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"It helps me to be more aware and connected to my body when I spent so many years trying to disconnect": A qualitative pilot study on the impact of time spent in nature on eating disorder recovery

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ABSTRACT

Eating disorders have high relapse and mortality rates, complex treatment needs, and disproportionately affect women. A common characteristic of women with eating disorders is a lack of embodiment and disconnection from the body. Increasing positive embodiment may be a means to help support recovery. This study qualitatively examined the impact of time spent in nature as a potential mechanism for increasing positive embodiment during eating recovery among six women in Canada and the USA using semi-structured interviews and reflexive thematic analysis. Participants shared that spending time in nature helped them appreciate and care for their bodies and slow their eating disorder voice, providing a foundation on which to build and maintain recovery from their eating disorder. Participants also described how being in nature helped them feel connected, leading to feeling a sense of belonging and a part of something bigger than themselves. The findings from this pilot study warrant further investigation, and may have implications for eating disorder treatment for women, as spending time in nature during eating disorder recovery may help counterbalance societal pressures on women and support recovery maintenance.

1. Introduction

Western culture's patriarchal thin-ideal beauty standards (McBride & Kwee, 2021) influence a focus on weight and weight loss (Javanovski & Jaeger, 2022) that socialize women into the normative discontent of body dissatisfaction (Rodin et al., 1984), the strongest predictor of clinical eating disorders (Stice & Shaw, 2002). Eating disorders, particularly anorexia nervosa, have been described as a natural response to the manipulation of women by society's ideal beauty standards (White, 2018). Although women are disproportionately affected by eating disorders (Burke et al., 2023), recent findings also indicate the importance of an intersectional approach to assessing eating disorder risk, via the consideration of sexuality, racial identity, and socioeconomic status (Burke et al., 2023). Eating disorders have also been traditionally viewed as an individual pathology (Malson & Burns, 2009); however, Orbach (1979), Chernin (1983), and Lawrence (1984) argued that they must be understood within the context of gender stereotypes and inequities present in Western patriarchal cultures.

Recovery from an eating disorder is an ongoing process, as most patients never achieve full and lasting recovery, but rather long-term partial recovery (Miskovic-Wheatley et al., 2023). While eating disorder recovery has also historically been regarded as an individual responsibility, LaMarre and Rice (2021) examined it as a contextual process that is connected to power and relationships, documenting the importance of feeling trusted and loved in patients' unique approaches to eating disorder recovery. Similarly, Kenny and Lewis (2023) developed a framework of recovery as a unique and non-linear process. They argued that recovery outcomes are dependent upon larger social systems, such as systems of oppression (e.g., white supremacy, patriarchy, homophobia, transphobia, weight stigma), which may make access to support more difficult for those with less privilege. In identifying priorities for eating disorder recovery research, Hower et al. (2022) noted that an increased understanding of the recovery process is needed, including changes in eating disorder thought patterns as well as increased use of research methods such as ecological momentary analysis to better understand day-to-day realities of eating disorder recovery.

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The purpose of this pilot research was to examine nature as a potential resource to aid the everyday recovery efforts of individuals with eating disorders. As research examining the impact of time spent in nature on eating disorder recovery is limited to three studies conducted outside of the North American cultural context, we endeavored to examine this relationship among Canadian and US women who had already turned to nature to aid in their recovery. Specifically, this work was guided by the following research question: how do experiences in nature impact eating disorder recovery in everyday life? For the purpose of this study, a broad definition of nature was used that included the consideration of indoor plants as well as natural elements (e.g., trees, grass, rocks) and parks in urban spaces alongside more expansive greenspaces and forests.

1.1. Benefits and accessibility of nature

Researchers have well-established the health benefits of time spent in nature. People living in cities with more green spaces report better perceived health and are prescribed fewer antidepressants than people in cities with fewer green spaces (Maas et al., 2006; Helbich et al., 2018). Exposure to natural environments is associated with enhanced psychological well-being (Hall & Knuth, 2019; Kang et al., 2023), lower blood pressure, reduced anxiety, depression, and stress (Beute & de Kort, 2018; Kang et al., 2023), improved sleep (Shin et al., 2020), and greater body satisfaction and appreciation (Harriger et al., 2024; Swami et al., 2020). Greater urban greenness is also associated with reduced disease prevalence and mortality rates (Crouse et al., 2017; James et al., 2016).

Although nature can be regarded as an accessible tool for enhancing wellness, it is also important to consider inequities in access to nature. In Western Eurocentric society, nature and outdoor activities have historically been reserved for White, cisgender, heterosexual men, while women have been socialized to remain indoors as caregivers (McNeil et al., 2012; Mitten, 2018). Engagement in outdoor recreation has, thus, been historically difficult for women, due to societal gender expectations, lack of exposure, and learned fear of the outdoors (e.g., fear of being harassed and attacked by men; Evans & Anderson, 2018; Mitten, 2018; McNeil et al., 2012). Further, other systems of oppression also have an impact on access to nature, as higher-income neighborhoods have more overall green space compared to lower-income neighborhoods (Grinspan et al., 2020).

