

Walking with Mother Nature: Mental Health Benefits of Regular Nature Walks for Women and Implications for Female Post-Secondary Students

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Abstract: Today's crisis in women's mental health has ignited an interest in evidence-based wellness practices, such as nature walks. However, further research is needed on women's lived experiences while walking in nature. The purpose of this research was to explore a woman's nature walk experiences and their perceived impact on her mental health. In this hermeneutic phenomenological study, a female participant's nature walk experiences and the meaning she ascribed to them were unraveled. Interpretative phenomenological analyses revealed that nature walks afforded numerous mental health benefits, including greater happiness, serenity, mindfulness, awe, gratitude to nature, problem-solving, and creativity, as well as reduced negative affect and stress. Findings provide novel insights into the mechanisms underlying the relationship between nature walks and women's mental health. Results are discussed in relation to extant mental health, ecotherapy, and positive education research.

Keywords: Women's Health, Ecotherapy, Nature Walks, Mental Health, Positive Education

Introduction

Women have an increased vulnerability to several stressors in their everyday lives, including domestic violence (World Health Organization, 2020), low social status (Afifi, 2007), and rights violations (World Health Organization, 2006), which compromise their mental health and increase their risk of mental illness (Yu, 2018). Compared to men, women have a significantly higher lifetime prevalence of mood and anxiety disorders (Remes et al., 2016). Several other mental illnesses, such as major depression, late-onset schizophrenia, and stress-related disorders, are also more prevalent in women than in men (Shimamoto & Rappeneau, 2017). Addressing this mental health disparity requires accessible, non-pharmacologic approaches to ameliorate mental health. One such approach is immersion in nature, a wellness practice long associated with healing and tranquility (Walsh, 2011).

Literature Review

Considerable research and clinical evidence support the therapeutic qualities of nature. Simple exposure to green space has been linked to significantly lower levels of stress, anxiety, and depression (An et al., 2016; Beyer et al., 2014; Oh et al., 2017), increased recovery from mental fatigue (Beyer et al., 2014), and greater well-being (White et al., 2013). Unlike urban settings, natural environments carry significant happiness-enhancing (MacKerron & Mourato, 2013) and stress-reducing effects, especially for women (Beil & Hanes, 2013). It follows that individuals living in greener neighbourhoods are generally happier (Van Herzele & De Vries, 2012) and less depressed (Cox et al., 2017) than those in less green areas.

Going beyond mere exposure to nature, actively spending time in natural settings offers a variety of benefits. In addition to promoting mental health (Gilbert, 2016), time in nature has been shown to foster well-being (Berman et al., 2008) and flourishing (Capaldi et al., 2015). Moreover, immersing oneself in nature while mindfully paying attention to one's senses has been demonstrated to mitigate anxiety, stress, anger, and depression (Kotera et al., 2020). Accordingly, ecotherapy—a form of psychotherapeutic technique based on environmental interventions (Buzzell, 2020)—is being increasingly utilized as a modality to help individuals reduce stress (Ewert et al., 2016) and heal from psychosocial conditions like depression (Chaudhury & Banerjee, 2020).

Combining immersion in nature with walking may bolster its positive mental health outcomes. A form of ecotherapy, nature walks are associated with a remarkable breadth of psychological and emotional benefits (Chaudhury & Banerjee, 2020). For example, leisure walking in natural environments has been shown to bring about various positive experiences, including reflection, mental relaxation, fascination with nature, and feelings of satisfaction and achievement (Zurawik, 2020). When compared to viewing nature scenes or engaging in physical exercise alone, walking in nature has been demonstrated to engender greater mood improvements (Olafsdottir et al., 2020). Furthermore, short engagements in green exercise have been linked

to improved self-esteem and mood, with the presence of water yielding even greater mental health benefits (Barton & Pretty, 2010). These findings are consistent with the results of a recent randomized crossover study indicating that short walks in blue spaces significantly enhance well-being and mood relative to urban walks (Vert et al., 2020). Additional research has shown that walking in natural settings, compared to urban areas, is more energizing (Shrestha et al., 2021) and correlates with lower levels of anger, fatigue, and sadness (Bowler et al., 2010).

One way vulnerable populations, such as female post-secondary students (Gomes et al., 2020; Nogueira et al., 2022), can learn and experience the potential mental health benefits of nature walks is through positive education, the teaching of applied positive psychology (Green et al., 2011). Described as the scientific study of a flourishing life, positive psychology seeks to both complement and expand upon traditional deficit-based models in psychology (Park et al., 2016) by offering evidence-based practices to promote mental health (Norrish et al., 2013), such as walking in nature. Incorporating nature walks into positive education curricula at the post-secondary level has been shown to enhance students' emotional well-being (Pastore et al., 2024), which can be especially beneficial for women, who are more prone to depression and anxiety than men (Seedat et al., 2010). Therefore, positive education courses with an experiential nature walk component hold promise for improving female post-secondary students' mental health.

