

Nature's Role in Outdoor Therapies

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Outdoor therapies are intentional therapeutic processes that are (1) place-based, (2) feature active bodily engagement, and (3) recognize nature-human kinship. Significant variety exists in practice, from walk and talk therapy, to expedition-based wilderness therapy, to garden and animal-assisted therapies. These approaches have shown improvement across a wide range of social, emotional, physical, physiological, and psychological outcomes and populations.

Keywords: nature ; therapy ; outdoor therapies ; health

1. Introduction

Understanding therapeutic values of human contact with nature is a topic of growing interest across health promotion and treatment fields ^[1]. A common narrative in developed nations is that urbanized and technology-driven lifestyles have diminished healthy human relationships with natural environments leading to a range of health issues and reduced wellbeing ^[2]. While long-acknowledged as practices across cultures, outdoor nature-based therapeutic interventions have grown significantly in number and type in recent years ^[3]. Outcomes research has supported outdoor therapeutic approaches as improving the lives and wellbeing of those experiencing mental health issues ^{[4][5]} as well as for general health promotion ^[6]. While an evidence base is present supporting exposure to nature and green spaces as 'pathways' toward comprehensive health benefits ^[7], a lack of comprehensive theoretical and conceptual articulation exists specifically for nature's contribution or role in psychotherapy and mental health outcomes, leaving outdoor therapies without an explicit theory of change for their application as a clinical practice.

While numerous approaches exist, all purporting contact with nature as a common essential component, theoretical development articulating mechanisms of change and processes contributing to the therapeutic outcomes are lacking ^{[8][9]} ^[10]. We postulate this knowledge gap exists due to the diversity of therapeutic approaches and subsequent study designs ^{[11][12]}.

Understanding and describing mediators (relationships between intervention and outcomes), moderators (characteristics that influence direction or magnitude between the intervention and outcomes), and mechanisms of change (the steps or effects—described with specificity—that produce change) in therapy is complicated. A concerted and systematic effort is required to understand how and why change is taking place in practices within outdoor therapies ^{[13][14]}. An umbrella review ^[15] was chosen to provide an overview of the guiding theoretical frameworks drawn upon in the outdoor therapy literature through an overall examination of the body of systematic and analytic reviews. Papatheodorou ^[16] states "The advantage of this method is that we may be able to collectively evaluate the state of the evidence in broad categories of research, which may make more sense in clinical practice than evaluating [them] one by one." (p. 543).

2. Nature's Role in Outdoor Therapies

2.1. Theory

Direct reference to theories other than allusions to specific activities and therapeutic approaches was limited to Attention Restoration Theory (ART) ^[17] and Stress Reduction Theory (SRT) ^[18], both named in Kotera et al.'s ^[19] recent review of forest therapy and mental health outcomes. ART posits that time spent in compatible natural environments creates the experience of soft fascination (attention that becomes involuntary) and thereby allows for a renewed energy and ability to pay attention—hence, reflecting the theory's name ^[17]. SRT suggests that our positive physiological responses to safe natural environments is evolutionary and reduces levels of stress. Being away is another construct of ART and Kamioka et al. ^[20] identified that being free from the stress of work and experiencing joy was the main reason found in their systematic review of horticultural therapy. Wen et al. ^[21] described the characteristics and seasonality of the forest interacting with the

five senses as the central features of forest therapy in reaching improved mental health outcomes. There is also a reference to Gilbert's model of affect regulation suggesting evolutionary emotional responses (e.g., soothing) to being in nature [22].

Annerstedt and Währborg [23] suggest that modern society and lifestyles have become overly stressful resulting in ill states of human health, and that health can be better defined by the fit and adjustment between person and environment. It is for this reason, they posit the effects of nature-based therapy have relevance and success. Djernis et al. [24] echo the above in stating that nature as context "may play a significant role in the benefits" of these interventions. Playing on the language of ART they suggest the environments may be "so fascinating that it calls for soft attention, thereby allowing disengagement" (n.p.). This conceptualization suggests nature stimuli hold our attention and reduce the likelihood of our mind wandering.

