

Bleeding at the roots: Post-secondary student mental health and nature affiliation

Eric Windhorst

School of Geography and Earth Sciences, McMaster University
Faculty of Applied Health Sciences, Department of Recreation and Leisure Studies, Brock University

Allison Williams

School of Geography and Earth Sciences, McMaster University

Key Messages

- The prevalence and severity of mental health issues among North American post-secondary students is increasing.
- Nature affiliation can offer potential mental health benefits to students and complement existing mental health initiatives.
- Three mental health strategies—raising awareness of local natural environments, creating natural settings indoors, using nature-based therapies—offer possibilities for the promotion of student mental wellness.

Over the past decade the mental health status of post-secondary students in North America has been receiving increasing attention. Several studies suggest that the prevalence and severity of mental health issues among college and university students are increasing—leading some to label the situation a mental health crisis. In response, many post-secondary institutions have developed formal strategies aimed at addressing the issue in a systemic manner. While those who develop these strategies recognize that many environmental factors shape student mental health, they pay little attention to the role that 'nature' might play in the system—despite a growing body of evidence demonstrating an intimate connection between mental health and nature affiliation. In this article we argue that colleges and universities should take nature's potential mental health benefits seriously by finding ways to foster student-nature relationships both on their campuses, and in their surrounding communities, as part of their formal responses to the mental health crisis. We present and evaluate three ways that this might be accomplished: (1) raising awareness of local natural environments, (2) creating natural settings indoors, and (3) using nature-based therapies.

Keywords: post-secondary students, mental health, nature connectedness, therapeutic landscapes, environmental psychology

Vivre sans racines : la santé mentale chez les étudiants de niveau postsecondaire et le rapport à la nature

Au cours de la dernière décennie, une attention croissante a été accordée au bilan de santé mentale des étudiants de niveau postsecondaire en Amérique du Nord. Plusieurs études laissent entendre que la prévalence et la gravité des problèmes de santé mentale chez les étudiants des établissements collégiaux et universitaires augmentent, à tel point que l'on qualifie la situation de crise en santé mentale. Pour y remédier, de nombreux établissements d'enseignement postsecondaire ont élaboré des stratégies afin

Correspondence to/Adresse de correspondance: Eric Windhorst, Faculty of Applied Health Sciences, Department of Recreation and Leisure Studies, Brock University, 1812 Sir Isaac Brock Way, St. Catharines, ON L2S 3A1. Email/Courriel: ew14ft@brocku.ca

d'apporter des réponses concrètes à cet enjeu. Alors que les promoteurs de ces stratégies admettent l'existence de nombreux facteurs environnementaux qui imprègnent la santé mentale des étudiants, ils n'accordent que peu d'importance au rôle que la « nature » pourrait jouer dans le système, et ce, en dépit d'une accumulation de preuves qui établissent l'existence d'un lien étroit entre la santé mentale et le rapport à la nature. Dans cet article, nous défendons l'idée selon laquelle les démarches officielles entreprises par les établissements collégiaux et universitaires pour remédier à cette crise en santé mentale devraient davantage tirer parti du potentiel qu'offre la nature pour la santé mentale, de sorte que les rapports des étudiants avec la nature soient renforcés autant sur leurs campus qu'au sein des communautés avoisinantes. Nous faisons état de trois avenues possibles pour y parvenir : (1) améliorer la connaissance des milieux naturels locaux; (2) aménager des espaces intérieurs naturels; et (3) utiliser des thérapies naturelles.

Mots clés : étudiants de niveau postsecondaire, santé mentale, rapport à la nature, paysages thérapeutiques, psychologie environnementale

*This is what is the matter with us. We are bleeding at the roots because we are cut off from the earth
... (Lawrence 2002, 323).*

Introduction

What is mental health and why is it of concern at North American post-secondary institutions? The Canadian Mental Health Association (2015, para. 2) notes that, "...good mental health is not just the absence of mental illness. Nor is it absolute—some people are more mentally healthy than others." Reflecting this, positive or good mental health now tends to be conceptualized holistically as a state of emotional, psychological, and social well-being. In the 21st century, it is the absence of *good* mental health that is of increasing concern on many North American college and university campuses (Castillo and Schwartz 2013). The severity of the issue—and why scholars like Kruisselbrink Flatt are calling the situation a "mental health crisis" (2013, para. 1)—is illustrated well by the results of a recent survey of over 34,000 Canadian post-secondary students (American College Health Association 2013). At some point within the previous 12 months, 89% of students felt overwhelmed by all that they had to do, 57% of students felt overwhelming anxiety, 38% of students felt so depressed they found it difficult to function, and 10% of students seriously considered suicide (American College Health Association 2013).