Although these findings offer a strong base of research supporting the mental health benefits of nature walks, none of the aforementioned studies explored the lived experiences of individuals who walk in nature nor discussed their results through a positive education lens. As nature walks can constitute complex experiences due to their physical, emotional, and spiritual components (Zurawik, 2020), individuals who live them may have compelling narratives to offer when provided with the opportunity to share their perspectives. Given the paucity of research directed towards understanding the experiences of nature walkers (namely women) and how they believe nature walks affect their mental health, the purpose of this study was to conduct an in-depth exploration of the perceived impact of regular nature walks on a woman's mental health and discuss their implications for female post-secondary students.

Method

Participant

To ensure confidentiality, the pseudonym "Martine" was used throughout the manuscript with all other identifying information altered. Martine is a 41-year-old Ontarian alumna who has been going on daily nature walks in a ravine for over a decade. Having dealt with anxiety and depression since the age of 17, Martine has tried various wellness practices to support her mental health and well-being.

Research Design

A hermeneutic phenomenological design was employed to explore Martine's experiences and perception of reality (Jones & Lavallee, 2009). Rooted in interpretation, hermeneutic phenomenology explores individuals' lifeworlds and goes beyond description of phenomena as communicated by the individuals (Neubauer et al., 2019). With few previous inquiries addressing the psychology of nature walks under a phenomenological lens, this methodology will help provide clearer insight into the lifeworld inhabited by a nature walker (Nesti, 2004).

Procedure

Prior to recruitment and data collection, ethical approval was received from the University of Ottawa's Research Ethics Board. Purposeful sampling (Creswell & Plano Clark, 2011) was used to recruit Martine based on two essential criteria: having experience in nature walks and being willing and able to describe her experiences (Polkinghorne, 1989). Martine was briefed about the nature of the investigation and informed of her rights to confidentiality and anonymity. After receiving assurance that she could withdraw from the research at any time without penalty, Martine agreed to participate and provided written consent.

A semi-structured phenomenological interview was conducted via Zoom video conferencing software to unravel Martine's lifeworld as a nature walker. Shown to facilitate the generation of rich and descriptive accounts of an individual's lived experiences (Nesti, 2004), phenomenological interviews facilitate access to subjective experiences (Nordgaard et al., 2013). The interview guide was loosely structured to allow Martine to freely express herself and tailored to stimulate reflection of her lived experiences in nature (Dale, 1996). The phenomenological design of the interview not only promoted the collection of descriptive data regarding nature walks and their impact on mental health, but also allowed Martine and the researcher to build trust, safety, respect, and acceptance, which in turn strengthened the data (Tillmann-Healy, 2003). Building this rapport also rendered the data collection more collaborative, whereby Martine and the researcher partook in intimate and joint sense-making with regard to nature walks and women's mental health (Tillmann-Healy, 2003).

Data Analysis

The interview was transcribed verbatim with the assistance of Zoom's audio transcription feature, yielding 10 single-spaced pages of text. Interpretative Phenomenological Analysis (IPA; Smith & Osborn, 2003) was conducted to thoroughly explore Martine's nature walk experiences. Conforming to Smith's (2016) steps to IPA, analysis commenced by reading the interview transcripts while watching and listening to the interview recording to develop a deep familiarity with the content. Salient passages were highlighted in the transcript and preliminary observations pertaining to the research topic were jotted down in the right margin. These initial notes predominantly consisted of attempts to answer the questions: "How does Martine experience her nature walks and how does she believe they influence her mental health?" which led to the development of an early interpretative commentary.

Once the entire transcript had been studied, the preliminary notes were carefully examined and translated into experiential grounded themes in the left margin. These thematic statements were constructed to offer a more distilled and abstract representation of Martine's nature walk experiences, while accurately reflecting her narratives to remain as faithful as possible to the phenomenon and context in which it unfolded (Giorgi & Giorgi, 2008). A set of coherent inductive clusters were then established from the corpus of experiential themes. After ensuring that each cluster communicated Martine's relevant experiential features, they were given a superordinate theme title. Subsequently, key extracts from the transcript were chosen to faithfully represent each lower-level, experiential grounded, and superordinate theme.

