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Destinee Waddy
Winthrop University

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The Relationship between Nature Connectedness and Physical Activity Patterns in a Sample of Collegiate Students, Faculty, and Staff

Destinee Waddy
Tyrone Ceaser, Ph.D. (Mentor)

ABSTRACT

PURPOSE: A strong relationship exists between physical activity (PA) and nature connectedness (NC); the most physically active individuals may also be the most nature connected. Designing PA programs and modifying college campuses through the lens of biophilia can provide a more logical, evidence-based approach to improve overall health and wellness. The purpose of this study was to identify the relationship between physical activity and nature connectedness in a sample of collegiate faculty and students. **METHODS:** Participants completed two previously validated surveys: The International Physical Activity Questionnaire and the Connectedness to Nature Survey. Demographic data (age, race, campus affiliation) were also collected. **RESULTS:** There were 82 participants total (male=18.8%, female= 81.2%). Participants reported a mean score of 2.39 on the NC scale. On average, participants accumulated 3330 minutes of weekly sedentary activity, 743 min of walking activity, 308 minutes of moderate activity, and 339 minutes of vigorous activity. Spearman correlations showed no correlation between NC and PA (vigorous, $p = .782$; moderate, $p = .577$; walking, $p = .374$; sitting, $p = .774$). **CONCLUSION:** College affiliates report an affinity for nature and high levels of PA. More studies are needed to determine additional variables that mediate the relationship between PA and NC in the collegiate setting.

INTRODUCTION

Heart disease, obesity, and type II diabetes are among the leading causes of death in the United States. The prevalence of these diseases has continued to increase over the last several decades (Ogden et al., 2006). Being overweight and obese are two of the most common risk factors for cardiovascular disease (CVD), metabolic disease and type II diabetes (Mozaffarian et al., 2015). These morbidities not only impact the health and wellness of individuals from specific socioeconomic status, but also affect the collegiate population as well. Collegiate affiliates tend to be placed under high levels of stress. According to research from Harvard Medical School, college students have higher rates of involvement in negative, stressful events. In addition, mental health diagnoses such as anxiety disorders are higher within the college community and increase the risk for suicide (Youngmans 2018). Taken together, there is a relationship between negative stressors and chronic disease (Schneiderman, Ironson, Siegel

2005). This relationship places collegiate affiliates at a higher morbidity risk. Students are allocating their time to academics and extracurriculars and aren't obtaining adequate levels of exercise and experiences of positive stress (e.g. eustress).

Increased levels of physical activity (PA) is associated with decreased risk of the aforementioned morbidities. Previous studies indicate a significant decline in PA as adolescents approach adulthood (i.e. their college years) (Calestine et.al. 2017). There is a lack of physical activity among the US population. However, there are guidelines in place to provide evidence on physical activity, fitness and overall health for Americans (ODPHP 2018). Leading health organizations such as the American College of Sports Medicine and The Centers for Disease Control and Prevention denote various activity levels to describe and define disease risk for children, adolescents, and adult individuals. According to the Office of Disease Prevention and Health Promotion, the various levels of PA are inactive, insufficiently active, active, and highly active. These levels are important in

determining if the individual incurs any health benefits for the given PA levels. In addition to total PA levels, PA can be further defined based on the pattern of activity intensity. There are three levels of physical activity intensity. These levels are low intensity, moderate intensity, and high intensity (ODPHP 2018). Intensity is determined by the metabolic equivalent of a task or MET, which is the amount of energy that is required to perform a task or activity. Between 40-60% of adults report no leisure time physical activity (LTPA), with a smaller percentage of non-Hispanic white men reporting no LTPA than most other groups (Ladabaum, 2012). Most adults spend their time in the low and moderate range for physical activity.

Looking at long-term physical activity behavioral interventions, researchers are focused on how to combat the decrease in physical activity among adults. There are interventions such as enhanced social support that help serve as mediators for individuals to increase their daily activity levels. Researchers have been studying these behavioral interventions, but we have not seen consistency with these models. There is a need for further research when it comes to using one's affinity of nature as a possible way to increase physical activity. Humans have an underlying need to feel connected with nature. According to Edward O. Wilson, humans have an innate tendency to connect with nature and other lifeforms. This urge is what connects humans to nature. Several studies have been done to connect biophilia to health and wellness. Researchers find that when an individual is connecting with nature, this improves their overall health and wellness. The presence of plants and green spaces has a subconscious, positive effect on the mind (Grinde and Patil 2009). When an individual isn't exposed to nature frequently, this can have adverse effects on mental health as well as create a disconnect from the natural environment. Connecting individuals to nature through biophilic design is helpful for those who have to stay indoors, but still need this connectedness. This is why it is important for collegiate affiliates to have this connection: with their busy work environments and being constantly under stress, biophilic design can play a role in preserving mental health and reducing

stress (Heerwagen and Hase 2001). Through the biophilic hypothesis, researchers are trying to identify if the connection is strong enough to serve as a possible intervention for physical activity.