Many post-secondary institutions and their partner organizations have responded to these statistics by developing formal strategies and frameworks aimed at creating campuses more conducive to

student mental health (e.g., National Association of Student Personnel Administrators 2004; Canadian Association of College & University Student Services and Canadian Mental Health Association 2013). Generally, these frameworks recognize that the mental health crisis is complex and argue that a systemic approach is the most appropriate way to address it. In other words, these strategies suggest that colleges and universities should confront the crisis holistically by assessing how various facets of their campus environments might help or hinder student mental health (e.g., social inclusivity, campus and community safety, the availability of sufficient student support services). While these strategies are much needed initiatives, we argue that they overlook an important dimension of good mental health—engagement with the 'natural' environment. Considering the growing body of research linking mental health and nature affiliation, this absence is striking (e.g., Bratman et al. 2012; Hartig et al. 2014).

Drawing primarily from environmental psychology and geography literature, this article presents evidence supporting nature's mental health-promoting potential for post-secondary students. The article concludes by presenting and evaluating three nature-based strategies that colleges and universities can employ to confront the mental health crisis.

Mental health and nature affiliation

Nature is enigmatic. While people often consider nature to be physical features and processes of non-human origin (Hartig et al. 2014), geographers have shown it is effectively a social construct (Demeritt 2002) whose meaning varies “across time, space, and the individual engaged in the defining” (Bratman et al. 2012, 120). In other words, the term “nature” can hold different meanings for different people in different contexts—and these meanings are not static but can vary across time and space. We use the terms “nature,” “natural environment,” “natural place,” “natural setting,” and “natural world” interchangeably in this article when referring to these complex, socially constructed landscapes.

The mental health–nature relationship has been studied by scholars situated in a variety of academic disciplines, such as environmental psychology, geography, urban planning, medicine, and landscape architecture (Bratman et al. 2012). Much of this body of work draws from evolutionary ideas, like biologist E. O. Wilson’s *biophilia hypothesis*, to explain nature’s mental health promoting potential. The *biophilia hypothesis* suggests that humans’ collective evolutionary history has resulted in an innate need to connect with other living things, human and non-human (Kellert and Wilson 1993). Put differently, the *biophilia hypothesis* posits that humans rely on the natural world for more than physical resources like food and water, they also need a connection to nature for psychological fulfillment (Kellert 1993). Scholars like Nisbet et al. (2009, 717) suggest that because “Humans began living in cities, separated from the natural world, relatively late in our evolutionary history... it is unlikely we have erased all the learning about nature’s value embedded in our biology.”

Advocates for the *biophilia hypothesis* argue that evidence for it can be seen in the popularity of outdoor activities such as gardening, our connection with animals both domestic and wild, and our love of natural scenery (Kaplan and Kaplan 1989; Frumkin 2001). *Biophilia* supporters also point to research that suggests that being disconnected from nature contributes to unhealthy and unhappy people. For example, de Vries et al. (2003) demonstrated that populations living in urban centres and other less green areas in the Netherlands experience poorer general health and poorer mental health

than those who live in greener areas—even after controlling for a variety of socioeconomic and demographic characteristics.

While the *biophilia hypothesis* is compelling, scholars have raised concerns about its heavy reliance on determinist sociobiology. As Curtis (2010, 40) notes, “People are not entirely driven by genetically encoded primitive instincts but also influenced by their lifetime experiences and environment and by contemporary influences on their social group.” This point is supported by studies, such as that of Milligan and Bingley (2007), who found that not all people, in all places, at all times consider nature to promote positive mental health; some individuals find certain natural places anxiety-provoking.

Recognizing the complexity of human responses to nature, many geographers have employed the *therapeutic landscapes* framework when studying the potential health benefits of natural places (Gesler 1991; Palka 1999; Williams 1999). The literature of *therapeutic landscapes* holds that places (whether they are considered natural or not) consist of several interacting and overlapping components—the natural environment, the built environment, the symbolic environment, and the social environment—each capable of shaping that place’s health promoting potential for a particular person (Gesler 1991, 2003). Windhorst and Williams (2015) employed the *therapeutic landscapes* framework in their recent study exploring the types of natural places that 12 Canadian post-secondary students considered mental health promoting. They found that students preferred natural places that were familiar (symbolic environment), contained a variety of natural elements (natural environment), and were distanced from the context of everyday campus life (separated from the built and social campus environments, both of which were considered stress-filled) (Windhorst and Williams 2015). The above example illustrates that the nature–mental health dynamic is more complex than the *biophilia hypothesis* seems to suggest.

