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Exposure to Nature: An Underutilized Component of Student Mental Health

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Abstract

Nature-exposure interventions on university campuses may serve as an effective addition to overburdened counseling and student support centers. Nature-exposure interventions can work as a preventative health measure on campuses, which can be used adjacently with existing health resources. This paper outlines the potential benefits of nature exposure for students' physical health, mental well-being, and academic success. Previous research has demonstrated that nature exposure may help reduce cognitive load, decrease negative psychological symptoms, increase psychological coping ability, and lead to better physical health. Many campuses already contain green spaces, defined as any part of an environment that is predominately made of natural elements, and these green spaces comprise an untapped resource that is relatively cheap and simple. This paper will outline interventions that use campus green spaces to improve student outcomes. The interventions include adding green space to university buildings and grounds, dedicating already natural environments as nature restoration areas, and providing means for outdoor excursions. Potential limitations and suggested areas for future research are also addressed.

From navigating new social situations to mastering the difficulties of differential calculus, college life can often be a catalyst for psychological illness and distress. College years are often accompanied by the onset of mental difficulties for emerging adults. In fact, early adulthood is the peak period of onset for many disorders including anxiety, mood, and substance-abuse disorders (de Girolamo et al., 2012). Such issues cause significant psychological distress to the individuals experiencing them, which may result in lower academic performance and increase suicide ideation (Auerbach et al., 2016; Bruffaerts et al., 2018; Mortier et al., 2018; Auerbach et al., 2018). The problems that arise in early adulthood create the need for academic and psychological support to ensure successful navigation and completion of university goals.

Due to lack of adequate research, researchers do not know the extent of decreased academic potential and personal suffering that could be avoided by increasing psychological support (Auerbach et al., 2016; Xaio et al., 2017). While college counseling centers do their best to offer emotional and academic support for strained students, the sheer number of stressed out, depressed, and distressed students far exceed the capacity of campus mental-health facilities. Recent research shows that while the number of counseling resources available to undergraduate students has increased in the last 20 years, the number and severity of mental illness cases presented to counseling centers has far outstripped the growth in available resources (Benton et al., 2003). Due to the lack of resources available to counseling centers, many centers have had to adopt strategies including waitlists, session limits, and external referrals (Benton et al., 2003). More than half of university centers surveyed in one study have had to adopt waitlists, and 90% of counseling center directors were alarmed that students may not be getting counseling resources when they need them most (Gallagher, 2011). These alternative strategies present problems for students who are unable to get into therapy when they need it, unable to properly address their problems in the allotted time provided in sessions, or unable to afford external referrals. Preventative support on campus outside of counseling centers may help struggling students who are currently unable to receive needed support from traditional therapeutic environments.

Various coping resources are already available to students, including exercise facilities, academic help centers, social clubs, and biofeedback labs. These resources help students learn new skills, restore emotional balance after stressful events, and obtain social support. However, while these resources are beneficial to the students who use them, there are many individuals who feel too busy for exercise, too embarrassed to seek academic support, and too shy to join social clubs. Academic institutions should attempt to find resources that will help students reduce cognitive and emotional strain without costing the student a great deal of time, effort, or inconvenience.

One possible coping strategy that would fit these criteria is exposure to natural environments. There are significant physical, psychological, and cognitive health benefits tied to spending time in and engaging with natural environments, and the specific benefits tied to spending time in nature relate directly to the needs of resource-strained universities (Kaplan & Kaplan, 1989; Ulrich et al., 1986; Mayer et al., 2009; Berman et al., 2008). For example, nature exposure may help reduce cognitive load, decrease negative psychological symptoms, increase psychological coping ability, and lead to better physical health (McMahon, 2018). Implementing these strategies could be relatively cheap, easy, and sensible given the potential benefits attached to them. Students would be introduced to these resources through the clinical center if they were placed on a waiting list, were struggling with difficulties that were not severe enough to warrant therapy, or were in need of more assistance in addition to traditional counseling. The following section will outline the cognitive, physical, social, and psychological benefits of nature.

Nature and Well-Being

A large body of research demonstrates that spending time in nature is associated with significant psychological and physical benefits (Kaplan & Kaplan, 1989; McMahon, 2018). Specifically, spending time in nature is associated with positive emotional, cognitive, and physical outcomes, as well as better overall well-being (Barton & Pretty, 2010; Thompson Coon et al., 2011; Berman et al., 2008; Kaplan & Kaplan,

1989). Several theories have been posited to explain these results. The first theory has been termed the biophilia hypothesis (Kellert & Wilson, 1995). Biophilia is the theory that human beings possess an innate need to interact with the natural world and was first put forward in the 1980s by biologist Edward Wilson (Kellert & Wilson, 1995). The rationale for this hypothesis is that human beings tend to do better in environments with abundant nature and tend to struggle in areas that lack nature (McMahon, 2018). Modern technology, transportation, and lifestyles have made interaction with nature less necessary and perhaps even less appealing.

Cognitive Restriction

Nature appears to have a restorative effect on the functioning of the human brain. Attention restoration theory posits that natural environments grab the brain's attention without requiring cognitive effort on behalf of the individual, thus giving the attention-focusing portions of the brain a chance to rest (Berman et al., 2008). On the other hand, built environments capture the attention of the brain quickly and intensely (such as when receiving a text message or navigating rush-hour traffic), which forces the brain to direct attention to address or ignore the intense stimulus (Berman et al., 2008). Over time, long periods spent in built environments may lead to attention fatigue, whereas spending time in natural environments may help relieve that fatigue (Berman et al., 2008). Research done with both clinical and nonclinical populations has demonstrated the validity of this theory. For example, interacting with nature has been shown to lead to an increase in attention and memory, as well as improved proofreading performance (Berman et al., 2008; Hartig et al., 1991). Taylor et al. (2001) found that individuals with ADHD experienced a decrease in symptoms after taking a walk in a natural setting.