Quality of Research

As hermeneutic phenomenology requires the interpretation of participants' narratives, utilizing this methodology may give rise to trustworthiness concerns in the findings. As per Smith and McGannon's (2018) recommendations, member reflections were used to enhance credibility and derive further nuanced interpretations. The researcher shared their perspectives of the data with Martine, who was given the opportunity to question the interpretations and offer alternative descriptions. This co-participatory process allowed the researcher to gain additional insight into Martine's nature walk experiences. To foster the study results' transferability, thick description was employed (Wolcott, 1994). Specifically, the researcher provided a detailed account of Martine's nature walk experiences (Lincoln & Guba, 1985) and revealed the psychological meaning behind the data by rendering the implicit explicit (Giorgi & Giorgi, 2008). It is hoped that following the outlined techniques allows for a credible and transferable account of the experiences and meanings associated with nature walks, as well as their impact on Martine's mental health.

Results

Martine perceives her daily nature walks to provide her with a host of mental health benefits, which appear to arise from the marriage of opposite yet harmonious entities. Through the interplay of Escape and Arrival, Mind and Body, and Mindfulness and Mind-wandering, Martine experiences the powerful congruences created by these united dichotomies and, as a result, reaps therapeutic benefits from her nature walks.

Escape and Arrival

Martine depicted nature walks as a temporary getaway from the hustle and bustle of everyday life and the sensory overload engendered by the modern world. Escaping these distractions allows Martine to detach from quotidian stressors and let her worries dissipate into thin air, resulting in a “release of some kind.” In addition to alleviating negative emotions occasioned by stressful situations and life events, nature walks also teach Martine to take a step back and notice how minuscule her hardships are in comparison to the vastness of the universe: “It’s creating this sense of like... I don’t know, that you’re very small? That the world around you is very big? And that perhaps your problems are... they’re important but, you know, in the grand scheme of things, you can kind of start to let go all of the smaller stuff that can really impact your anxiety.”

Here, Martine communicates that nature does not dismiss her troubles, but rather changes the relationship she has with them. This shift in perspective, along with the emotional release from reduced distractions, make nature walks a liberating experience—one in which Martine’s “small” problems fade into a wider context. As she lets go of this emotional baggage and settles into this new space, Martine is able to ground herself and reconnect with the present moment. Upon this arrival, Martine allows nature to nourish her mind and body.

Mind and Body

Martine emphasized the healing properties of nature walks during the interview, which appear to extend beyond mental health. Walking in nature not only enhances her happiness, serenity, and focus, but also lessens her stress and muscle tension. Martine reported that these emotional, mental, and physical benefits linger well beyond the end of her walks and “trickle down throughout [her] day to help with other areas of emotional life,” creating a positive ripple effect. Similarly, the ramifications of a missed nature walk seem to bleed into other areas of her life: “I’ll end my day feeling tight, my stress levels a little bit higher, I’m cranky with my family... I’ll sort of, like, react quickly if I don’t get my walk.”

By melting away the tension in Martine’s mind and body, nature walks appear to optimize the synergy between these two dichotomous yet co-dependant entities. Indeed, Martine perceives the somatic effects of nature walks to augment their mental benefits: “Your breathing is more intense and your heart rate goes up... I think that’s releasing good hormones into your body as well, which can also help mental health.” In other words, nature walks enable Martine to experience both the invigorating and soothing effects of exercising in a natural environment. She embraces the intensity of the body movement, while letting her mind soften as she takes in the calming properties of the flora and fauna.

Mindfulness and Mind-wandering

Martine reported that nature walks help her tap into mindfulness by heightening her interoceptive and exteroceptive awareness. Foremost, “walking in nature brings [her] back down to the very basics of what being mindful is,” allowing her to ponder: “What does my breath feel like? How is my heart beating? What’s the ground like underneath me?” Apparently, the mindfulness Martine has cultivated in nature over the years has taught her more about her body and mental health than anything else. Martine also discussed learning to become more aware of her external world through the Japanese art of forest bathing or *shinrin-yoku*, which reminds her to slow down and see the world through fresh, curious eyes. In doing so, Martine is able to notice “the magical things around [her]” that otherwise go unnoticed, awakening within her a sense of awe and gratitude for the world.

Conversely, Martine’s nature walks are also marked by moments of effortless mind-wandering, during which she lets her thoughts drift freely with the wind. As Martine stated, “I spend a lot of time in thought and thinking about my work and if I’m, like, mulling over a problem, I will spend time doing that.” This ebb and flow between mindfulness and mind-wandering provides Martine with the best of both worlds: greater awareness, wonder, and gratitude from anchoring the mind to the present moment, as well as increased reflection, problem-solving, and creativity from intentionally letting her mind enter its natural default mode. The combination of mindfulness and mind-wandering appears to yield not only meaningful experiences in nature, but also significant mental health benefits.