2.2. Mechanisms of Change

Djernis et al. [24] found explanations of nature increasing the experiences of memory and thereby extending the longevity of benefits gained. Britton et al. [25] pointed to the characteristics and diversity of natural environments and how humans interact with them. They provide the example of water-based programs where movement and balance are engaged (i.e., vestibular and proprioception systems) and submersion in water which can reduce pain, alter body sensations and provide an equitable experience for someone with physical limitations. Further, they found connections between physical challenges of the wilderness therapy programs on the physical body (i.e., aches and pain) and reports of increased self-efficacy and resilience. Again, these findings do not clearly identify mechanisms of change. Lee et al. [26] shared the common activity of walking in forest therapy as well as the 'five senses' approach which appears to be sometimes manualized, but also practiced with great diversity, such as "forest viewing, forest meditation, Qi-Qong, aromatherapy, herbal tea therapy, and craftwork using natural materials" (p. 11). The authors also posited that just being present in nature, or just viewing nature, may not be enough—suggesting that more needs to be known about the dosage, protocols, practitioner influence, and whether or not outcome measures utilized are actually capturing what they intend to.

2.3. Evidence

The reviews of nature-based therapies suggest some improvements in mental health and psycho-social wellbeing [25], psychological states related to emotions and stress reduction, but that the evidence was weak regarding the links to physiological outcomes [24]. Forest therapy reviews showed positive outcomes for mental health, particularly anxiety [26], and physiological improvements such as reducing blood pressure and boosting immunity [21], again failing to show casual links between physiological change and mental health outcomes. Horticultural therapy reviews stated positive outcomes for a range of mental health and behavioral disorders "such as dementia, schizophrenia, depression, and terminal-care for cancer" [20] (p. 942) as well as for "cognitive function, agitation, positive emotion and engagement" [27] (p. 14), again depicting connections but not causal links. Wilderness therapy reviews suggested outcomes measured across a range of social, psychological and behavioral constructs with positive treatment effects in the areas of self-esteem, locus of control, behavioral changes, personal effectiveness, clinical symptomology, and interpersonal skills [28][29]. Bowen and Neill's [11] adventure therapy meta-analysis was significant in size and scope (197 studies, 2908 effect sizes, 206 unique samples). The authors posited that adventure therapy produces moderate short-term outcomes and that positive gains are maintained over the long-term indicating a robustness of outcome over time [11]. Overall, strong outcomes, but lacking clear indications of mechanisms of change.

In sum, the evidence of treatment outcomes across outdoor therapies is mostly positive. The breadth of interventions were diverse and all were comprised of being place-based/outdoors, with active engagement of bodies-in-environments, and often focused on increasing one's connection to nature. While populations served and issues addressed varied, the approaches all included direct contact with nature and other species. Still, we were unable to identify clear articulations of nature's contribution to the specific therapy undertaken. ART and SRT were both presented in an explanatory manner but fall short of explaining outcomes.

2.4. Recommendations for Practice

Thus far, theoretical models, on which to base both practice and research, are not concisely defined, nor utilized for testing and implementation. Annerstedt and Währborg's [23] observations still holds true, when stating that: "we are still not satisfied in aspects of evidence, quality, or causality, what specific natural elements are most beneficial, and to what population with what diagnoses" (p. 385). Britton and colleagues [25] point to the lack of a common language for nature-based providers, researchers and policy-makers, where conceptual ambiguity of central terms such as nature, health, and wellbeing exacerbates a lack of coherence across nature and health research, policy, and practice. Other

recommendations include increased local collaboration across practice and research, which can lead to greater engagement and sustainability over time through the integration of nature-based practices into the existing community structures and services.