1.2. Theory of embodiment

French phenomenologist Merleau-Ponty (1962) identified the body as our "means of communication" with the world (p. 92) and stated that, since the body and mind are inseparable, the body is the center of perception and subjectivity. These ideas serve as the foundation of Piran's Developmental Theory of Embodiment (Piran, 2017; Piran & Teall, 2012). Within this theory, experiences of embodiment include the following five dimensions: (1) body connection and comfort (i.e., feeling at one with the body and comfortable in one's own skin), (2) agency and functionality (i.e., the ability to express the self through movement; viewing one's body as capable of doing many things), (3) experience and expression of desire (i.e., experiencing and responding to desires, such as appetite, in a self-caring way), (4) attuned self-care (i.e., fulfilling bodily, emotional, and relational needs, including having meaningful pursuits), and (5) inhabiting the body as a subjective site, resisting objectification (i.e., experiencing your body from within, subjectively; Piran, 2017; Piran & Teall, 2012) The developmental theory of embodiment recognizes the interconnection between body and culture and that social systems affect embodiment via experience in the world (Piran, 2017; Piran & Teall, 2012).

1.2.1. Embodiment, body image, and eating disorders

Positive embodiment is associated with body esteem (Gattario et al., 2020), reduced body dissatisfaction (Levine & Smolak, 2016), rejection of thin-ideal beauty standards (Smolak, 2012), and can support eating disorder recovery efforts (Cook-Cottone, 2020; Piran & Teall, 2012). Since eating disorders are associated with alexithymia (i.e., difficulty in awareness and identification of emotional state) and disconnection from one's own body (Westwood et al., 2017), embodying practices serve to build a connection with the body in recovery (Cook-Cottone, 2020). These practices include being active *intentionally* to support greater awareness of the body and its processes, as well as being mindfully attuned to our bodies through movement and what the body needs (e.g., rest, movement, food, sleep; Cook-Cottone, 2020).

1.3. Time spent in nature and eating disorder recovery

Existing research on the impact of time spent in nature on eating disorder recovery has been conducted in the Nordic cultural context, where the practice of *friluftsliv* (i.e., engagement in outdoor, nature-based, and non-competitive activities) is commonplace (Jepsen Trangsrud et al., 2020). *Friluftsliv* includes both sedentary and active outdoor activities and is emphasized in Nordic culture as a practice to support wellness (Jepsen Trangsrud et al., 2020).

To date, three studies have investigated how being in nature might support eating disorder recovery. Corazon et al. (2018) examined the impact of a nature-based therapy intervention on eight individuals with binge eating disorder. Participants noted that the nature-based practices were easy to translate into daily life and that nature was like a 'second therapist' (Corazon et al., 2018, p. 8). Jepsen Trangsrud et al. (2020) conducted a qualitative exploration of how embodying experiences with nature related to recovery in everyday life with eight participants with bulimia or binge eating disorder. Participants reported that nature provided them with a sense of peace, calm, mindful attentiveness, bodily connection, and non-judgement, which facilitated self-care. In another study, Jepsen Trangsrud et al. (2022) explored the subjective experiences of how *friluftsliv* can support recovery with participants diagnosed with bulimia or binge eating disorder. Participants reported that nature supported feelings of freedom, positive bonding experiences with others, a sense of empowerment, and helped participants redefine their relationship with food. Overall, the findings of this emerging research suggest that time spent in nature may be an important recovery support, especially pertaining to the development of positive embodiment, that warrants examination in a North American cultural context. Our research extends these three studies by including participants with any eating disorder diagnosis, as opposed to participants with bulimia nervosa and/or binge eating disorder only, as well as by taking a broad approach to our methodology that was not specifically focused on experiences of nature therapy (Corazon et al., 2018), embodiment (Jepsen Trangsrud et al., 2020), or *friluftsliv* (Jepsen Trangsrud et al., 2022). Although we anticipated that embodiment may be relevant to participants' experiences of being in nature based on the findings of these studies, we intentionally provided participants with flexibility to speak about the aspects of their experience that were most salient to them.