Despite the complexity of the mental health–nature relationship, numerous studies show that interacting with nature in various forms can promote mental health for a variety of populations—including post-secondary students (Bratman et al. 2012; McSweeney et al. 2015). For example, contact with nature and viewing nature through a window have been shown to lower levels of stress

and restore attention (Kaplan and Kaplan 1989; Ulrich et al. 1991; Kaplan 2001); walking in a natural setting has been shown to boost positive affect and improve cognition (Mayer et al. 2008; Bratman et al. 2015); and viewing nature-oriented slides or spending time in a plant-laden laboratory has been shown to increase endorsement of intrinsic goals (Weinstein et al. 2009).

While experiencing nature in various forms can promote mental health, these benefits may also extend beyond the immediate encounter. Using the concept of nature connectedness, a psychological construct described as the cognitive, affective, and physical connections that individuals have with the natural world (Nisbet et al. 2009), environmental psychologists suggest that we carry our relationship with nature within us as an ecological identity. Several studies suggest that nature experiences might lead both to short-term (Mayer et al. 2008), and long-term (Tam 2013) increases in nature connectedness. A recent meta-analysis of 21 studies exploring the nature connectedness-mental health dynamic concluded that individuals who are more nature connected tend to experience more positive affect, vitality, and life satisfaction than those who are less nature connected (Capaldi et al. 2014).

Confronting the crisis naturally

Given the growing evidence demonstrating that connecting with nature can lead to immediate, short-term, and long-term mental health benefits for a variety of populations, we believe that post-secondary institutions should aim to encourage nature-student relationships on their campuses, and in their surrounding communities, as part of their formal responses to the mental health crisis. These efforts can take a number of different forms depending on an institution's unique circumstances (e.g., setting and proximity to green space, climate, availability of financial resources, etc.). We offer three nature-student affiliation strategies that colleges and universities should consider: (1) raising awareness of local natural environments; (2) creating natural settings indoors; and (3) using nature-based therapies.

Raising awareness of local natural environments

Post-secondary institutions can increase student interactions with nature by simply raising

awareness among their student populations about the potential mental health benefits of connecting with local natural places. The specific format that an awareness campaign might take is quite flexible. Colleges and universities could choose to include this message either as a part of existing mental health promotion activities, or through stand-alone campaigns.

For example, McMaster University (located in Hamilton, Ontario) recently launched a website (Nature @ McMaster) dedicated to raising students' awareness about natural places surrounding its campus (McMaster University 2015). The *Nature & Health* section of the website draws attention to the potential physical and mental health benefits of nature contact and provides a list of relevant research from which students can learn more about the nature-health connection. The website also describes ten local natural places and how each area can be accessed from McMaster's campus (via walking, biking, bussing, and/or driving). In addition, the website highlights the location of wheelchair accessible nature trails, and McMaster's Department of Athletics & Recreation provides free access to an all-terrain wheelchair upon request, to ensure that students with mobility impairments can also connect with these local natural places.

A strength of this first initiative is that it is fairly simple to implement—especially if messaging is included as part of existing mental health promotion activities. Drawbacks to this first strategy include that awareness-raising does not necessarily translate into behaviour change among students, and, as Windhorst and Williams (2015) discovered, some students may consider the campus setting and surrounding environment stressful—preferring instead to visit familiar natural places further removed from the post-secondary milieu.

Creating natural settings indoors

Colleges and universities can create natural settings indoors. Nature can be brought inside in a variety of different ways, including: incorporating biophilic design (Joye 2012) elements—such as living walls (see Figure 1)—into building architecture; installing windows overlooking natural settings; placing indoor plants in hallways, offices, and classrooms; and installing pictures or paintings of natural landscapes in a variety of public locations. A number of studies have shown that exposure to



Figure 1

A five-storey tall living wall located in the Social Sciences Building at the University of Ottawa

SOURCE: Courtesy of University of Ottawa

indoor nature in various forms can help promote positive mental health to a variety of populations (see McSweeney et al. 2015 for a recent review of this literature).

For example, the new Social Sciences Building at the University of Ottawa (located in Ottawa, Ontario) incorporates a large, multi-storey living wall that not only captures occupants' imaginations and may improve their mental health—it also enhances the building's air quality (University of Ottawa 2015).

Bringing nature indoors is an especially useful strategy for post-secondary institutions—such as many of those in Canada—whose geographical location or local climate conditions might make accessing outdoor nature throughout the year difficult for students. Another strength of this second initiative is that it is flexible: bringing nature indoors can be done in a variety of ways. This strategy also has drawbacks, however: for example, biophilic design elements like living walls can be very expensive to install (and have on-going

maintenance costs), and bringing plant-life indoors could aggravate some students' pre-existing allergies (Miles et al. 2014).

