi-structured interviews. In service evaluations, interviewing clients allows for a more nuanced understanding of what works in the intervention, accounting for the subjective experience of participants and inductively unveiling factors of the programme that benefit mental wellbeing (Palinkas, 2014)

Participants

To be eligible, individuals must have taken part in the Young People's Programme (15-25) within the two years prior to the start of data collection: from June 2022. A purposeful sample of at least 10 participants is required for the use of thematic analysis. 11 random clients were invited and 10 agreed to take part (six females and four males).

Materials

Semi-Structured Interview Questions

Semi-structured interview questions were developed from the DoN Client Evaluation Form, a feedback form for clients to evaluate their experience of the programme. The semi-structured interview is comprised of 6 open-ended questions, the first one being "How did you find the Dose of Nature prescription?". Please see supplementary material for the full list of interview questions.

Procedure

Data Collection

DoN psychologists contacted the client and asked if they would be interested in taking part in an informal interview aimed at understanding their experience. An email was sent to them (and to caregivers for under-18 clients) with the Study Information Sheet and a Consent Form. Once participants gave their informed consent interviews were conducted after which a Study Debrief was sent to participants. Interviews are stored on the researchers' laptop for 2 years.

Data Analysis

Once the interviews had been conducted and transcribed, they were analysed via Thematic Analysis, here used within an interpretivist epistemological position. This method was chosen because it identifies, analyses, and reports patterns within rich data. It is excellent for exploring participants' perspectives about the programme. After having applied initial coding to analyse the initial large amount of data in the transcripts, themes were generated and reviewed (Braun & Clarke, 2006).

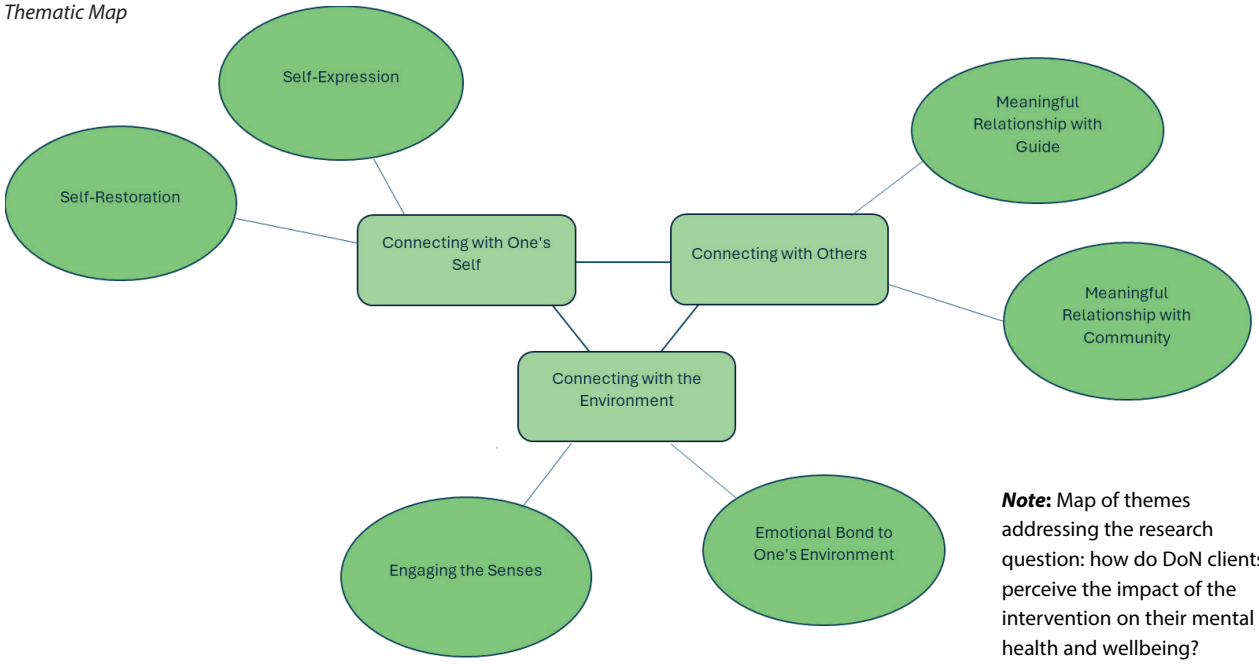
Ethical Considerations

As participants are part of a clinical population, and some are under 18, they are classified as vulnerable people in psychological research. This means that participants' wellbeing was prioritized throughout the study, and informed consent was required to take part. The treatment of their personal data complied with Goldsmiths GDPR policy. After the research received ethical approval from the departmental ethics committee, appropriate research processes have been followed. The study was completed in accordance with the Declaration of Helsinki as revised in 2013.