2. Methods

2.1. Theoretical approach

This research used Reflexive Thematic Analysis (TA; Braun & Clarke, 2021; Terry et al., 2017). TA is a flexible qualitative methodology, independent from an epistemological or ontological foundation, that allows researchers to systematically identify, interpret, and report patterns in qualitative data (Braun & Clarke, 2006; Terry et al., 2017). Specifically, an inductive and latent approach to coding and theme development was used (Braun & Clarke, 2006; Terry et al., 2017). Although we anticipated that embodiment may be relative to participants' experiences of turning to nature in recovery, specific codes and themes were not predetermined prior to analysis and effort was made to ensure our findings were grounded in the data during analysis.

This work was also grounded in a social constructionist epistemological position (Burr & Dick, 2017). Social constructionism informed the definition of eating disorder recovery used in this research. Prominent definitions of recovery have been criticized for a focus on physical aspects of recovery and a focus on weight (Kenny et al., 2022). Recovery has been identified as also including psychological wellbeing, improved coping, identity outside of the eating disorder, self-perception and acceptance, and improved social functioning (Kenny et al., 2022) . Thus, the current research used a self-perceived approach to defining recovery, consistent with other published feminist recovery research (see LaMarre & Rice, 2016; Saunders et al., 2019).

In reflexive TA, meaning is regarded as contextually situated within the data, with researcher subjectivity "a resource for knowledge production", where researchers analyze and interpret the data through their unique social, cultural, and professional location (Braun & Clarke, 2021, p.334). Thus, we recognize that our own identities and positionality have a significant impact on the research we design and conduct (Trussell, 2014). All authors identify as White and able-bodied cisgender women with lived experiences of weight-related issues, including body dissatisfaction, eating disorders, and weight stigma. All authors have professional backgrounds in psychology, including counselling psychology and developmental psychology. While all authors value time in nature to support wellbeing, two authors (JFS and MB) have more consistently engaged with nature as a regular resource to support wellbeing throughout their lives.

Our identities and positionalities contextualized our approach to the research design and analysis in several ways. As lead author, MB's own history of disordered eating and her experience of turning to nature as a support for recover and recovery maintenance were regarded as a key resource from conceptualization through analysis. Further, her experience of embodiment as a connection with her body that extends beyond awareness of physical movements, needs, and sensations was consistent with the embodied experiences of the second and third authors and was also foundational in our approach to data analysis and interpretation. With an awareness of this influence, we intentionally worded interview questions that would allow for participants to describe their own experiences, or lack thereof, with embodiment, allowing it to arise more naturally from the data.

2.2. Participants and procedure

This research was approved by the research ethics board at the University of Victoria (REB #22–0362). Participants were recruited for a study examining "the effects of time spent in nature on eating disorder recovery". Recruitment occurred through a newsletter for researchers and practitioners working in the body image and eating disorder fields, which is subscribed to by over 1000 people, mostly within the USA and Canada. Participants were also recruited via the social media page of the National Initiative for Eating Disorders, a Canadian organization providing support to individuals with eating disorders and their families. Individuals were eligible to participate if they lived in Canada or the USA, were over the age of 18, had previously received an eating disorder diagnosis, self-identified as being in recovery for approximately two years, identified as either cisgender women or as having been socialized as a woman during infancy and childhood, and did not identify as currently having impaired perceptions or another mental health diagnosis that would negatively impact their ability to participate.

Data were collected from January to April 2023. Potential participants contacted the first author, who provided a link to a consent form and demographic survey. Following the completion of informed consent, virtual face-to-face semi-structured interviews took place with the first author over Zoom, lasting 60–90 min each (see Appendix for interview questions). Participants were provided with an honorarium of $30 as a thank you for their time and participation. Six interviews were conducted, with three participants from Canada and three from the USA. Four participants reported being 2 – 5 years in recovery, one reported being 1 – 2 years in recovery, and one reported being more than 10 years in recovery. See Table 1 for participant pseudonyms and demographic information.

2.3. Analysis

A five-phase approach to data analysis was taken (Braun & Clarke, 2006; Terry et al., 2017), which was led by the first author, with support from the second author and consultation with the third author. First, data familiarization occurred via data transcription, reading, and re-reading the data, noting any initial patterns and meaning in the data. Second, initial codes were generated by labelling interesting features in the data systematically across all the data. Initial codes were based on the identified aspects and patterns that could become themes, and were inclusive, open, and flexible. Third, initial themes and sub-themes were generated by identifying patterns and meaning across codes as well as in discussion between the first and second authors. For this study, a theme was identified if it represented shared meaning that was present within the majority of the participants' interviews.

Next, codes and initial themes were reviewed via a re-examination of the data. The coding and initial thematic organization was reviewed to ensure that the analysis formed a coherent pattern that was aligned with the research question. When coded data did not fit within an initial theme, the theme was revised, the data was identified as belonging to a different theme, or the code was removed from the data extract. Each theme was then re-considered across the data set, with final themes considered for their richness and coherence in relation to the research question. Lastly, themes were named and defined (Terry et al., 2017).

