

The Correlation Between the Ratio of Screen Time to Green Time and Perceived Anxiety Levels Among UCSD Undergraduates

Behrad Hafezi, Humberto Reyes-Reid, Rafael Barrera



Objective

To determine how the amount of screen time relative to the amount of green time correlates with perceived anxiety levels among UCSD undergraduate students.

Introduction

- Over 1/5 of college students experience anxiety globally.¹
 - Over 2/5 of college students in North America.²
- Academics have been associated with increased anxiety and stress levels among individuals aged 18-24.³
- Spending time in nature (green time) has shown to have a revitalizing effect on mental health; it reduces average stress levels, burnout, and anxiety. While significantly increasing ones mental health.⁴
- Conversely, screen time has been associated with negative mental health outcomes, with some findings indicating significant increases in depression, anxiety, and stress.⁵
- A nationally representative survey conducted in the U.S. from 2009-2015 showed an average increase of 0.7 hours per day in screen time among adolescents.⁶

Methods

Using Qualtrics, we created a cross-sectional survey distributed to UCSD students through platforms like the UCSD subreddit, Snapchat, and Instagram. Our main form of advertisement came from digital and physical posters that were distributed across these social media platforms, as well as posted in high traffic areas around campus in order to maximize outreach. The survey asked questions that helped determine demographic information, self-reported exposure measurements of screen time and green time, and a self-reflective section for anxiety measures that were based on the GAD-7 anxiety scale as our outcome.⁷ Our survey was short enough to be completed in typically under 5 minutes, and we had 93 valid responses for the data analysis. We used R to run several correlation tests, notably the correlation between screen time/green time ratios and total anxiety scores. Our other test was a two-sample independent t-test between high/low ratio groups and anxiety levels.

Figure 1. Correlation Between the Ratio of Screen Time/ Green Time and Total Anxiety Scores

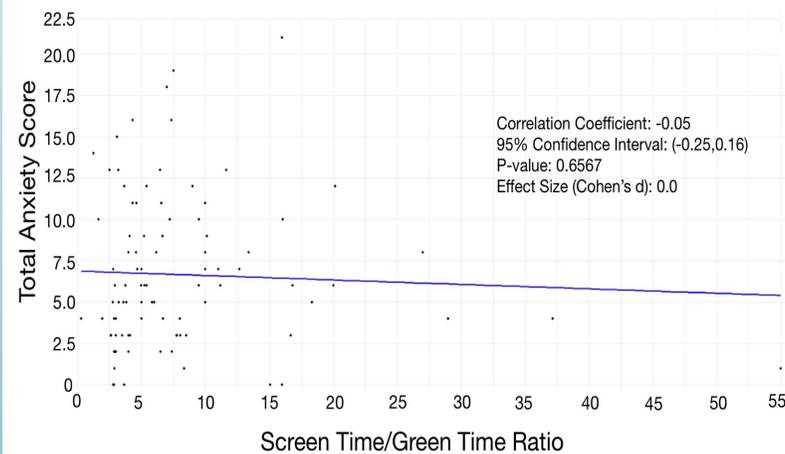


Table 1. Demographic Characteristics (N=93)

| | |
|------------------------------------|---------------|
| Age | 20.38 (1.56) |
| Gender | |
| Female | 46 (49.5%) |
| Male | 41 (44.1%) |
| Non-binary / third gender | 5 (5.4%) |
| Prefer not to disclose | 1 (1.1%) |
| Total Screen Time Hrs per Week | 67.09 (25.46) |
| Total Green Time Hrs per Week | 13.44 (12.13) |
| Screen T / Green T | 8.04 (7.94) |
| Total Anxiety Score | 6.67 (4.56) |
| Race/Ethnicity | |
| American Indian or Alaska Native | 2 (1.9%) |
| Asian | 31 (28.7%) |
| Black or African American | 5 (4.6%) |
| Hispanic, Latino or Spanish Origin | 45 (41.7%) |
| Middle Eastern | 3 (2.8%) |
| Other: | 1 (0.9%) |
| Prefer not to disclose | 2 (1.9%) |
| White | 19 (17.6%) |