METHODS

In attempt to identify nature connectedness and physical activity levels and patterns, 82 participants were voluntarily recruited to answer questions that described individual physical activity levels and connectedness with nature. Specifically, two questionnaires, the International Physical Activity Questionnaire (IPAQ) and the Connectedness to Nature Scale (CNS), were combined and sent out in a Qualtrics survey in the Winthrop University Qualtrics database system. After approval from the Winthrop University International Review Board, participants were chosen by word-of-mouth and email. Participants had to be a current Winthrop student, faculty or staff member. The survey also included demographic questions regarding age, race, gender, and university affiliation. The first portion of the survey then began with questions from the Connectedness to Nature Scale (CNS), then were followed by questions from the International Physical Activity Questionnaire (IPAQ). The surveys were analyzed through an SPSS Spearman Correlation.

International Physical Activity Questionnaire

This is an internationally compatible questionnaire that can be used to gather health-related physical activity questions. This questionnaire is available in multiple languages, in a short or long version, and is self-administered or telephone administered. For this particular study, we focused on the self-administered, English, short version. This version consists of 3 categories, or levels, with 7 questions total. The first level is vigorous activity, the next is moderate activity and the last is low activity. Each question allows for subjects to record their physical activity levels within the last 7 days. The IPAQ assesses both physical activity levels and patterns. Questions have particular activity pattern descriptions such as heavy lifting, biking, and sitting.

Connectedness to Nature Scale

The 13-question connectedness to nature scale consists of questions that can help identify how subjects generally feel about nature. This survey consists of questions such as “I think of the natural world as a community to which I belong,” and “I feel that all inhabitants of earth, human and nonhuman, share a common “life-force.” Nature connectedness is connecting humans to nonhuman forms around them. Understanding this connection can help determine if those with higher connections to nature also have higher physical activity levels and patterns. Following the collection of data, a spearman correlation was run to interpret significance and p-values.

RESULTS

[Figure 3] There was a total of 82 participants (male=18.8%, female= 81.2%). There were more Caucasians (54.1%) than African Americans (43.5%). [Figure 2] A majority of the campus affiliates that participated were students (48.2%). [Figure 1] Participants reported a mean score of 2.39 on the NC scale. On average, participants accumulated 3330 minutes of weekly sedentary activity, 743 minutes of walking activity, 308 minutes of moderate activity, and 339 minutes of vigorous activity. Spearman correlations showed no correlation between NC and PA (vigorous, $p = .782$; moderate, $p = .577$; walking, $p = .374$; sitting, $p = .774$).