3. Results

To inquire about their lifelong relationship with nature, participants were asked about their relationship with nature prior to the start of their eating disorder. All participants expressed spending a lot of time in nature as children. This included being outside in various contexts, including forests, rivers, fields, beaches, playgrounds and/or engaging in outdoor activities such as hiking, camping, skiing, canoeing, and general play. Following data analysis, themes were organized into two overarching categories: Embodiment and Meaning of Nature.

3.1. Embodiment

Participants expressed that embodiment was an important outcome of spending time in nature. Embodiment was connected to feeling functional and capable within their body and disembodiment was described as feeling disconnected from one's body and viewing the body as an enemy. Time in nature encouraged two clear processes that supported embodiment. The first was a greater sense of freedom in and of their bodies instead of feelings of restriction and punishment. The second was that nature helped slow down the eating disorder voice and allow their bodies to be 'uncontrollable.'

3.1.1. Freedom and acceptance vs punishment and restriction

When they spent time in nature, participants experienced freedom in relation to food and movement as well as acceptance towards their bodies. Self-punishment is a common experience in EDs (Cook-Cottone, 2020; Tragantzopoulou et al., 2024), and was discussed by all participants. Punishment was described as the behaviours one would engage in to "punish bad behavior" and was described as the opposite of freedom. For example, Layla said:

> So, since the eating disorder started with exercise … it was very much like a punishment mindset for most of the years I was in my eating disorder. If I did exercise, it was always these expectations and it was very hard to be consistent because I was so scared and I would

Table 1
Participant demographics.

Pseudonym	Age	Sexual Identity	Gender Identity	Racial/Ethnic Identity	Highest Level of Education	Diagnosis
Alayna	25	Heterosexual	Cisgender Woman	White	Undergraduate	AN
Layla	29	Heterosexual	Cisgender Woman	South Asian	Masters	AN, BN, BED
Sam	45	Heterosexual	Cisgender Woman	White	Masters	AN, BN
Hank	32	Heterosexual	Cisgender Woman	White	Highschool	BN
Melody	31	Heterosexual	Cisgender Woman	White	Undergraduate	AN
Molly	26	Bisexual	Cisgender Woman	White	Highschool	AN, BN

Note. For diagnosis, AN = anorexia nervosa, BN = bulimia nervosa, BED = binge eating disorder.

> be mad at myself and it was usually to compensate for eating in some way.

Similarly, Sam described running as a behavior that was previously connected to punishment:

> It's sort of like a double-edged sword, like I did a lot of running and running was contributing to my eating disorder. But it was also, like, supporting me, and depression so, like, I love running because I get to be outside and I can do it anywhere. And, but it also, like, kept me, like, kept me thinking that I could eat, like, I deserved to eat, because I was running enough.

Connecting previous punishment to current acceptance, Melody said "[Nature] just - it really, I think, helps me be more aware and connected to my body when I spent so many years trying to… I think, probably, disconnect is the word I would use, and to punish it, or punish myself."

In contrast, freedom with food and exercise was described as recognizing when the body is hungry or satiated, what food the body wants, enjoying food without compensation, finding enjoyable physical movement, and resting when needed. All participants expressed experiencing freedom when they spent time outside, and that nature supported a healthy relationship with movement. For example, Layla said:

> I feel like I've developed a healthy relationship with movement and, like, and rediscovered how much my body has naturally liked movement which I hadn't – I think I was mourning for a long time because I was so scared of movement and, like, that could be healthy for me. It became – the eating disorder confused me so much, like, do I actually like exercise or is this something that I'm always gonna feel like I'm punishing myself with.

Most expressed a feeling of disgust and discomfort at the use of the words "working out" or the idea of being active at a gym, which often led to feeling watched, feeling exposed, or being more critical of their bodies. Hank described moving for purpose in nature rather than moving for the sake of moving:

> Things, like, you know, picking, like, dried plant seeds from native species, or, you know, pulling invasive weeds out of a forest or something. I-I don't think about that as much. I mean, that's still movement, but I guess I'm not moving for the sake of movement. I'm moving for the sake of accomplishing something.

Similarly, Sam said:

> In the gym I'm worried about what people are gonna think, and if I'm working out – my clothing, and if I'm doing it properly … whereas when I'm in nature, and I'm like, oh, cross country skiing I don't worry about that so much. I'm more engaged in what's happening around me, and how calm and peaceful it is, and I feel stronger.