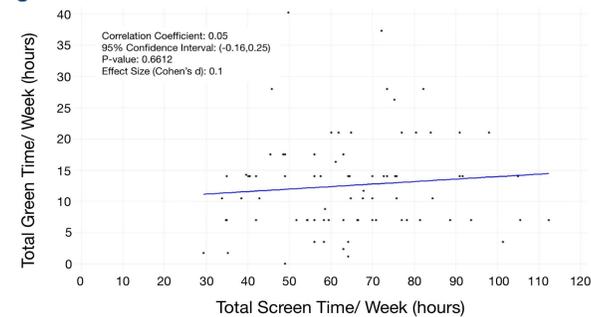
¹ Mean (SD); n (%)

² n (%)

Table 2. Study Population Data Averages (N=93)

| | |
|--|-------|
| Mean Weekly Screen Time (hours) | 67.05 |
| Mean Weekly Green Time (hours) | 13.36 |
| Mean Screen Time/ Green Time Ratio | 8.04 |
| Median Screen Time/ Green Time Ratio | 5.39 |
| Mean Total Anxiety Score (Range of 0-21) | 6.67 |

Figure 2. Correlation Between Screen Time and Green Time



Results

- N=93 participants
- The average weekly screen time and green time was 67.05 and 13.36 hours respectively
- The average total anxiety score was 6.67 out of the 21 possible. Our range was 0 - 21.
- Weak negative correlation between screen time/green time ratio total anxiety score ($\rho = -0.05$, $p = 0.6567$)
- Weak positive correlation between screen time and green time ($\rho = 0.05$, $p = 0.6612$).
- High ratio (>Median) had ~4-times the screen time/green time ratio of the low groups (12.50 vs. 3.52 respectively).
- High ratio (>Median) had an average of 1.49 more points on the anxiety test.
- No statistically significant difference in anxiety score between high/low group ($t = 1.49$, $CV = 1.987$ $df = 88$, $p = 0.1377$)
- Weak positive correlation between screen time and anxiety score ($\rho = 0.13$, $p = 0.2126$, [95% C: -0.07, 0.33])
- Weak positive correlation between green time and anxiety score ($\rho = 0.03$, $p = 0.7556$, [95% C: -0.17, 0.24])

Conclusion

- Within our sample, there was a very weak negative correlation between the ratio of screen time over green time and overall perceived anxiety levels among UCSD students.
- We fail to reject the null hypothesis that there is no significant association between the ratio of screen time to green time and perceived anxiety levels.
 - Further analysis of the data concluded with no statistical significance between screen time and green time, along with their individual impacts on anxiety levels.

Implications

- Self-report bias is a major limitation in our study model, and direct observation of participants will eliminate it.
- The quality of green time also varies and was not considered in this study
 - Can be controlled by only studying green time in a specific area
- While our study did not show an association, increasing the amount of green spaces will help improve other aspects of mental health.⁴
 - Increase awareness of the benefits of green time to improve average green time.

Acknowledgements

We would like to thank Dr. Anne E. C. White and Marina Katague for guidance throughout the course of this study, along with our participants for taking part in the study.

References

- Ramón-Arbués E, Gea-Caballero V, Granada-López JM, Juárez-Vela R, Pellicer-García B, Antón-Solanas I. The Prevalence of Depression, Anxiety and Stress and Their Associated Factors in College Students. *Int J Environ Res Public Health*. 2020;17(19):7001. Published 2020 Sep 24. doi:10.3390/ijerph17197001
- Li, W., Zhao, Z., Chen, D., Peng, Y., & Lu, Z. (2022). Prevalence and associated factors of depression and anxiety symptoms among college students: a systematic review and meta-analysis. *Journal of child psychology and psychiatry, and allied disciplines*, 63(11), 1222–1230. <https://doi.org/10.1111/jcpp.13606>
- Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015, March). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders*, 173, 90–96.
- Camerini, A. L., Albanese, E., Marciano, L., & Corona Immunitas Research Group (2022). The impact of screen time and green time on mental health in children and adolescents during the COVID-19 pandemic. *Computers in human behavior reports*, 7, 100204.
- Deyo, A., Wallace, J., & Kidwell, K. M. (2023). Screen time and mental health in college students: Time in nature as a protective factor. *Journal of American college health : J of ACH*, 1–8. Advance online publication.
- Tang, S., Werner-Seidler, A., Torok, M., Mackinnon, A. J., & Christensen, H. (2021). The relationship between screen time and mental health in young people: A systematic review of longitudinal studies. *Clinical Psychology Review*, 86(86), 102021.
- Spitzer, R. L., Kroenke, K., Williams, J. B. W., Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092-1097.