RESULTS

Figure 1 displays a visual representation of the themes that emerged from the interviews. The factors that underpin the mental health and wellbeing benefits brought about by DoN prescriptions can be represented by three interrelated themes: *Connecting with One's Self*, *Connecting with Others*, and *Connecting with the Environment* and 6 sub-themes. Altogether they represent what clients believe to be the mental health and wellbeing benefits rooted in DoN's programme.

Figure 1:
Thematic Map



Note: Map of themes addressing the research question: how do DoN clients perceive the impact of the intervention on their mental health and wellbeing?

Connecting with One's Self

The theme *Connecting with One's Self* captures clients' comments on the sense of personal wellbeing brought about by an increased awareness of their needs and ability to act upon them. This concept is expressed through 2 sub-themes: S*elf-Restoration* and S*elf-Expression.*

Self-Restoration. Participants described how engaging with nature enabled the restoration of both mind and body. The mood is improved, and attention is restored to the present moment. Participants recognised the session as a recharging break from daily duties and this experience led to lifestyle changes (e.g., having breaks in parks, and acknowledging the importance of "slowing down").

Extract: *"It makes you feel calmer to just be outside... to having a fast-paced life, but also I think you know, living in a big city and our society is so fast paced in general and it's like slowing that like nature really helps(with) right to like just slow down and be calm."*

Self-Expression. This sub-theme theme refers to clients' sense of freedom and self-determination brought about by engaging with nature. It is the second most present sub-theme. Participants said that sessions were often playful and experiential. Exploring urban natural environment opened them to new experiences. Participants felt valued and heard, and they considered the programme as less pathologising than other types of mental health support they experienced. The sessions cultivate autonomy, develop non-judgmental self-acceptance and lead to life-style changes.

Extract: *"I kind of felt sometimes I'd leave (the sessions) feeling a bit a bit more like motivated to go and like, try new things."*

Connecting with Others

In the interviews, participants described an essential factor for the positive experience of a nature prescription: the ability to develop meaningful connections with members of the programme, such as DoN Guides, psychologists and other clients. This concept is expressed in 2 sub-themes: *Relationship with Guide* and *Relationship with Community*.

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Meaningful Relationship with Guide. Participants referred to the quality of the relationship with the DoN Guide as an essential aspect of the programme. This bond engaged them with the content and aims of the programme, and thus made them feel better. Further, the volunteering nature of Guides seemed to be an essential factor within this relationship, making it feel trustful and authentic.

Extract: *"In some ways, that's more like human to human rather than I guess specialist to client, which is quite nice. I think it's better (that the Guide is a volunteer)"*

Meaningful Relationship with Community. Different aspects of the person-centred programme made clients feel valued, heard and respected. They felt part of a community where support is accessible: from being able to take part in the charity's activities at any time to receiving an email with the programme of the week ahead.

Extract: *"I know that if I'm struggling, I can always go back and I can always engage in the groups"*

Connecting with the Environment

The theme *Connecting with the Environment* refers to the clients' reflections on the benefits of noticing and engaging with one's physical state and natural surroundings. The body and the senses are perceived as a gate to the present moment and the natural world. By noticing the beauty and variety of the natural world, participants see themselves as part of it and develop a bond with it. These experiences led to new daily habits of noticing and acknowledging one's surroundings. This category is expressed by 2 sub-themes: *Engaging the Senses* and *Emotional Bond to One's Environment*.

Engaging the Senses. Many clients said that feeling in the present moment, noticing and being aware of one's mind, body and environment, improves their mood, relaxes and restores attention. Many activities clients did with their DoN Guides are based on engaging with their surroundings through the senses. Clients repeat these activities outside of the sessions.