Discussion

The results from the present study shed light on a female nature walker's experiences and how she perceives them to influence her mental health. Martine's vivid accounts of her outdoor walks depict what nature is for her: A new world she gets to enter upon leaving her own, where her mind and body rejuvenate as her attention is either captivated by the forces of nature or wanders off to distant places. Walking in this natural environment allows Martine to discover the mental health benefits of combining Escape and Arrival, Mind and Body, and Mindfulness and Mind-wandering, and reap the therapeutic contrasts these dichotomous pairs confer.

Nature walks provide Martine with an escape from her reality, both physically and mentally. Devoid of modern day stimuli, nature is a retreat in which Martine can leave her tasks and responsibilities behind, thereby detracting from anxieties and diminishing mental trivia. As nature reframes her thinking and transforms her relationship with her difficulties, Martine can feel the tensions in her mind and body dissolve. The positive mental, emotional, and physical outcomes that emanate from engaging in what is for Martine relaxing, yet vitalizing movement in nature are consistent with previous research indicating physical activity's "feel good function" (Mutrie & Faulkner, 2004, p. 152) as well as nature walks' restorative effects (Barton et al., 2009). The lasting effects of these positive outcomes is also supported by empirical evidence highlighting physical activity's role in improving mood after having exercised (Dubnov & Berry, 2013). Accordingly, the entwinement of body movement and nature produce a potent mind-body practice that calms the mind, energizes the body, and sharpens the senses.

Walking in nature also orients Martine's attention to the here-and-now, deepening her awareness of sensations and emotions. This corresponds with prior work indicating that nature heightens sensory and emotional awareness (Branham, 2024). Nature walks have also taught Martine to be mindful of the external world, facilitating both awe—a positive emotion activated by mindfulness (Stell, 2018) and easily accessible in nature (Ballew & Omoto, 2018)—and gratitude to nature, an emotional experience marked by appreciation and thankfulness for its benefits (Tam, 2022). Martine's experiences of awe and gratitude for the world during her walks appear to promote a sense of nature connectedness, a psychological construct characterized by oneness and emotional closeness with nature (Pritchard et al. 2020). Given the positive association between nature connectedness and mindfulness (Howell et al., 2011), mental health (McEwan et al., 2019), and gratitude to nature (Tam, 2022), it is conceivable that Martine derives these benefits from her feelings of closeness with nature. Martine's narratives also suggest that nature walks bring her to feel connected to something greater than herself, a mental state known as self-transcendence (Castelo et al., 2021). Self-transcendent experiences, such as nature immersion (Castelo et al., 2021), are characterized by a strong connection to the world, feelings of smallness, awe, and mindfulness, as well as reduced self-salience (Perez & Lench, 2018; Yaden et al., 2017). As is the case for nature connectedness, evidence points to a significant relationship between self-transcendent experiences and greater mental health (Liu et al., 2021).

Martine's mindful moments in nature are also accompanied by mind-wandering. When she lets her mind roam during her walks, Martine reports having a greater ability to solve work-related problems and develop innovative ideas. Evidence also emphasizes the positive correlation between mind-wandering and problem-solving, as well as creativity (Gong & Ding, 2018). Through the interaction of mindfulness and mind-wandering, Martine learns to both rest in awareness and allow her thoughts to flow freely in her stream of consciousness. The transition between these two practices closely resembles the cognitive state of soft fascination, a form of reflective thinking that typically emerges in natural settings where aesthetically pleasing elements attract one's attention (Kaplan & Kaplan, 1989). Given its effortless nature, soft fascination leaves ample mental space for mind-wandering and reflection (Kaplan, 1995), promoting creativity (Williams et al., 2018) and restoration (Kaplan, 1995). Moreover, the restorative benefits of soft fascination seem to occur only when one has the sense of "being away, [which] frees one from mental activity that requires directed attention support" (Kaplan, 1995, p. 173), conforming with Martine's experience of Escape and Arrival.

Implications

The discussed mental health benefits of nature walks are especially relevant for female post-secondary students, who are at an increased risk of experiencing mental health challenges compared to male post-secondary students (Gomes et al., 2020; Nogueira et al., 2022). Accordingly, female post-secondary students could particularly benefit from increased happiness, serenity, mindfulness, and problem-solving skills, as well as decreased negative affect and stress, along with the other mental health benefits of nature walks identified in this study. As student mental health is intimately connected with resilience (Ahluwalia et al., 2023), these various favourable effects of nature walks may strengthen female students' overall resilience, allowing them to better adapt and bounce back from stressors (Rutten et al., 2013). This improved resilience can be valuable in academic settings, which are often replete with stressors such as heavy workloads (Reddy et al., 2018) and financial strain (Slemp, 2017). To foster female students' mental health and resilience, post-secondary institutions could offer positive education courses that explore nature-based practices both theoretically and practically, which have been demonstrated to improve students' emotional well-being partly due to their experiential nature walk component (Pastore et al., 2024). Thus, the integration of nature walks into post-secondary positive education curricula is warranted as a potential student mental health promotion strategy.