Molly noted that she thinks goals are different when being active outside versus in the gym: "It's absolutely the difference between aesthetic-based and non-aesthetic-based [goals]." Alayna noted that she does not have expectations for herself or her body when she is active outside. She "can let go of body image struggles." She continued:

> I think I don't give my - like the outdoors enough credit for, like, how much it does help me, like exercising outdoors and just, like, being outside in general. It's the one place where I feel like I don't have any – like, if I'm doing, like, an activity that I love, generally it tends to be exercise of some sort, but it's, like, the one place where I feel like there's no expectations for myself, and I don't – I can let go of like-like body image struggles.

In describing the difference between indoor movement and outdoor activity, Molly described nature as a non-judgmental space: "I feel like there is like so little external influences when I'm in nature, like, I don't have to see billboards or social media all those other, sort of, like, stereotypical things that can influence someone's relationship with one's body."

3.1.2. Slowing down the eating disorder voice

Participants indicated that nature supported them in connecting with the idea that their body is a vessel to see beauty and to feel strong and capable. Nature was described as imperfect and uncontrolled and as providing the message that it is okay to pay attention to what is happening in one's "imperfect" body. For example, Hank said: "I think maybe another piece of it is that it isn't man-made, right, and yet it is so perfect! Like the way that leaves are kind of uniformly shaped, and yet, if you look close enough, there are also imperfections. So yeah, I guess there's something symbolic about it". Alayna shared how nature helps her take up space: "It feels like I'm occupying more space. It feels like, yeah … Just both. Probably both. Like physically and mentally, like, [nature] allows me to, like, occupy more space." Sam described being in nature as a "mental support", stating "I can use my mind to think about something besides, like negative self-talk, or disordered eating, or… Oh, I guess it like opens my mind as well like both allows my body to be more free and my mind to be more free."

Participants shared that slowing down and connecting with their bodies was essential for recovery and that they had to intentionally incorporate nature time into their lives to slow down, calm their mind, and 'reset' their body image. Alayna said:

No matter, like, how I'm feeling about my body on any given day. If I get outside and, like, spend time outside it sort of acts as a reset and gives me the choice. The choice, like, when I'm going back indoors, or to whatever I'm doing, like, how I wanna, like, reframe, like, my thoughts about myself and my body.

Similarly, Molly said:

> I think sometimes it takes, you know, active steps to get rid of [eating disorder voice]. But generally, I think … being in nature does make it go away eventually… It'll dissipate. I think, what I think of as clearing the mind. I think there's a sense of urgency or anxiety that I could feel it just, I'm sure most people feel on their day-to-day lives, and I find nature kind of, maybe, slows that down.

Melody also described this intentionality when she said that nature "helps me be more self-aware". She said "I can tell if I'm having a bad day or a low day that I know I need to. I need to do something, and even if it's just a 10 min walk outside, I know that I'll be better off than if I just sit inside." In describing her experience of slowing down, Hank

discussed how the term "natural" had been taken over by her eating disorder, and how being in nature changed the way she thought about what was, and wasn't natural:

> I think the eating disorder leveraged this concept of, like, natural and pure, or like that, you know, my very old, very incorrect thinking, right, or biased, thinking that you know everybody could be smaller if certain things were done, right. That [being smaller is] natural, and being in a larger body is not natural, right, is really interesting. Because it's just so far from the truth. … Over the course of recovery is really interesting phenomenon in that, what it shifts more to, is kind of like…natural isn't controlled right? It more is a form of neutrality or acceptance, … Any body is natural, right? Just the same way that you know the flowers outside are natural.

3.2. Meaning of nature

Participants shared how nature affected their relationships with their bodies (i.e., embodiment), but also in a larger-than-self way. First, participants discussed feeling that when they went into nature, they felt a part of something bigger than themselves. Second, participants described how nature made them feel peace and presence beyond their relationship with their bodies. Third, participants indicated that they shifted from turning to nature instinctively to including nature intentionally as a part of their wellbeing practices.

3.2.1. Spirituality, belonging, and something bigger

All participants reported experiencing a sense of being a part of "something bigger" in nature, including a sense of belonging and relation to other beings as well as a larger system. In describing this, Layla said "When I think of being in nature, I think a lot of… for me, mindfulness practice, and connection between my body and my humanity with the Earth". Similarly, Sam said:

> I think that, like, knowing that I have worth and you know, deep, deep down somewhere, like I knew that I had worth. And I think that's because, like as a little girl, I would spend tons of time in nature … I think, just feeling like I'm a part of something greater than myself.

In describing this connection, Molly said: "being in nature is probably not, it's like, I guess it's reciprocal … it's a connection, like, it's not just being even me being in nature. It's also, like, me being aware of it." Similarly, Alayna said:

> It's definitely really grounding, and it gives me, it like gives me a sense of like being part of a bigger experience. … It makes me feel, like, small as a person. In the, the way that, like I don't have as much like responsibility, or like-like my life isn't so…Like nothing matters as much as when I'm in like at school or at my job, like, like those responsibilities just feel smaller.