Using nature-based therapies

Finally, student counselling and support centres can make use of nature-based mental health interventions—often referred to as ecotherapy (Buzzell and Chalquist 2009). Ecotherapy is an emerging form of therapy that expands the scope of treatment to include the human–nature relationship (Hasbach 2012). This initiative can take a number of different forms: for example, therapy animals can be brought to campus to interact with students; therapists can make use of nature-based guided meditations (many of which are already commonly employed); counsellors can encourage their clients to spend time in natural places as part of the therapeutic process; and when deemed both practical and ethically appropriate, individual and group therapy sessions can be conducted out-of-doors.

The unique strengths associated with bringing therapy sessions outdoors are highlighted by ecotherapist Patricia Hasbach who argues that, a “part of our ‘deep knowing’ can be accessed if we are willing to move out into nature and experience it mindfully, with awareness and presence. Direct experience [of nature] affords heightened sensations and perceptions that connect our inner world with the outer landscape” (2012, 128).

The ecotherapy movement is gaining momentum worldwide. For example, *Mind*, a registered mental health charity in England, has been actively endorsing ecotherapy for over five years (Mind 2013). Between 2009 and 2013, *Mind* funded 130 ecotherapy projects that were shown to be not only cost-effective—the projects also improved participants' physical and mental well-being (Mind 2013). While ecotherapy shows potential for promoting mental health, however, like all mental health interventions, it may not be appropriate for all post-secondary students' difficulties.

Conclusion

While post-secondary institutions are formally addressing the student mental health crisis in a systemic manner, many ignore the potential mental health benefits of the natural environment. Colleges

and universities can strengthen their responses to the student mental health crisis by acknowledging and harnessing nature's mental health promoting potential. Although the three nature-oriented mental health strategies presented in this article will not solve the complex mental health crisis—nor be relevant to every student's mental health concerns—we believe they can contribute to the creation of post-secondary environments capable of better serving students' diverse mental health needs. While many students may be "bleeding at the roots," it is not too late to graft them back onto the earth.

Acknowledgments

We are grateful to the three anonymous referees for their helpful feedback on an earlier version of this article. We would also like to thank Linda Peake, Kate Parizeau, and Beverley Mullings for their constructive feedback and editorial support.