Conclusion

In seeking to explore a woman's nature walk experiences and their perceived impact on her mental health, it was found that walking in nature provides Martine with the opportunity to disconnect (Escape) from personal preoccupations, distractions, and modern day stimuli to reconnect (Arrival) with her Mind and Body through the interplay of Mindfulness and Mind-wandering. The ensuing grounding experience promotes happiness, serenity, mindfulness, awe, gratitude to nature, problem-solving, and creativity, as well as relieves negative affect and stress, all of which result in greater mental health. These results are suggestive of nature walks' effectiveness in increasing women's mental health and developing resilience, both of which can help female post-secondary students better function and perform under stress in academic settings. Thus, the present study adds to the body of knowledge regarding nature walks as an accessible mental health practice for women, an essential component of positive education curricula, and a viable approach to resilience development in female students.

Bearing in mind the array of mental, emotional, and physical benefits that can be obtained through regular nature walks, the findings reported in this study suggest that women, namely female post-secondary students, have much to gain from walking in nature. Nonetheless, it is important to note that mental health concerns and mental illnesses are not isolated to female students. Consequently, nature-based approaches focused on promoting mental health and alleviating mental illness in *all* post-secondary students are warranted. Providing increased access to positive education courses with an experiential nature walk component is an important first step to allow students to interact (and perhaps recover) with nature. By increasing students' contact with natural environments and, in turn, their likelihood of benefiting from nature's therapeutic properties, these recommendations offer great potential for maintaining and optimizing student mental health.

Limitations

This study provides interpretative accounts of one female nature walker's experiences. While this approach allowed for an in-depth exploration of her lived experiences walking in nature, such experiences cannot be generalized to a greater population of female nature walkers. Future investigations could include a larger and more diverse group of women, including different ages, ethnicities, and socioeconomic backgrounds, to uncover similarities and differences in mental health outcomes and mechanisms across various female populations, including post-secondary students.

The interpretative framework of hermeneutic phenomenology may be criticized for its subjective nature; however, it is argued that both the participant's and the researcher's subjectivity plays an indispensable role in this type of inquiry (Neubauer et al., 2019). First, the participant's social identities as an alumna with a history of anxiety and depression as well as an interest in wellness practices undoubtedly tinted her

interpretations of nature walks as a therapeutic tool. Second, as a nature walker themselves, the researcher was able to both grasp and share Martine's feelings as she described and made sense of her nature walks. Nevertheless, it is possible that the focus on the benefits rather than the challenges of walking in nature overshadowed the potential drawbacks of nature walks, which may pose a threat to the study's confirmability. Further research is required to confirm and extend this study's findings.

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REFERENCES

Afifi, M. (2007). Gender differences in mental health. *Singapore Medical Journal*, 48(5), 385-391.

Ahluwalia, M., Shillington, K. J., & Irwin, J. D. (2023). The relationship between resilience and mental health of undergraduate students: A scoping review. *Journal of American College Health*, 1-14. <https://doi.org/10.1080/07448481.2023.2252925>

An, M., Colarelli, S. M., O'Brien, K., & Boyajian, M. E. (2016). Why we need more nature at work: Effects of natural elements and sunlight on employee mental health and work attitudes. *PLoS One*, 11(5), 1-17. <https://doi.org/10.1371/journal.pone.0155614>

Ballew, M. T., & Omoto, A. M. (2018). Absorption: How nature experiences promote awe and other positive emotions. *Ecopsychology*, 10(1), 26-35. <https://doi.org/10.1089/eco.2017.0044>

Barton, J., Hine, R., & Pretty, J. (2009). The health benefits of walking in greenspaces of high natural and heritage value. *Journal of Integrative Environmental Sciences*, 6(4), 261-278. <https://doi.org/10.1080/19438150903378425>

Barton, J., & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environmental Science & Technology*, 44(10), 3947-3955. <https://doi.org/10.1021/es903183r>

Beil, K., & Hanes, D. (2013). The influence of urban natural and built environments on physiological and psychological measures of stress—A pilot study. *International Journal of Environmental Research and Public Health*, 10(4), 1250-1267. <https://doi.org/10.3390/ijerph10041250>

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, 19(12), 1207-1212. <https://doi.org/10.1111/j.1467-9280.2008.02225.x>

Beyer, K. M., Kaltenbach, A., Szabo, A., Bogar, S., Nieto, F. J., & Malecki, K. M. (2014). Exposure to neighborhood green space and mental health: Evidence from the survey of the health of Wisconsin. *International Journal of Environmental Research and Public Health*, 11(3), 3453-3472. <https://doi.org/10.3390/ijerph110303453>