2.5. Recommendations for Research

Outdoor therapy studies are dominated by the use of self-referred subjects, who might be expected to have an interest in nature and natural environments, which again could cause a potential “nature-positive” bias [30]. Not all experiences are deemed to be positive, yet selection bias could favor those who had more positive experiences [25]. Furthermore, there is a need for contextually sensitive and process-oriented approaches in outdoor therapies research that measure more than “what” worked or did not work well; but also evaluating “how” and “why” success, or indeed failure, happened [25]. The epistemology of classical science and linear understandings are not sensitive enough to the dynamics and complexities of “messy” nature-based interventions. Future research could therefore benefit from operationalizing inter-disciplinary frameworks such as complex systems approaches that assume multi-causality and a non-linear perspective, in order to arrive at more holistic understandings of outdoor therapies in a socioecological context [25].

References

1. Frumkin, H.; Bratman, G.N.; Breslow, S.J.; Cochran, B.; Kahn, P.H., Jr.; Lawler, J.J.; Levin, P.S.; Tandon, P.S.; Varanasi, U.; Wolf, K.L.; et al. Nature contact and human health: A research agenda. *Environ. Health Perspect.* 2017, 125, 075001.
2. Hartig, T.; Mitchell, R.; De Vries, S.; Frumkin, H. Nature and health. *Annu. Rev. Public Health* 2014, 35, 207–228.
3. Moeller, C.; King, N.; Burr, V.; Gibbs, G.R.; Gomersall, T. Nature-based interventions in institutional and organisational settings: A scoping review. *Int. J. Environ. Health Res.* 2018, 28, 293–305.
4. Picton, C.; Fernandez, R.; Moxham, L.; Patterson, C. Experiences of outdoor nature-based therapeutic recreation programs for persons with a mental illness: A qualitative systematic review protocol. *JBI Evid. Synth.* 2019, 17, 2517–2524.
5. Santaniello, A.; Dicé, F.; Claudia Carratú, R.; Amato, A.; Fioretti, A.; Menna, L.F. Methodological and terminological issues in animal-assisted interventions: An umbrella review of systematic reviews. *Animals* 2020, 10, 759.
6. Shanahan, D.F.; Astell-Burt, T.; Barber, E.A.; Brymer, E.; Cox, D.T.; Dean, J.; Depledge, M.; Fuller, R.A.; Hartig, T.; Irvine, K.N.; et al. Nature-based interventions for improving health and wellbeing: The purpose, the people and the outcomes. *Sports* 2019, 7, 141.
7. Hansen, M.M.; Jones, R.; Tocchini, K. Shinrin-yoku (forest bathing) and nature therapy: A state-of-the-art review. *Int. J. Environ. Res. Public Health* 2017, 14, 851.
8. Harper, N.J.; Doherty, T. An introduction to outdoor therapies. In *Outdoor Therapies: Practices, Possibilities, and Critical Perspectives*; Harper, N.J., Dobud, W.W., Eds.; Routledge: London, UK, 2020.
9. Revell, S.; Duncan, E.; Cooper, M. Helpful aspects of outdoor therapy experiences: An online preliminary investigation. *Couns. Psychother. Res.* 2014, 14, 281–287.
10. Rutko, E.A.; Gillespie, J. Where's the wilderness in wilderness therapy? *J. Exp. Educ.* 2013, 36, 218–232.
11. Bowen, D.J.; Neill, J.T. A meta-analysis of adventure therapy outcomes and moderators. *Open Psychol. J.* 2013, 6, 28–53.
12. Harper, N.J.; Dobud, W.W. (Eds.) *Outdoor Therapies: An Introduction to Practices Possibilities, and Critical Perspective*; Routledge: London, UK, 2020.
13. Kazdin, A.E. Mediators and mechanisms of change in psychotherapy research. *Annu. Rev. Clin. Psychol.* 2007, 3, 1–27.
14. Kazdin, A.E. Evidence-based psychotherapies I: Qualifiers and limitations in what we know. *S. Afr. J. Psychol.* 2014, 44, 381–403.
15. Aromataris, E.; Fernandez, R.; Godfrey, C.M.; Holly, C.; Khalil, H.; Tungpunkom, P. Summarizing systematic reviews: Methodological development, conduct and reporting of an umbrella review approach. *Int. J. Evid. Based Healthc.* 2015, 13, 132–140.
16. Papatheodorou, S. Umbrella reviews: What they are and why we need them. *Eur. J. Epidemiol.* 2019, 34, 543–546.
17. Kaplan, R.; Kaplan, S. *The Experience of Nature: A Psychological Perspective*; Cambridge University Press: Cambridge, UK, 1989.