This connection to something bigger as supporting a shift in perspective was also described by Hank, who said: "I would say the appreciation is mainly for the beauty, and then also that kind of that is a reminder that there's something beyond myself, right, or beyond all of the human cares and worries".

In addition to feeling connected to something bigger, nature supported participants in appreciating life. In describing this, Melody said: "I think it also just, I don't know, makes you appreciate just living - being alive and in general". Participants expressed a sense of appreciation for other beings, which presented as being less focused on oneself and more so on the larger picture. Molly said: "I don't think I'm thinking of myself as much - like I'm not so self-centered when I'm outside. I guess maybe the boundaries are between, like, myself, and what's external versus when I'm inside …like, be more aware of my presence within the world."

3.2.2. Peace, tranquility, presence, and joy

Participants expressed a feeling of peace when in nature in a way that was not connected specifically to their body. When asked what "being in nature" meant to her, Sam shared, "Peace. Quiet exploration, resiliency, courage, reflection. Wholeness." Layla said, "tranquility, peace, and presence." Molly described nature as "accepting me for who I am." Participants spoke of nature as a grounding experience. For example, Alayna said "I just feel like being under an open sky, and, like, being surrounded … by nature and wilderness. It -I think it grounds you in a way that not very many other things can, or at that time not very many other things could."

Participants discussed how being outside calmed their minds and that they experienced an ability to be present with themselves and what they were doing. In describing this, Melody said:

> 7 o′clock in the morning, when it's super quiet and super still, it was just really just peaceful and zen-and it let me just totally empty my head. And that was really helpful…Yeah, I'm definitely an over thinker. So, I think it definitely – it helped me kind of get a little bit more control of that, and that's something I definitely do less of.

Rather than needing to "do" something, participants expressed an ability to just "be". For example, Melody said "You know, find a nice spot, and-and just kind of be". Participants described that they are able to consider the "beauty and awe and amazement of the world" (Molly). Participants also shared a feeling of joy at witnessing nature. Hank said:

> If I look at a very beautiful flower or color that appears naturally, or maybe the ways that the trees intertwine with each other, or the flowers that are just now budding from the trees outside. There's just something breathtaking about, you know, observing, witnessing those things, I think there's, like, it's aesthetically pleasing, and in a way that, like, things that are man-made sometimes aren't.

3.2.3. Foundation to recovery and recovery maintenance

Participants spoke of nature as a foundation on which their recovery could be built. Four participants shared that they did not spend time in nature intentionally in the early stages of recovery, when multidisciplinary healthcare was essential to recovery. However, time in nature increasingly became a foundation to their recovery. In describing this, Sam said:

> I really think that, like, emotionally focused therapy for me at one point was really helpful in like understanding myself, and I think that at the beginning when I was hospitalized, I think, like CBT was really helpful for me, so I think that the nature part of it is been like sort of like the foundation, and I'm really grateful that I had such a strong foundation as a kid.

Additionally, Melody described how time in nature impacted her daily recovery experience when she said "My days were just better, you know, it just made it-put me in such a better, you know, more stable mindset, and I just remember feeling like, okay, like, no matter what, you know, it's-the day's gonna be okay." Molly also described this incorporation of nature into her daily life when she said:

> I really had a big revelation over the past few years about how important nature is to me. So, now I actually work at a garden. … But just, I guess, like, literally, just, like I try to go outside every day. Obviously, sometimes I can't, but trying to make like a ritual of that, I guess, incorporating it, naturalizing it, I guess, into my daily life. I do find it really clears my head.

Melody and Molly were the only two who shared that they

intentionally included nature in their active treatment process. In the maintenance of recovery, all participants clearly stated that time in nature was vital to their wellbeing. Layla said "I would say, now it's very much a presence in my life; it's an intentional presence, whereas, you know, when I was in – hav-having an active eating disorder with treatment, it was just like something in the background or something I didn't really think about." This intentional inclusion of nature was also described by Alayna:

> I've definitely tried to get outside every day. I had a habit in the fall and the spring of like trying to see the sunrise and sunset every day, and that was really awesome. I, yeah, I try to get outside anytime… I'm feeling stressed or just like I feel like I need to-to feel kind of more like a human being again.

Similarly, Hank, who described herself as "not very outdoorsy" spoke about the activities she engages in within nature "affirms why recovery is worth it." Finally, in describing nature as her foundation to recovery maintenance, Melody said:

> I think I wouldn't have been able to kind of get through all of that if I hadn't gotten stronger at actually, you know, being forced outside and making myself do that and getting into that habit of spending time outside. And I definitely can catch myself now I know when I'm not [getting outside] enough.