Bowler, D. E., Buyung-Ali, L. M., Knight, T. M., & Pullin, A. S. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health*, 10(1), 1-10. <https://doi.org/10.1186/1471-2458-10-456>

Branham, L. (2024). Embodied earth kinship: Interoceptive awareness and relational attachment personal factors predict nature connectedness in a structural model of nature connection. *Frontiers in Psychology*, 15, 1400655. <https://doi.org/10.3389/fpsyg.2024.1400655>

Buzzell, L. (2020). Ecotherapy. In D. A. Leeming, K. Madden, & S. Marlan (Eds.), *Encyclopedia of psychology and religion* (pp. 739-741). Springer. https://doi.org/10.1007/978-3-030-24348-7_9155

Capaldi, C. A., Passmore, H. A., Nisbet, E. K., Zelenski, J. M., & Dopko, R. L. (2015). Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention. *International Journal of Wellbeing*, 5(4), 1-16. <https://doi.org/10.5502/ijw.v5i4.449>

Castelo, N., White, K., & Goode, M. R. (2021). Nature promotes self-transcendence and prosocial behavior. *Journal of Environmental Psychology*, 76(1), 1-5. <https://doi.org/10.1016/j.jenvp.2021.101639>

Chaudhury, P., & Banerjee, D. (2020). "Recovering with nature": A review of ecotherapy and implications for the COVID-19 pandemic. *Frontiers in Public Health*, 8(1), 1-12. <https://doi.org/10.3389/fpubh.2020.604440>

Cox, D. T., Shanahan, D. F., Hudson, H. L., Fuller, R. A., Anderson, K., Hancock, S., & Gaston, K. J. (2017). Doses of nearby nature simultaneously associated with multiple health benefits. *International Journal of Environmental Research and Public Health*, 14(2), 1-13. <https://doi.org/10.3390/ijerph14020172>

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed method research* (2nd ed.). SAGE.

Dale, G. A. (1996). Existential phenomenology: Emphasizing the experience of the athlete in sport psychology research. *The Sport Psychologist*, 10(4), 307-321. <https://doi.org/10.1123/tsp.10.4.307>

Dubnov, G., & Berry, E. M. (2013). Physical activity and mood. The endocrine connection. In N. Constantini & A. C. Hackney (Eds.), *Endocrinology of physical activity and sport* (pp. 405-415). Humana Press.

Ewert, A., Klaunig, J., Wang, Z., & Chang, Y. (2016). Reducing levels of stress through natural environments: Take a park; not a pill. *International Journal of Health, Wellness & Society*, 6(1), 36-43.

Giorgi, A., & Giorgi, B. (2008). Phenomenology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (pp. 26-52). SAGE.

Gomes, C. F. M., Pereira Junior, R. J., Cardoso, J. V., & Silva, D. A. D. (2020). Common mental disorders in university students: Epidemiological approach about vulnerabilities. *SMAD. Revista Eletrônica Saúde Mental Álcool e Drogas*, 16(1), 1-8. <https://doi.org/10.11606/issn.1806-6976.smad.2020.157317>

Green, S., Oades, L., & Robinson, P. (2011). Positive education: Creating flourishing students, staff and schools. *InPsych*, 33(2), 16-17.

Gong, Z., & Ding, Y. (2018). Mind wandering: Mechanism, function, and intervention. *Psychology*, 9(12), 2662-2672.

Howell, A. J., Dopko, R. L., Passmore, H. A., & Buro, K. (2011). Nature connectedness: Associations with well-being and mindfulness. *Personality and Individual Differences*, 51(2), 166-171. <https://doi.org/10.1016/j.paid.2011.03.037>

Jones, M. I., & Lavallee, D. (2009). Exploring Perceived Life Skills Development and Participation in Sport. *Qualitative Research in Sport and Exercise*, 1(1), 36-50. <https://doi.org/10.1080/19398440802567931>

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3), 169-182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)

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

Kotera, Y., Richardson, M., & Sheffield, D. (2020). Effects of Shinrin-Yoku (forest bathing) and nature therapy on mental health: A systematic review and meta-analysis. *International Journal of Mental Health and Addiction*, 20(1), 337-361. <https://doi.org/10.1007/s11469-020-00363-4>

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.