18. Ulrich, R.S.; Simons, R.F.; Losito, B.D.; Fiorito, E.; Miles, M.A.; Zelson, M. Stress recovery during exposure to natural and urban environments. *J. Environ. Psychol.* 1991, 11, 201–230.
19. Kotera, Y.; Richardson, M.; Sheffield, D. Effects of shinrin-yoku (forest bathing) and nature therapy on mental health: A systematic review and meta-analysis. *Int. J. Ment. Health Addict.* 2017, 14, 321.
20. Kamioka, H.; Okada, S.; Tsutani, K.; Park, H.; Okuizumi, H.; Handa, S.; Oshio, T.; Park, S.-J.; Kitayuguchi, J.; Abe, T.; et al. Effectiveness of animal-assisted therapy: A systematic review of randomized controlled trials. *Complement. Ther. Med.* 2014, 22, 371–390.
21. Wen, Y.; Yan, Q.; Pan, Y.; Gu, X.; Liu, Y. Medical empirical research on forest bathing (Shinrin-yoku): A systematic review. *Environ. Health Prev. Med.* 2019, 24, 1–21.
22. Richardson, M.; McEwan, K.; Maratos, F.; Sheffield, D. Joy and calm: How an evolutionary functional model of affect regulation informs positive emotions in nature. *Evol. Psychol. Sci.* 2016, 2, 308–320.
23. Annerstedt, M.; Währborg, P. Nature-assisted therapy: Systematic review of controlled and observational studies. *Scand. J. Public Health* 2011, 39, 371–388.
24. Djernis, D.; Lerstrup, I.; Poulsen, D.; Stigsdotter, U.; Dahlgard, J.; O'Toole, M. A systematic review and meta-analysis of nature-based mindfulness: Effects of moving mindfulness training into an outdoor natural setting. *Int. J. Environ. Res. Public Health* 2019, 16, 3202.
25. Britton, E.; Kindermann, G.; Domegan, C.; Carlin, C. Blue care: A systematic review of blue space interventions for health and wellbeing. *Health Promot. Int.* 2020, 35, 50–69.
26. Lee, I.; Choi, H.; Bang, K.S.; Kim, S.; Song, M.; Lee, B. Effects of forest therapy on depressive symptoms among adults: A systematic review. *Int. J. Environ. Res. Public Health* 2017, 14, 321.
27. Zhao, Y.; Liu, Y.; Wang, Z. Effectiveness of horticultural therapy in people with dementia: A quantitative systematic review. *J. Clin. Nurs.* 2020.
28. Bettmann, J.E.; Gillis, H.L.; Speelman, E.A.; Parry, K.J.; Case, J.M. A meta-analysis of wilderness therapy outcomes for private pay clients. *J. Child Fam. Stud.* 2016, 25, 2659–2673.
29. Gillis, H.L.; Speelman, E.; Linville, N.; Bailey, E.; Kalle, A.; Oglesbee, N.; Sandlin, J.; Thompson, L.; Jensen, J. Meta-analysis of treatment outcomes measured by the Y-OQ and Y-OQ-SR comparing wilderness and non-wilderness treatment programs. *Child Youth Care Forum* 2016, 45, 851–863.
30. Corazon, S.S.; Sidenius, U.; Poulsen, D.V.; Gramkow, M.C.; Stigsdotter, U.K. Psycho-physiological stress recovery in outdoor nature-based interventions: A systematic review of the past eight years of research. *Int. J. Environ. Res. Public Health* 2019, 16, 1711.