Figure 1

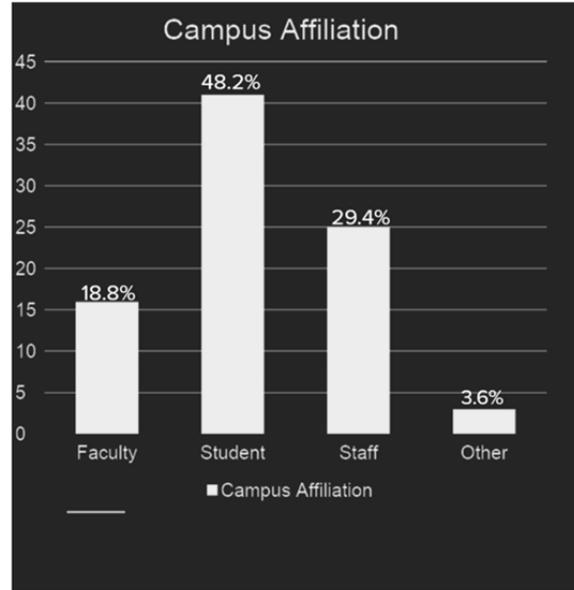


Figure 2

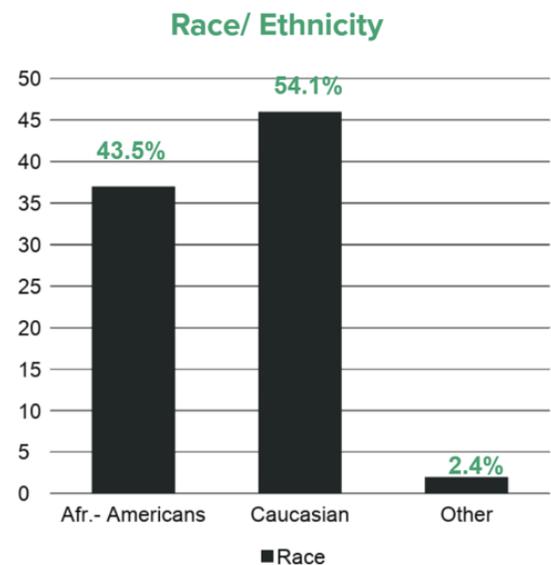


Figure 3

CONCLUSION & DISCUSSION

College affiliates report an affinity for nature and high levels of PA, which may suggest the need for more biophilic spaces. Though there was not a significant relationship connecting physical activity levels and nature connectedness, college affiliates still reported high numbers on both NC and PA portions of the survey. More studies are needed to determine stronger relationships between PA and NC in the collegiate setting. The sample demographics are

representative of the population at Winthrop University. The amount of physical activity in a 7-day span are higher than the recommended guidelines for ACSM. About 150 minutes of moderate and 75 minutes of vigorous activity are the recommended guidelines. Some limitations of this study included sample size. Sample, though representative of the Winthrop University population, was not large enough to collect significant data. The time that the study was given was not an active season. Researchers hypothesize a stronger correlation between NC and PA if data was collected during a school year versus the summer. A stronger assessment of nature connectedness is also needed, so are questions that are more specific/easier read. Also, a collection of objective data such as an accelerometer to collect PA is needed because individuals tend to overreport PA levels subjectively.

REFERENCES

- Abu-Moghli, F. A., Khalaf, I. A., & Barghoti, F. F. (2010). The influence of a health education programme on healthy lifestyles and practices among university students. *International Journal of Nursing Practice*, 16(1), 35–42. <https://doi.org/10.1111/j.1440-172X.2009.01801.x>
- Biophilic Design Case Studies - Terrapin Bright Green. (2015). Retrieved from <https://www.terrapinbrightgreen.com/report/biophilic-design-case-studies/>
- Calestine, J., Bopp, M., Bopp, C. M., & Papalia, Z. (2017). College Student Work Habits are Related to Physical Activity and Fitness. *International journal of exercise science*, 10(7), 1009–1017.
- Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999–2010. *The Journal of American Medical Association*, 307(5), 491–497.
- Grinde, B., & Patil, G. G. (2009, September). Biophilia: Does visual contact with nature impact on health and well-being? *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph6092332>
- Heerwagen, J. H., & Hase, B. (2001). Building Biophilia: Connecting People to Nature in Building Design. *Environmental Design and Construction*, 3, 30–36. Retrieved from <http://www.usgbc.org/Docs/Archive/External/Docs8543.pdf>
- Ladabaum, U., Mannalithara, A., Myer, P. A., & Singh, G. (2014). Obesity, abdominal obesity, physical activity, and caloric intake in US adults: 1988 to 2010. *The American journal of medicine*, 127(8), 717–727.e12. doi:10.1016/j.amjmed.2014.02.026
- Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, de Ferranti S, Després J-P, Fullerton HJ, Howard VJ, Huffman MD, Judd SE, Kissela BM, Lackland D'T, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Matchar DB, McGuire DK, Mohler ER 3rd, Moy CS, Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Willey JZ, Woo D, Yeh RW, Turner MB; on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2015 update: a report from the American Heart Association. *Circulation*. 2015;131:e29–e322.
- Odph (ed.). (2018). Part f. Chapter 6. All-cause mortality, cardiovascular mortality, and incident cardiovascular disease. Retrieved from <https://health.gov/paguidelines/second-edition/>
- Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of Overweight and Obesity in the United States, 1999–2004. *JAMA*. 2006;295(13):1549–1555. doi:10.1001/jama.295.13.1549
- Plotnikoff, R. C., Costigan, S. A., Williams, R. L., Hutchesson, M. J., Kennedy, S. G., Robards, S. L., ... Germov, J. (2015). Effectiveness of interventions targeting physical activity, nutrition and healthy weight for university and college students: a systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 12(1), 45.

- <https://doi.org/10.1186/s12966-015-0203-7>
- Ryan, C. O., Browning, W. D., Clancy, J. O., Andrews, S. L., & Kallianpurkar, N. B. (2014). Biophilic design patterns: Emerging nature-based parameters for health and well-being in the built environment. *Archnet-IJAR*. <https://doi.org/10.26687/archnet-ijar.v8i2.436>
- Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: psychological, behavioral, and biological determinants. *Annual review of clinical psychology, 1*, 607–628. doi:10.1146/annurev.clinpsy.1.102803.144141
- Wilson, E.O. *Biophilia*; Harvard University Press: Cambridge, MA, USA, 1984.
- Younghans, J. (2018, September 10). College Stress. Retrieved from <https://hms.harvard.edu/news/college-stress>