Liu, P., Wang, X., Li, D., Zhang, R., Li, H., & Han, J. (2021). The benefits of self-transcendence: Examining the role of values on mental health among adolescents across regions in China. *Frontiers in Psychology*, 12(1), 243-253. <https://doi.org/10.3389/fpsyg.2021.630420>

MacKerron, G., & Mourato, S. (2013). Happiness is greater in natural environments. *Global Environmental Change*, 23(5), 992-1000. <https://doi.org/10.1016/j.gloenvcha.2013.03.010>

McEwan, K., Richardson, M., Sheffield, D., Ferguson, F. J., & Brindley, P. (2019). A smartphone app for improving mental health through connecting with urban nature. *International Journal of Environmental Research and Public Health*, 16(18), 1-15.

Mutrie, N., & Faulkner, G. (2004). Physical activity: Positive psychology in motion. In P. Lindley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 146-164). Wiley. <https://doi.org/10.1002/9780470939338.ch9>

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education*, 8(2), 90-97. <https://doi.org/10.1007/s40037-019-0509-2>

Nesti, M. 2004. *Existential psychology and sport: Implications for research and practice*. Routledge.

Nogueira, M. J., Sequeira, C., & Sampaio, F. (2022). Gender differences in mental health, academic life satisfaction and psychological vulnerability in a sample of college freshmen: a cross-sectional study. *Journal of Gender Studies*, 31(8), 895-904. <https://doi.org/10.1080/09589236.2021.1979945>

Nordgaard, J., Sass, L. A., & Parnas, J. (2013). The psychiatric interview: Validity, structure, and subjectivity. *European Archives of Psychiatry and Clinical Neuroscience*, 263(4), 353-364. <https://doi.org/10.1007/s00406-012-0366-z>

Norrish, J. M., Williams, P., O'Connor, M., & Robinson, J. (2013). An applied framework for positive education. *International Journal of Wellbeing*, 3(2), 147-161. <https://doi.org/10.5502/ijw.v3i2.2>

Oh, B., Lee, K. J., Zaslawski, C., Yeung, A., Rosenthal, D., Larkey, L., & Back, M. (2017). Health and well-being benefits of spending time in forests: Systematic review. *Environmental Health and Preventive Medicine*, 22(1), 1-11. <https://doi.org/10.1186/s12199-017-0677-9>

Olafsdottir, G., Cloke, P., Schulz, A., Van Dyck, Z., Eysteinsson, T., Thorleifsdottir, B., & Vögele, C. (2020). Health benefits of walking in nature: A randomized controlled study under conditions of real-life stress. *Environment and Behavior*, 52(3), 248-274. <https://doi.org/10.1177/0013916518800798>

Park, N., Peterson, C., Szvarca, D., Vander Molen, R. J., Kim, E. S., & Collon, K. (2016). Positive psychology and physical health: Research and applications. *American Journal of Lifestyle Medicine*, 10(3), 200-206. <https://doi.org/10.1177/1559827614550277>

Pastore, O. L., Sherrington, K., & Fortier, M. S. (2024). A catalyst for personal growth: The influence of a positive education course on undergraduate student mental health one-year later and during the COVID-19 pandemic. *Social Sciences & Humanities Open*, 10, 101043. <https://doi.org/10.1016/j.sssaho.2024.101043>

Perez, K. A., & Lench, H. C. (2018). Benefits of awe in the workplace. In D. Lindebaum, D. Geddes, & P. J. Jordan (Eds.), *Social functions of emotion and talking about emotion at work* (pp. 46-67). Edward Elgar Publishing. <https://doi.org/10.4337/9781786434883.00010>

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>

Polkinghorne, D. E. (1989). Phenomenological Research Methods. In R. S. Valle & S. Halling (Eds.), *Existential-phenomenological perspectives in psychology: Exploring the breadth of human experience* (pp. 41-60). Springer. https://doi.org/10.1007/978-1-4615-6989-3_3

Reddy, K. J., Menon, K. R., & Thattil, A. (2018). Academic stress and its sources among university students. *Biomedical and Pharmacology Journal*, 11(1), 531-537. <https://dx.doi.org/10.13005/bpj/1404>

Remes, O., Brayne, C., Van Der Linde, R., & Lafortune, L. (2016). A systematic review of reviews on the prevalence of anxiety disorders in adult populations. *Brain and Behavior*, 6(7), 1-33. <https://doi.org/10.1002/brb3.497>

Rutten, B. P., Hammels, C., Geschwind, N., Menne-Lothmann, C., Pishva, E., Schruers, K., van den Hove, D., Kenis, G. van Os, J., & Wichers, M. (2013). Resilience in mental health: Linking psychological and neurobiological perspectives. *Acta Psychiatrica Scandinavica*, 128(1), 3-20. <https://doi.org/10.1111/acps.12095>