4. Discussion

This pilot study examined the impact of time spent in nature on eating disorder recovery and recovery maintenance among six women living in Canada and the USA. Consistent with previous research (Corazon et al., 2018, Jepsen Trangsrud et al., 2020; 2022), our results suggest that time spent in nature may support eating disorder recovery and the maintenance of recovery amongst those who have a history of spending time in nature as children. Our results are also consistent with research supporting the use of nature in addictions recovery (Díaz-Martínez et al., 2024) as well as overall mental health support (Hall & Knuth, 2019; Kang et al., 2023). These findings also respond to the call put forth by Hower et al. (2022), by identifying nature as a potential daily recovery tool that supports changes in eating disorder thought patterns, with further research needed to examine these findings in larger and more diverse samples.

Participants' experiences of nature as supporting positive embodiment is consistent with the three domains of embodiment outlined by Piran and Teall (2012; physical, mental, social). In supporting positive embodiment, participants learned to challenge patriarchal beauty standards (McBride & Kwee, 2021) and redirect society's focus on weight (Javanovski & Jaeger, 2022). This shift towards embodiment and interoception, as supported by time in nature, bolstered women's recovery experiences. Eating disorders are associated with alexithymia, as well as disconnection from the body's signals (i.e., physical and mental domains; Cook-Cottone, 2020; Piran & Teall, 2012). For participants, spending time in nature increased their ability to attune to themselves both mentally and physically, indicating an attunement to their bodies' cues. In the mental domain, disruptions occur through exposure to gender-based stereotypes or societal appearance standards (Piran, 2017; Piran & Teall, 2012). Time in nature gave our participants freedom from appearance-based expectations, supporting an acceptance of themselves and their bodies. Cultural pressures and discourses, including the male gaze (McKinley & Hyde, 1996; Noll & Fredrickson, 1998) and appearance standards have a significant influence on the development of body dissatisfaction (Fitzsimmons-Craft et al., 2012; Saunders et al., 2024), disordered eating (Saunders & Eaton, 2018), and clinical eating disorders (Krug et al., 2021). Participants shared that, in nature, they experienced a freedom from these pressures and felt they had a place regardless of their body size (i.e., social power and relationships domain; Piran, 2017; Piran & Teall, 2012)

Our results are also consistent with the findings of Jepsen Trangsrud et al. (2020), who reported that (1) nature provides one with peacefulness and calmness, (2) nature invites one to sense the world with one's feet, (3) nature embraces one as one is, and (4) nature provides room for self-care. Participants in the current study described nature as helping to slow them down and to feel connected to something bigger. Although our participants described embodiment differently than participants in Jepsen Trangsrud et al.'s study (2020; i.e., sensing the world with one's feet), they all discussed an experience of embodiment that supported them in feeling connected to the present moment and to their body. Our participants also discussed that their eating disorder voice quieted as positive embodiment strengthened, that nature was a non-judgmental, accepting space, that nature allowed them to listen to what their body needed (e.g., rest, movement, food), and that nature calmed their mind.

Our results also extend the findings of Jepsen Trangsrud et al. (2020) regarding the experience of nature as facilitating a connection to something bigger. Participants in the current study were not asked directly about spirituality or if nature helped them to feel connected to something bigger, but all participants brought up this concept spontaneously. Jepsen Trangsrud et al. (2020) did not report a theme related to connection to "something bigger", but they did suggest that nature facilitates a sense of belonging, connectedness, or purpose. Our findings about feeling part of something bigger is consistent with previous research on time spent in nature more broadly, which is associated with an increased sense of non-religious spiritual connection (Trigwell et al., 2014).

Our findings also align with research indicating that natural spaces can decrease loneliness by facilitating social relationships and community (Rugel et al., 2019). While isolation is common among individuals with eating disorders(Levine, 2012), spending time in nature supported a sense of belonging among our participants. This finding is congruent with that of Jepsen Trangsrud et al. (2022), whose participants also discussed finding connectedness to themselves and others. Participants in the current study also discussed how they did not feel alone in nature, even when they were alone, which may relate to feelings of interconnectivity and being part of something bigger. Our participants also described feelings of reciprocity with nature, which is consistent with findings reported by Corazon et al. (2018) that learning therapeutic techniques while in nature changed how participants interacted with nature in their everyday lives.