References

- American College Health Association. 2013. *American College Health Association–National College Health Assessment II: Canadian reference group data report Spring 2013*. Hanover, MD: American College Health Association.
- Bratman, G. N., G. C. Daily, B. J. Levy, and J. J. Gross. 2015. The benefits of nature experience: Improved affect and cognition. *Landscape and Urban Planning* 138: 41–50.
- Bratman, G. N., J. P. Hamilton, and G. C. Daily. 2012. The impacts of nature experience on human cognitive function and mental health. *Annals of the New York Academy of Sciences* 1249: 118–136.
- Buzzell, L., and C. Chalquist, eds. 2009. *Ecotherapy: Healing with nature in mind*. San Francisco, CA: Sierra Club Books.
- Canadian Association of College & University Student Services and Canadian Mental Health Association. 2013. *Post-secondary student mental health: Guide to a systemic approach*. Vancouver, BC: Author.
- Canadian Mental Health Association. 2015. *Meaning of mental health*. http://toronto.cmha.ca/mental_health/meaning-of-mental-health/#.VpZpSBUrLIU.
- Capaldi, C. A., R. L. Dopko, and J. M. Zelenski. 2014. The relationship between nature connectedness and happiness: A meta-analysis. *Frontiers in Psychology* 5(September): 1–15.
- Castillo, L. G., and S. J. Schwartz. 2013. Introduction to the special issue on college student mental health. *Journal of Clinical Psychology* 69(4): 291–297.
- Curtis, S. 2010. *Space, place and mental health*. Farnham, UK: Ashgate.
- Demeritt, D. 2002. What is the 'social construction of nature'? A typology and sympathetic critique. *Progress in Human Geography* 26 (6): 767–790.
- de Vries, S., R. A. Verheij, P. P. Groenewegen, and P. Spreeuwenberg. 2003. Natural environments – healthy environments? An exploratory analysis of the relationship between greenspace and health. *Environment and Planning A* 35 (10): 1717–1731.
- Frumkin, H. 2001. Beyond toxicity: Human health and the natural environment. *American Journal of Preventive Medicine* 20 (3): 234–240.
- Gesler, W. M. 1991. *The cultural geography of healthcare*. Pittsburgh, PA: University of Pittsburgh Press.
- . 2003. *Healing places*. New York, NY: Rowman & Littlefield Publishers Inc.
- Hartig, T., R. Mitchell, S. de Vries, and H. Frumkin. 2014. Nature and health. *Annual Review of Public Health* 35: 207–228.
- Hasbach, P. H. 2012. Ecotherapy. In *Ecopsychology: Science, totems, and the technological species*, ed. P. H. Kahn Jr. and P. H. Hasbach. Cambridge, MA: The MIT Press, 115–139.
- Joye, Y. 2012. Can architecture become second nature? An emotion-based approach to nature-oriented architecture. In *Ecopsychology: Science, totems, and the technological species*, ed. P. H. Kahn Jr. and P. H. Hasbach. Cambridge, MA: MIT Press, 195–217.
- Kaplan, R. 2001. The nature of the view from home: Psychological benefits. *Environment and Behavior* 33 (4): 507–542.
- Kaplan, R., and S. Kaplan. 1989. *The experience of nature: A psychological perspective*. Cambridge, UK: Cambridge University Press.
- Kellert, S. R. 1993. Introduction. In *The biophilia hypothesis*, eds. S. R. Kellert and E. O. Wilson. Washington, DC: Island Press, 20–27.
- Kellert, S. R., and E. O. Wilson, eds. 1993. *The biophilia hypothesis*. Washington, DC: Island Press.
- Kruisselbrink Flatt, A. 2013. A suffering generation: Six factors contributing to the mental health crisis in North American higher education. *College Quarterly* 16 (1): <http://collegequarterly.ca/2013-vol16-num01-winter/flatt.html>.
- Lawrence, D. H. 2002. *Lady Chatterley's lover and a propos of 'Lady Chatterley's lover'*, ed. M. Squires. Cambridge, UK: Cambridge University Press.
- Mayer, F. S., C. M. Frantz, E. Bruehlman-Senecal, and K. Dolliver. 2008. Why is nature beneficial?: The role of connectedness to nature. *Environment and Behavior* 41 (5): 607–643.
- McMaster University. 2015. *Nature @ McMaster*. <http://www.mcmaster.ca/nature/index.html>.
- McSweeney, J., D. Rainham, S. A. Johnson, S. B. Sherry, and J. Singleton. 2015. Indoor nature exposure (INE): A health-promotion framework. *Health Promotion International* 30 (1): 126–139.
- Miles, S., H. Perez, M. McGee, J. Brenchley, and B. Crewe. 2014. *Feasibility of a living wall in the LSC*. http://www.dal.ca/content/dam/dalhousie/pdf/science/environmental-science-program/ENVS_3502_projects/2014/ENVS_Living_Wall.pdf.
- Milligan, C., and A. Bingley. 2007. Restorative places or scary spaces? The impact of woodland on the mental well-being of young adults. *Health & Place* 13 (4): 799–811.
- Mind. 2013. *Ecotherapy | Mind, the mental health charity – help for mental health problems*. <http://www.mind.org.uk/about-us/policies-issues/ecotherapy/>.
- National Association of Student Personnel Administrators. 2004. *Leadership for a healthy campus: An ecological approach for student success*. Washington, DC: Author.
- Nisbet, E. K., J. M. Zelenski, and S. A. Murphy. 2009. The nature relatedness scale: Linking individuals' connection with nature

- to environmental concern and behavior. *Environment and Behavior* 41 (5): 715–740.
- Palka, E. J. 1999. Accessible wilderness as a therapeutic landscape: The case of Denali National Park, Alaska. In *Therapeutic landscapes: The dynamic between place and wellness*, ed. A. Williams. Lanham, MD: University Press of America, 29–51.
- Tam, K-P. 2013. Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology* 34(June): 64–78.
- Ulrich, R. S., R. F. Simons, B. D. Losito, E. Fiorito, M. A. Miles, and M. Zelson. 1991. Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology* 11 (3): 201–230.
- University of Ottawa. 2015. *A faculty at the forefront of sustainability!* | Faculty of social sciences | University of Ottawa. <http://socialsciences.uottawa.ca/faculty-forefront-sustainability>.
- Weinstein, N., A. K. Przybylski, and R. M. Ryan. 2009. Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality & Social Psychology Bulletin* 35 (10): 1315–1329.
- Williams, A., ed. 1999. *Therapeutic landscapes: The dynamic between place and wellness*. Lanham, MD: University Press of America.
- Windhorst, E., and A. Williams. 2015. 'It's like a different world': Natural places, post-secondary students, and mental health. *Health & Place* 34(July): 241–250.