Seedat, S., Scott, K. M., Angermeyer, M. C., Berglund, P., Bromet, E. J., Brugha, T. S., Demyttenaere, K., de Girolamo, G., Haro, J. M., Jin, R., Karam, E. G., Kovess-Masfety, V., Levinson, D., Mora, M. E. M., Ono, Y., Ormel, J., Pennell, B.-E., Posada-Villa, J., Sampson, N. A., ... Kessler, R. C. (2010). Cross-national associations between gender and mental disorders in the World Health Organization World Mental Health Surveys. *Archives of General Psychiatry*, 66(7), 785-795. <https://www.doi.org/10.1001/archgenpsychiatry.2009.36>

Shimamoto, A., & Rappeneau, V. (2017). Sex-dependent mental illnesses and mitochondria. *Schizophrenia Research*, 187, 38-46. <https://doi.org/10.1016/j.schres.2017.02.025>

Shrestha, T., Di Blasi, Z., & Cassarino, M. (2021). Natural or urban campus walks and vitality in university students: Exploratory qualitative findings from a pilot randomised controlled study. *International Journal of Environmental Research and Public Health*, 18(4), 1-17. <https://doi.org/10.3390/ijerph18042003>

Slemp, G. R. (2017). University settings: A new frontier for positive education. In M. White, G. Slemp, & A. Murray (Eds.), *Future directions in well-being: Education, organizations and policy* (pp. 141-145). Springer. https://doi.org/10.1007/978-3-319-56889-8_25

Smith, J. A. (2016). Interpretative phenomenological analysis in sport and exercise: Getting at experience. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 241-251). Routledge.

Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101-121. <https://doi.org/10.1080/1750984X.2017.1317357>

Smith, J. A., & Osborn, M. (2003). Interpretative Phenomenological Analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (pp. 51-80). SAGE.

Stell, A. J. (2018). *Awe as a self-transcending emotion* [Doctoral dissertation, University of Sussex]. EThOS. <https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.742128>

Tam, K. P. (2022). Gratitude to nature: Presenting a theory of its conceptualization, measurement, and effects on pro-environmental behavior. *Journal of Environmental Psychology*, 79(1), 1-14. <https://doi.org/10.1016/j.jenvp.2021.101754>

Tillmann-Healy, L. M. (2003). Friendship as Method. *Qualitative Inquiry*, 9(5), 729-749. <https://doi.org/10.1177/1077800403254894>

Van Herzele, A., & De Vries, S. (2012). Linking green space to health: A comparative study of two urban neighbourhoods in Ghent, Belgium. *Population and Environment*, 34(2), 171-193. <https://doi.org/10.1007/s11111-011-0153-1>

Vert, C., Gascon, M., Ranzani, O., Márquez, S., Triguero-Mas, M., Carrasco-Turigas, G., Arjona, L., Koch, S., Llopis, M., Donaire-Gonzalez, D., Elliott, L. R., & Nieuwenhuijsen, M. (2020). Physical and mental health effects of repeated short walks in a blue space environment: A randomised crossover study. *Environmental Research*, 188, 1-15. <https://doi.org/10.1016/j.envres.2020.109812>

Walsh, R. (2011). Lifestyle and mental health. *American Psychologist*, 66(7), 579-592. <https://doi.org/10.1037/a0021769>

White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science*, 24(6), 920-928. <https://doi.org/10.1177/0956797612464659>

Williams, K. J., Lee, K. E., Hartig, T., Sargent, L. D., Williams, N. S., & Johnson, K. A. (2018). Conceptualising creativity benefits of nature experience: Attention restoration and mind wandering as complementary processes. *Journal of Environmental Psychology*, 59, 36-45. <https://doi.org/10.1016/j.jenvp.2018.08.005>

Wolcott, H. (1994). *Transforming qualitative data*. SAGE.

World Health Organization. (2006, August 27). *Gender disparities in mental health*. www.who.int/mental_health/media/en/242.pdf

World Health Organization. (2020, April 17). *Violence against women and girls data collection during COVID-19*. <https://www.unwomen.org/en/digital-library/publications/2020/04/issue-brief-violence-against-women-and-girls-data-collection-during-covid-19#view>

Yaden, D. B., Haidt, J., Hood Jr, R. W., Vago, D. R., & Newberg, A. B. (2017). The varieties of self-transcendent experience. *Review of General Psychology*, 21(2), 143-160. <https://doi.org/10.1037/gpr0000102>

Yu, S. (2018). Uncovering the hidden impacts of inequality on mental health: A global study. *Translational Psychiatry*, 8(1), 1-10. <https://doi.org/10.1038/s41398-018-0148-0>

Zurawik, M. (2020). Moving through spaces—leisure walking and its psychosocial benefits for well-being: A narrative review. *Human Movement*, 21(2), 1-8. <https://doi.org/10.5114/hm.2020.89908>

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