Finally, participants shared that nature was a foundation to their recovery, and that they began to intentionally include regular time in nature to support their wellbeing. Importantly, time in nature was not a cure for participants' eating disorders, but part of the interconnection of many supports. For our participants, recovery was also holistic and included physical, mental, social, and spiritual aspects, which aligns with the findings of previous recovery research (Matusek & Knudson, 2009). To our knowledge, nature has not been described as a "foundation" for recovery in the eating disorder recovery literature, though nature has been long identified as a resource for mental wellness more broadly (Hall & Knuth, 2019; Josewski et al., 2023; Kang et al., 2023; Stewart, 2008). The closest comparison is in Jepsen Trangsrud et al.'s (2022) findings, whereby participants shared that nature was an arena where they could practice behaviours to support recovery (e.g., self-care, healthy coping). Although the current study is a small pilot study, these findings warrant further examination for the potential role that time spent in nature may have for eating disorder treatment. Inpatient and outpatient treatment facilities are often situated on acreage or have green spaces near them; thus, it would be highly accessible to take clients outside for walk and talks, group therapy, outdoor wellness activities, or to simply spend time being mindful and at rest.

4.1. Limitations and directions for future research

To our knowledge, this study was the first of its kind in North America, answering the call from Jepsen Trangsrud et al. (2020) to investigate how time in nature support eating disorder recovery in non-Nordic countries. However, it is not without its limitations. As a pilot study, our sample was small and homogenous. Participants were primarily White and heterosexual, and all identified as cisgender and able-bodied. Thus, voices from those with multiple marginalized identities, who may face more barriers to accessing nature, are missing from our results and additional research is needed with 2SLGBTQIA+ , BIPOC, and disabled individuals, as these populations are understudied in eating disorder research (Nagata et al., 2020; Goel et al., 2022). Participants were also self-selected, and our findings do not describe the experiences of people who did not have a positive relationship with nature as a child or those who may be hesitant to try nature-based treatments. Future research examining the influence of nature-based interventions may want to intentionally include people who do and do not have positive historical relationships with nature to investigate any potential contraindications for including time spent in nature in eating disorder treatment. Finally, we chose to only include participants who had been formally diagnosed with an eating disorder, but the experiences of individuals with sub-clinical or undiagnosed eating disorders is also important to examine. Future research with expanded participant pools and larger sample sizes would further elucidate the impact of spending time in nature on eating disorder recovery.

5. Conclusion

Consistent with previous studies conducted in a Nordic cultural context (Corazon et al., 2018; Jepsen Trangsrud et al., 2020, 2022), the findings from the current study indicate that spending time in nature in a North American sociocultural setting could have positive benefits for supporting everyday eating disorder recovery and recovery maintenance, helping women to challenge the patriarchal body norms and expectations they had previously felt constrained by. Spending time in nature helped participants appreciate and care for their bodies as well as helped calm the eating disorder voice, providing a foundation on which to build and maintain recovery. Being out in nature helped participants feel connected to other people and other beings, leading to feeling a sense of belonging and a part of something bigger than themselves. They shared that nature was a non-judgmental space where all bodies are accepted. Thus, spending time in nature may support eating disorder recovery as an accessible and affordable resource to find peace, experience positive embodiment, and connect to something larger than themselves.

CRediT authorship contribution statement

Megan Buchkowski: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Sarah Nutter:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Jessica F. Saunders:** Writing – review & editing, Methodology, Formal analysis, Conceptualization.

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Declaration of Competing Interest

Regarding our submission entitled *"It helps me to be more aware and connected to my body when I spent so many years trying to disconnect": A qualitative pilot study on the impact of time spent in nature on eating disorder recovery"* myself and my coauthors have no competing intersts, dual commitments, or competing loyalties to disclose.

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Appendix. Interview Questions

1. Can you briefly tell me the story of your eating disorder? Specifically, what I'd like a summary of is when/how your ED began, when/how you received treatment, if/number of times you relapsed, and your recovery journey.
2. What would you say are the main supports to you healing from your ED?
3. When I say "being in nature", what does this mean to you?
   a. What's your relationship to or experience in being in nature?
4. Tell me about your experience in nature before your ED.
5. For this question, I'm interested in when you were in treatment for an active ED. During this time did you/how did you turn to nature for support?
   a. Was nature integrated into your formal or informal treatment?
6. For the next question, I'm interested in recovery: in what way do you turn to nature to support your ED recovery?
   a. How is this integrated regularly day-to-day in your recovery?
7. How does time in nature support your relationship with your body?
   a. If the participant talks about only treatment OR recovery, ask a follow up question to inquire about the one not discussed.
   b. If participant doesn't talk about their relationship with their body in different spaces, ask: how is your relationship with your body different in the not in nature vs. in nature?
8. How does the experience of moving your body in nature differ from moving your body in other settings, such as a gym?
   a. Who are you doing this with?
9. Have you felt that being in nature is an accessible place for you as a/n INSERT GENDER IDENTITY HERE?
   a. What was it that being a/n INSERT GENDER IDENTITY HERE that made nature feel inaccessible?
10. Is there anything that you want to talk about?

Data availability

Data will be made available on request.

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