Extract: *"I take my mind off things and focus on nature and the details of the sounds, which does help me destress."*

Emotional Bond to One's Environment. This is the most present sub-theme. Engaging with nature in the sessions made clients reflect and notice how humans are as part of nature as other beings. They develop an emotional bond with nature, feel part of a greater whole and develop a sense of belonging. They refer to an interconnection between beings. This emotional bond is nurtured by a sense of wonder, a sense of awe, with many comments acknowledging the beauty of the natural world. The appreciation of one's surroundings is accompanied by a sense of gratitude for being able to witness and be part of this whole. In addition, by noticing that the natural environment is in constant transformation, and understanding humans as part of the natural environment, clients referred to feeling more capable of accepting unpredictability and demonstrated resilience. The acknowledgement of change nurtures self-compassion.

Extract: *"It definitely makes me feel a lot more positive to go out and just see the world. And you know, you're suddenly able to realize that even if you're feeling bad, there's a lot of beauty around and I feel a lot more positive after I've been spending time outside."*

DISCUSSION

Theoretical Implications

The study's findings are valuable as they enrich our understanding of the psychological benefits brought about by increased engagement with nature. First, the findings are consistent with current evidence on these benefits, such as the reduction of stress and low mood, improved attention, increased self-esteem and social connection and reduction of isolation (DEFRA, 2018; Kuo, 2015; Lengieza et al., 2023; Martin et al., 2020; Mygind et al, 2021; Sandifer et al, 2015). Findings suggest that eudaimonic wellbeing, main aspects of which are self-acceptance, purpose, authenticity, and sense of gratitude, is nurtured in the sessions, confirming that higher levels of nature connection are linked to higher levels of eudaimonic wellbeing (Pritchard et al., 2020). Moreover, in the outdoors participants face changing weather, seasons, and unexpected obstacles, and learn to face adversity, as they understand challenges and adversities as part of life. Engagement with nature cultivates resilience to adversity (Ewert & Yoshino, 2009; Neill & Dias, 2001).

The theme *Connecting with One's Environment*, with its sub-themes *Emotional Bond to One's Environment* and *Engaging the Senses* reflects the five pathways to nature connection developed at the University of Derby: 1) engaging with nature through the senses, 2) develop an emotional bond with nature 3) developing compassion to the self and others through nature 4) developing new meaning through nature, 5) appreciating the beauty of nature (Lumber et al., 2017). Additionally, the sub-theme *Emotional Bond to One's Environment* reflects the four principles

of ART: 1) awe, 2) getting distance from our routine, 3) feeling compatible and part of the natural environment, and 4) feeling in harmony with a greater whole (Kaplan, 1989). The Kaplans understand these four principles as part of a cognitive process that restores attention, whereas in this study they seem to belong to an emotional pathway. A sense of awe and belonging to the natural world, drawing similarities between themselves and the rest of nature seems to emerge from an emotional connection to the natural world.

These findings highlight the clinical value of an emotional connection to the natural world. Nurturing a relationship with nature and an emotional bond to it gives participants a sense of kinship to the rest of the natural world. A paradigm where humans are part of nature and are not separated from it fosters a sense of belonging and appears to increase participants' self-awareness, with consequent benefits to mental wellbeing. Thus, for increased psychological benefits, it is the quality of our interaction with nature that matters more than the quantity of it. High levels of nature connection are, in fact, a predictor of high levels of wellbeing (Lumber et al., 2017; Mayer & McPherson Frantz, 2004; Martin et al., 2020). Yet, most NBI focus on nature contact and knowledge-based activities (Bragg & Atkins, 2016). The present findings highlight the relevance of DoN approach, which focuses on fostering a relationship with the natural world and the social community. This approach fits into an ecopsychological understanding of NBI, recognising the interconnection between humans and their ecological context, and how their wellbeing is interdependent (Roszak et al., 1995).

Today, the familiar is fading, and the sense of home is under threat as climate change and biodiversity loss increase environmental destruction and alter the balance of known ecosystems with subsequent psychological damage for humans (Cunsolo et al., 2013; Sandifer et al., 2015; Thoma et al, 2021). The DoN programme fosters a sense of place and wholeness, enhancing social connection, cohesion and perceived safety (Oh et al., 2022; Warber et al., 2015). As an emotional bond to nature and enhanced social connections foster feelings of belonging, nature prescriptions are a great therapeutic tool in response to psychological distress caused by today's environmental and social havoc (Lingos et al., 2022; Martin et al., 2020). Further, a deeper connection with nature develops pro-environmental behaviours: developing a meaningful relationship with the natural world is key to moving toward a more sustainable future (Lengieza et al. 2023).