Physical Health

There are also significant physical health benefits tied to nature exposure. Simply placing patients in hospital rooms with windows facing trees rather than a brick wall resulted in shorter hospital stays, reduced need for pain medication, and fewer negative comments to

nurses (Kaplan & Kaplan, 1989; Ulrich et al., 1986; Wichrowski et al., 2005; Gigliotti et al., 2004). Similarly, engaging with nature has been linked to better pain control, better heart-disease outcomes as a result of decreased stress, higher levels of positive affect and engagement in dementia patients, and increased natural killer cells (Gigliotti et al., 2004; Li et al., 2007).

Spending time in nature and engaging in several different types of physical activity (including walking, jogging, and strenuous activity) have been shown to improve feeling and functioning (McMahon, 2018). Doing these activities in natural environments produces greater physical and psychological benefits than exercise conducted in built environments (McMahon, 2018). These positive effects included increases in positive affect, self-esteem, and engagement, as well as decreases in tension, anger, and aggression (McMahon, 2018).

Social Environment

Nature exposure within social environments also leads to more positive outcomes (McMahon, 2018). Individuals who live in urban areas with more green space have, on average, lower mental distress and higher well-being (Bertram & Rehdanz, 2015; McMahon, 2018). Furthermore, children living in green urban areas have significantly lower BMIs than children living in urban areas without green space (Bell et al., 2008). Even when controlling for the natural benefits of exercise and social connections, nature connectedness still significantly predicts increased happiness (Howell et al., 2011; Zelenski & Nisbet, 2014).

Psychological Well-Being

Perhaps most importantly, nature exposure is tied to many positive psychological outcomes. Exposure to nature has been shown to increase positive emotions, improve well-being, lower mental distress, and improve one's ability to reflect on life problems (Capaldi et al., 2014; Mayer et al., 2009). Likewise, connection with nature has been correlated with an increase in positive affect, vitality, and life satisfaction (Mackerron & Mourato, 2013). In an international study where participants received random pings to their phone asking how happy they were, individuals were overall happier in green environments as measured through GPS monitoring (White et al., 2013).

Implementation Planning

The specific interventions that could be implemented onto college campuses to test out the efficacy of this research on university populations will be outlined in this section.

Nature within Built Environments

There are significant psychological and cognitive benefits attached to simply having natural elements (house plants, water features, and trees) in a man-made environment, such as improved mental health and well-being as well as decreased stress, violence, and crime (Soderlund & Newman, 2015; Rothert, 2007). Potential interventions could include attaching green space to study areas, classrooms, testing centers, and dorms. This intervention would be cost effective and provide easy ways to measure the psychological and academic effects of nature exposure, since classrooms and dorms are generally fairly uniform and thus easy to randomize while avoiding confounding variables. Interventions would consist of placing potted plants and green walls into built environments in order to test whether small quantities of nature can lead to positive psychological impacts in university populations.

Nature-Dedicated Space

Campuses often contain nature trails, grass-covered quads, and water features such as fountains and streams. These natural features that are already available for public use could easily be transformed into intentional nature restoration areas. A nature-dedicated space would consist of a principally natural area secluded from built environments, such as roads and campus buildings. For example, a greenspace that naturally appears near a campus testing center could be labeled as a nature restoration area; researchers could then have students spend time in this area prior to taking tests to measure the potential cognitively restorative elements of the area.

Wilderness Excursions

The final potential implementation strategy would be campus-led wilderness excursions. These interventions could consist of weekend-long trips to local natural areas in which students could become

fully immersed. Many departments already conduct field trips into natural areas, and these trips could be used as an opportunity to test the validity of this approach. Previous research has demonstrated that individuals experience a decrease in cortisol and an increase in creativity during wilderness trips similar to the one described above (Li et al., 2007; Atchley et al., 2012). If research proved this approach effective, the counseling center could provide trips to natural areas during stressful times in the semester.

Conclusion

Substantial research supports the efficacy of using nature exposure as a coping mechanism for university students, but before this approach can be appropriately justified, various interventions need to be conducted and construct limitations need to be addressed. If this intervention can be empirically validated, nature exposure could offer an inexpensive, simple, and effective coping resource for struggling students.

There are significant limitations to the research as it currently stands. Currently, the construct of nature exposure lacks coherence and validity; many researchers disagree about what constitutes a natural space and what constitutes a built structure. How researchers define these elements may alter the results of research, as the psychological effects associated with spending time in a forest may be different from those associated with spending time in a tundra. Furthermore, the cognitive and psychological strain created by synthetic environments may differ depending on context as well, for example, a busy shopping mall versus a peaceful library. Future research, especially regarding interventions, should focus on establishing a universal definition upon which future research will be conducted.

Additionally, there is a lack of research on the efficacy of nature exposure on university success. While many studies have identified benefits of various aspects of nature exposure that could be useful in the university setting, further research needs to be conducted using nature-exposure interventions on college student populations. Specifically, further research should identify the effect of engaging

with nature on academic success, stress, and student well-being. With additional research, nature restoration may be a potent solution to strained students and counseling centers around the world.

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