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Plant-Exposure may Alleviate College Freshmen Stress and Increase Attention Capacity

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Introduction

The human-nature relationship is affected by many different social (Azqueta & Sotelsek, 2007), evolutionary (Grinde & Patil, 2009), and personal influences (Stern, 2000). Furthermore, various studies have revealed the positive psychological and physiological benefits of nature-exposure (Ulrich et al., 1984). This study evaluated the effects of plants on freshmen stress levels, attention capacity, and nature relatedness. The hypothesis of the study predicted that as one is exposed to nature, he or she will experience an increase in nature relatedness and attention capacity, and a decrease in perceived stress.

Method

This study was quasi-experimental. The participants were derived from a convenience sample of traditional freshmen at Concordia University. The average age of the participants was 18 years; 96% (n = 25) were female, and 84% (n = 21) of the participants described themselves as non-Hispanic white. The experimental group was told that they would receive their spider plant, after completing the initial surveys, and the comparison group was told that they would receive their plants after the study was complete. This was a repeated-design study; therefore, the same surveys were given at the beginning and end of the study. The measurements included the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), Nature Relatedness Scale (Nisbet, Zelenski, & Murphy, 2009), and the Psychology Experimental Building Language Program Clock Test (Mueller, 2011), which measured attention capabilities. Qualitative questions that explored the participants' nature relatedness and perceived stress were included in the survey packet.

Results

Paired-sample t-tests were conducted to find changes in nature relatedness, attention capacity, and perceived stress for those who were given a plant and those who were not given a plant. In the experimental group, there was a significant change in attention capabilities measured by the clock test when comparing the first session (M = 8.80, SD = 7.16) and the second session (M = 2.60, SD = 2.22); $t(9) = 3.25, p = .010$. The effect size, estimated with Cohen's d, was 1.52. These results are summarized in the table below.

Table 1
Experimental Group Results

Variable Measured	First Session Results		Second Session Results		p value of t-test	Significant Difference
Nature Relatedness	M = 3.60	SD = .453	M = 3.67	SD = .602	p = .293	No
Perceived Stress	M = 15.08	SD = 5.88	M = 15.46	SD = 4.01	p = .869	No
Clock Test	M = 8.80	SD = 7.16	M = 2.60	SD = 2.22	p = .010	Yes

In the comparison group, there was a significant difference in perceived stress scores when comparing the first survey session (M = 13.85, SD = 8.23) with the second session (M = 18.00, SD = 6.11); $t(12) = -2.7, p = .019$. The effect size, estimated by Cohen's d, was -.802. The results are summarized in the table below.

Table 2
Comparison Group Results

Variable Measured	First Session Results		Second Session Results		p value of t-test	Significant Difference
Nature Relatedness	M = 4.08	SD = .419	M = 4.14	SD = .496	p = .420	No
Perceived Stress	M = 13.85	SD = 8.23	M = 18.00	SD = 6.11	p = .019	Yes
Clock Test	M = 6.18	SD = 4.87	M = 4.54	SD = 5.63	p = .402	No

According to the qualitative questions that were listed on the survey, the most common stressor during one's college transition was time management and most common ways in which one dealt with stress included time management and social interactions. Most of these students expressed having an experience-based nature relatedness, which means they enjoy the physical experience of being in nature. Finally, when asked if they had ever been calmed by nature, every person in the comparison group replied "yes" at the beginning and end of the study. In the experimental group, 69% of individuals expressed that they had been calmed by nature at the beginning of the study and this increased to 85% at the end of the study.



The initial hypothesis for this study, that as one is exposed to nature, he or she will experience an increase in nature relatedness and attention capacity, and a decrease in perceived stress, was partially supported by its results. In the experimental group, the participants showed a significant increase in attention capacity. The results suggest that the plant could have been an effective intervention for attention restoration (Tennessen & Cimprich, 1995). There was no significant change in nature relatedness in either group. Finally, the experimental group did not experience a significant decrease in perceived stress; however, the comparison group did experience a significant increase in perceived stress. This result may reveal that the plant's presence prevented the participants' stress to rise significantly.

Conclusions

Overall, this study reveals that plants may be beneficial for reducing stress and increasing attention capabilities among college freshmen. The results of this study are important because nature-exposure may prove to be an adaptive coping mechanism for college freshmen. Studies that focus on the human-nature relationship must be evaluated because this relationship determines the health of the natural world and may influence the well-being of humanity.

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For further information

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