Practical Implications for DoN

The present findings suggest a successful DoN nature prescription comprises three factors. The theme *Connecting with the Environment* represents the content of the intervention. This sensorial gate and emotional bond are enabled with the directions and through a *Meaningful Relationship with the DoN Guide* and *with the Community* (the two sub-themes of *Connecting with Others*). Thus, clients can alleviate their mental difficulties (*Connecting with One's Self*). Cultivating a relationship with nature, enabled by the person-centred structure of the programme, allows clients to acknowledge and respect their emotions, moods, and needs (*Self-Expression*), and to take a break from their daily pressures and life stresses (*Self-Restoration*). The two factors that clients mostly mention are *Self-Expression* and *Emotional Bond to the Environment,* meaning that alongside increased emotional connection to the natural world, clients foster a sense of personal sovereignty. Thus, the DoN programme mainly benefits nature connection and psychological wellbeing: two aspects found to be essential for a successful nature-based psychological intervention.

Limitations & Future Research

As participants are DoN clients who successfully completed the programme, their positive responses in the interviews could be influenced by a social desirability response bias: a desire to appear a "good client" could have come into play (Clark et al., 1993). The researcher is affiliated with the charity, being a volunteer, and this could have played a role in how participants wanted to portray themselves in the eyes of the charity even if they had never met the researcher before. The study can be replicated with an individual external to the organisation. Additionally, this study cannot draw conclusions about the long-term effects of the intervention on clients, for which a randomized control trial with long term follow up would be required (Mohr, 2024).

Regarding future directions, it would be interesting to examine the relationship between self-expression and emotional bond to the environment, which are the two most present themes in the qualitative findings. As most research focuses on the restorative elements of nature, both psychologically and physiologically, examining the link between personal sovereignty and emotional connection to the environment can increase the current knowledge on the relationship between mental health and natural environments. This could be done by researching the causes behind the higher levels of confidence that engaging with nature appears to bring.

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CONCLUSION

To conclude, this study increases understanding of the mechanisms by which NBI may be effective. According to young clients, a successful DoN prescription positively impacts the level of connection to one's self (bringing higher self-awareness, self-expression, and restoring and responding to one's needs), and enhances feelings of connection to the social community and the natural environment. Specifically, findings are significant because most nature-based interventions focus on physical contact with nature, whereas it is the quality of the interaction with nature that matters more than the quantity. They show the clinical relevance of engaging with the natural world beyond simply physically connecting with nature, a marginal topic in standard clinical practice. Developing a relationship with nature is felt as an emotional bond and a source of meaning in life, it brings mental health and wellbeing benefits and increases pro-environmental behaviours, making nature-based interventions urgent clinical practices that benefit both humans and the natural world in a reciprocal recovery during a time of social and environmental crises (Cooley et al, 2020; Corvalan et al, 2022; Krzanowski, 2021, Williams et al., 2023). The mechanisms by which DoN psychological intervention appears to be effective fit into an ecopsychological understanding of NBI. Clients recognise the interconnection between humans and their ecological context, and how their wellbeing benefits from acknowledging this connection and nurturing and consolidating a healthy relationship with the natural world (Roszak et al., 1995). Indeed, clinical research and practice can further develop NBI, focussing on deepening human-nature relationships, and integrating them into health systems in order to face environmental crises and support people and communities (Charles et al., 2018; Gray et al., 2023). ■

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References

Bragg, R, & Atkins, G. (2016). *A review of nature-based interventions for mental health care* (Natural England Commissioned Report No. 204). Natural England. https://publications.naturalengland.org.uk/publication/4513819616346112#:~:text=Natu e%2Dbased%20interventions%20are%20operating,solution%20for%20mental%20health%20care

British Psychological Society. (2023). *Impact of biodiversity on health: Research finds walk in nature boosts wellbeing*. https://www.bps.org.uk/news/impact-biodiversity-health-research-finds-walk-nature-boosts-wellbeing

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Cambridge University Press. (n.d.). *Nature*. In *Cambridge dictionary*. Retrieved April 8, 2024, from: https://dictionary.cambridge.org/dictionary/english/nature

Capaldi, C. A., Dopko, R. L., & Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: A meta-analysis. *Frontiers in Psychology, 5*, 92737. https://doi.org/10.3389/fpsyg.2014.00976

Charles, C., Keenleyside, K., Chapple, R., Kilburn, B., Salah van der Leest, P., Allen, D., Richardson, M., Giusti, M., Franklin, L., Harbrow, M., Wilson, R., Moss, A., Metcalf, L., & Camargo, L. (2018). *Home to Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth*. Children & Nature Network. https://repository.derby.ac.uk/download/3d5bae496fce040d03141ac663645b3b214d6c2366a75fb451bebd4ebe02e93f/2597649/HometoUsAll.pdf

Clark, C., Scott, E., & Krupa, T. (1993). Involving Clients in Programme Evaluation and Research: A New Methodology for Occupational Therapy. *Canadian Journal of Occupational Therapy*. https://doi.org/10.1177/000841749306000405

Corvalan, C., Gray, B., Villalobos Prats, E., Sena, A., Hanna, F., & Campbell-Lendrum, D. (2022). Mental health and the global climate crisis. *Epidemiology and Psychiatric Sciences, 31*, e86. https://doi.org/10.1017/S2045796022000361

Cooley, S. J., Jones, C. R., Kurtz, A., & Robertson, N. (2020). 'Into the Wild': A meta-synthesis of talking therapy in natural outdoor spaces. *Clinical Psychology Review*, *77*, 101841. https://doi.org/10.1016/j.cpr.2020.101841

Cunsolo Willox, A., Harper, S. L., Ford, J. D., Edge, V. L., Landman, K., Houle, K., ... & Wolfrey, C. (2013). Climate change and mental health: an exploratory case study from Rigolet, Nunatsiavut, Canada. *Climatic Change, 121*, 255-270. https://doi.org/10.1007/s10584-013-0875-4

Department for Education (2023). *State of the nation 2022: Children and young people's wellbeing*. https://www.gov.uk/government/publications/state-of-the-nation-2022-children-and-young-peoples-wellbeing

Department for Environment, Food & Rural Affairs (2018). *Connecting people to the environment to improve health and wellbeing*. In *25 Year Environmental Plan*, 71-82. https://assets.publishing.service.gov.uk/media/65fd713d65ca2f00117da89e/CD1.H_HM_Government_A_Green_Future_Our_25_Year_Plan_to_Improve_the_Environment.pdf

Department of Health and Social Care (2023). *Earlier mental health support announced for thousands nationwide*. https://www.gov.uk/government/news/earlier-mental-health-support-announced-for-thousands-nationwide

Dose of Nature (n.d.). *Home*. Retrieved April 25, 2024. https://www.doseofnature.org.uk/

England Marketing. (2009). *Childhood and nature: a survey on changing relationships with nature across generations* (Natural England Commissioned Report). Natural England. https://publications.naturalengland.org.uk/publication/5853658314964992

Eriksen, I. M. (2021). Duty, discipline and mental health problems: young people's pursuit of educational achievement and body ideals. *Journal of Youth Studies, 25*(7), 931-945. https://doi.org/10.1080/13676261.2021.1925637

Ewert, A., & Yoshino, A. (2011). The influence of short-term adventure-based experiences on levels of resilience. *Journal of Adventure Education and Outdoor Learning, 11*(1), 35-50. https://doi.org/10.1080/14729679.2010.532986

Giusti, M., Svane, U., Raymond, C. M., & Beery, T. H. (2018). A Framework to Assess Where and How Children Connect to Nature. *Frontiers in Psychology*, *8*, 2283. https://doi.org/10.3389/fpsyg.2017.02283

Gray, D., Hewlett, D., Hammon, J., & Aburrow, S. (2023). (Re) connecting with nature: Exploring nature-based interventions for Psychological Health and Wellbeing. *Managing Protected Areas*, 143-166. https://doi.org/10.1007/978-3-031-40783-3_9

Greenwood, A., & Gatersleben, B. (2016). Let's go outside! Environmental restoration amongst adolescents and the impact of friends and phones. *Journal of Environmental Psychology*, *48*, 131-139. https://doi.org/10.1016/j.jenvp.2016.09.007

Ive, K., & Bahri, S. (2023). *Census Data 2021 Richmond Upon Thames*. London Borough of Richmond Upon Thames. https://www.datarich.info/wp-content/uploads/2023/04/Census-2021-results-Richmond-APRIL-23-PUB.pdf

Hunt, A., Stewart, D., Burt, J., & Dillon, J. (2016). *Monitor of Engagement with the Natural Environment: a pilot to develop an indicator of visits to the natural environment by children - Results from years 1 and 2 (March 2013 to February 2015)* (Natural England Commissioned Report No. 208). Natural England. https://assets.publishing.service.gov.uk/media/5a7f686440f0b62305b86f70/mene-childrens-report-years-1-2.pdf

Kaplan, R. (1989). *The experience of nature: A psychological perspective*. Cambridge University Press.

Krzanowski, J. (2021). The need for biodiversity champions in psychiatry: the entwined crises of climate change and ecological collapse. *BJPsych Bulletin, 45*(4), 238-243. https://doi.org/10.1192/bjb.2021.44

Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology, 6*. https://doi.org/10.3389/fpsyg.2015.01093

LeGris, J., Weir, R., Browne, G., Gafni, A., Stewart, L., & Easton, S. (2000). Developing a model of collaborative research: the complexities and challenges of implementation. *International Journal of Nursing Studies, 37*(1), 65-79. https://doi.org/10.1016/S0020-7489(99)00036-X

Lengieza, M. L., Aviste, R., & Richardson, M. (2023). The human–nature relationship as a tangible target for pro-environmental behaviour – Guidance from interpersonal relationships. *Sustainability*, *15*(16), 12175. https://doi.org/10.3390/su151612175

Lingos, A., Mylonas, F., & Skanavis, C. (2022). ECOTHERAPY AGAINST CLIMATE CHANGE. *Environmental Communication and Health Promotion*, 115-128. https://www.researchgate.net/publication/360032339_ECOTHERAPY_AGAINST_CLIMATE_CHANGE

Lumber, R., Richardson, M., & Sheffield, D. (2017). Beyond knowing nature: Contact, emotion, compassion, meaning, and beauty are pathways to nature connection. *PLOS ONE*, *12*(5), e0177186. https://doi.org/10.1371/journal.pone.0177186

Martin, L., White, M. P., Hunt, A., Richardson, M., Pahl, S., & Burt, J. (2020). Nature contact, nature connectedness and associations with health, wellbeing and pro-environmental behaviours. *Journal of Environmental Psychology, 68*, 101389. https://doi.org/10.1016/j.jenvp.2020.101389

Mayer, F.S., & McPherson Frantz, C. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology, 24*(4), 503-515. https://doi.org/10.1016/j.jenvp.2004.10.001

McGorry, P. D., & Mei, C. (2018). Early intervention in youth mental health: Progress and future directions. *Evidence Based Mental Health*, *21*(4), 182-184. https://doi.org/10.1136/ebmental-2018-300060

Mohr, D. C. (2024). Standards for randomized controlled trials of efficacy of psychological treatments. *World Psychiatry*, *23*(2), 286-287. https://doi.org/10.1002/wps.21207

Mygind, L., Kurtzhals, M., Nowell, C., Melby, P. S., Stevenson, M. P., Nieuwenhuijsen, M., ... & Enticott, P. G. (2021). Landscapes of becoming social: A systematic review of evidence for associations and pathways between interactions with nature and socioemotional development in children. *Environment International, 146*, 106238. https://doi.org/10.1016/j.envint.2020.106238

Neill, J. T., & Dias, K. L. (2001). Adventure education and resilience: The double-edged sword. *Journal of Adventure Education and Outdoor Learning, 1*(2), 35-42. https://doi.org/10.1080/14729670185200061

Nisbet, E. K. L., & Gick, M. L. (2008). Can health psychology help the planet? Applying theory and models of health behaviour to environmental actions. *Canadian Psychology / Psychologie Canadienne, 49*(4), 296-303. https://doi.org/10.1037/a0013277

Oh, R. R., Zhang, Y., Nghiem, L. T., Chang, C., Tan, C. L., Quazi, S. A., Shanahan, D. F., Lin, B. B., Gaston, K. J., Fuller, R. A., & Carrasco, R. L. (2022). Connection to nature and time spent in gardens predicts social cohesion. *Urban Forestry & Urban Greening*, *74*, 127655. https://doi.org/10.1016/j.ufug.2022.127655

Palinkas, L. A. (2014). Qualitative Methods in Mental Health Services Research. *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, *43*(6), 851. https://doi.org/10.1080/15374416.2014.910791

Pritchard, A., Richardson, M., Sheffield, D., & McEwan, K. (2020). The Relationship Between Nature Connectedness and Eudaimonic Well-Being: A Meta-analysis. *Journal of Happiness Studies*, *21*(3), 1145-1167. https://doi.org/10.1007/s10902-019-00118-6

Richardson, M., Hussain, Z., & Griffiths, M. D. (2018). Problematic smartphone use, nature connectedness, and anxiety. *Journal of behavioral addictions, 7*(1), 109-116. https://doi.org/10.1556/2006.7.2018.10

Richardson, M. (2023). *Reconnection: Fixing our Broken Relationship with Nature.* Pelagic Publishing.

Roszak, T. E., Gomes, M. E., & Kanner, A. D. (1995). *Ecopsychology: Restoring the earth, healing the mind*. Sierra Club Books.

Sandifer, P. A., Sutton-Grier, A. E., & Ward, B. P. (2015). Exploring connections among nature, biodiversity, ecosystem services, and human health and well-being: Opportunities to enhance health and biodiversity conservation. *Ecosystem Services*, *12*, 1-15. https://doi.org/10.1016/j.ecoser.2014.12.007

Shanahan, D. F., Barber, E. A., Brymer, E., Cox, D. T., Dean, J., Depledge, M., Fuller, R. A., Hartig, T., Irvine, K. N., Jones, A., Kikillus, H., Lovell, R., Mitchell, R., Niemelä, J., Nieuwenhuijsen, M., Pretty, J., Townsend, M., Warber, S., & Gaston, K. J. (2019). Nature–Based Interventions for Improving Health and Wellbeing: The Purpose, the People and the Outcomes. *Sports*, *7*(6), 141. https://doi.org/10.3390/sports7060141

Thoma, M. V., Rohleder, N., & Rohner, S. L. (2021). Clinical Ecopsychology: The Mental Health Impacts and Underlying Pathways of the Climate and Environmental Crisis. *Frontiers in Psychiatry*, *12*, 675936. https://doi.org/10.3389/fpsyt.2021.675936

Ugolini, F., Massetti, L., Calaza-Martínez, P., Cariñanos, P., Dobbs, C., Ostoić, S. K., Marin, A. M., Pearlmutter, D., Saaroni, H., Šaulienė, I., Simoneti, M., Verlič, A., Vuletić, D., & Sanesi, G. (2020). Effects of the COVID-19 pandemic on the use and perceptions of urban green space: An international exploratory study. *Urban Forestry & Urban Greening, 56*, 126888. https://doi.org/10.1016/j.ufug.2020.126888

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of environmental psychology, 11*(3), 201-230. https://doi.org/10.1016/S0272-4944(05)80184-7

University of Derby (n.d.). *Nature Connectedness Research Group*. Retrieved June 22, 2024. https://www.derby.ac.uk/research/centres-groups/nature-connectedness-research-group/

Young Minds (2024). *Mental Health Statistics*. https://www.youngminds.org.uk/about-us/media-centre/mental-health-statistics/

Warber, S. L., DeHudy, A. A., Bialko, M. F., Marselle, M. R., & Irvine, K. N. (2015). Addressing "Nature-Deficit Disorder": A Mixed Methods Pilot Study of Young Adults Attending a Wilderness Camp. *Evidence-Based Complementary and Alternative Medicine, 2015*(1), 651827. https://doi.org/10.1155/2015/651827

Wilson, E. O. (1984). *Biophilia*. Harvard University Press.

Williams, P. C., Beardsley, J., Isaacs, D., Preisz, A., & Marais, B. J. (2023). The impact of climate change and biodiversity loss on the health of children: An ethical perspective. *Frontiers in Public Health*, *10*, 1048317. https://doi.org/10.3389/fpubh.2022.1048317

World Health Organization (2024, October 10). *Mental health of adolescents*. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

World Health Organization (n.d). *One Health*. Retrieved 7 May, 2024 https://www.who.int/health-topics/one-health#tab=tab_1

Supplemental material

Semi-Structured Interview Schedule

1. How did you find the Dose of Nature Prescription? Could you please describe your experience? Do you think nature is beneficial for your mental health? In what way?

2. Are you spending more time in nature? If so, where and when? What kind of natural environment are you going to? Frequency of time and what time of the day?

3. Do you feel more connected to nature now than the beginning of the nature prescription? If so, please give some examples of your connection. Can you tell me what do you mean/ understand as connection to nature? What of nature makes you feel connected to it?

4. Has your life changed in any way since you started the nature prescription?

5. What did you enjoy about the programme? What was your favourite part about it?

6. Do you think the programme could be improved in any way? (what was not successful for you). If you would do it again now, is there something you would have done differently?