

# Green Space Exposure and Self-Perceived Anxiety: Is there a Correlation?

Rebecca Francois<sup>1</sup>, Beberly Garcia<sup>1</sup>, Madison Rivera<sup>1</sup>, David Johnston<sup>1</sup> and Tashana Samuel<sup>2</sup>  
Brooklyn Academy of Science and the Environment (BASE)<sup>1</sup>  
Brooklyn College, City University of New York<sup>2</sup>

## Abstract

Green spaces are plots of undeveloped land surrounding places of residential or industrial areas that are maintained for recreational enjoyment. City parks, green urban landscapes, and rooftop gardens are some examples of green spaces. Anxiety is a normal sustained reaction to stress. Is there a correlation between a person's exposure in green spaces and self-perceived anxiety? We investigated this question by constructing survey questions that focused on two parameters: green space exposure and self-perceived anxiety. Surveys were administered to freshman students (N=74) at Brooklyn Academy of Science and the Environment (BASE). Based on previous research, we hypothesized that green space exposure, having a calming effect, should reduce anxiety. Pearson *r* analyses indicated that there was a positive correlation between green space exposure and anxiety; specifically that increased exposure to direct sunlight in green spaces tended to slightly *increase* self-perceived anxiety. We believe that the change in season was one possible explanation for this finding.

## Introduction

A green space is any vegetated land or water within an urban area. Some examples of green spaces are parks, playing fields, gardens, and vacant dilapidated land that has the potential to be transformed. A study was conducted in Dublin, Ireland to investigate the relationship between preferred green spaces and their size (Bullock, 2009). The results showed that parks with children's play facilities and a mixture of quiet and busy areas attracted more attention in small local parks, and parks with walking/seating facilities and adventure play were preferred in larger regional parks. Green spaces have also been shown to reduce anxiety. Anxiety is a sustained feeling of worry or uneasiness caused by fear of danger or misfortune. Adolescents with higher anxiety levels tend to spend less time communicating with people and engaging in entertaining activities. Substance use and eating patterns change with anxiety levels. Teens in the middle and high anxiety group tend to have stronger urges to smoke, drink, and eat (Henker, Whalen, Jamner & Delfino, 2002).

Data from health reports from medical doctors in the Netherlands have shown that rates in anxiety, depression, and a wide variety of physiological diseases were substantially lower in people who lived within 1 kilometer of a green space, compared to people who lived much further away (Nauert, 2009). This large-scale research study (N=350,000), also found a strong correlation between those who spent more time within green spaces and good physical and mental health. The current research study sought to investigate the extent to which high school students were exposed to green spaces and whether this was correlated to self-perceived anxiety.

## Method



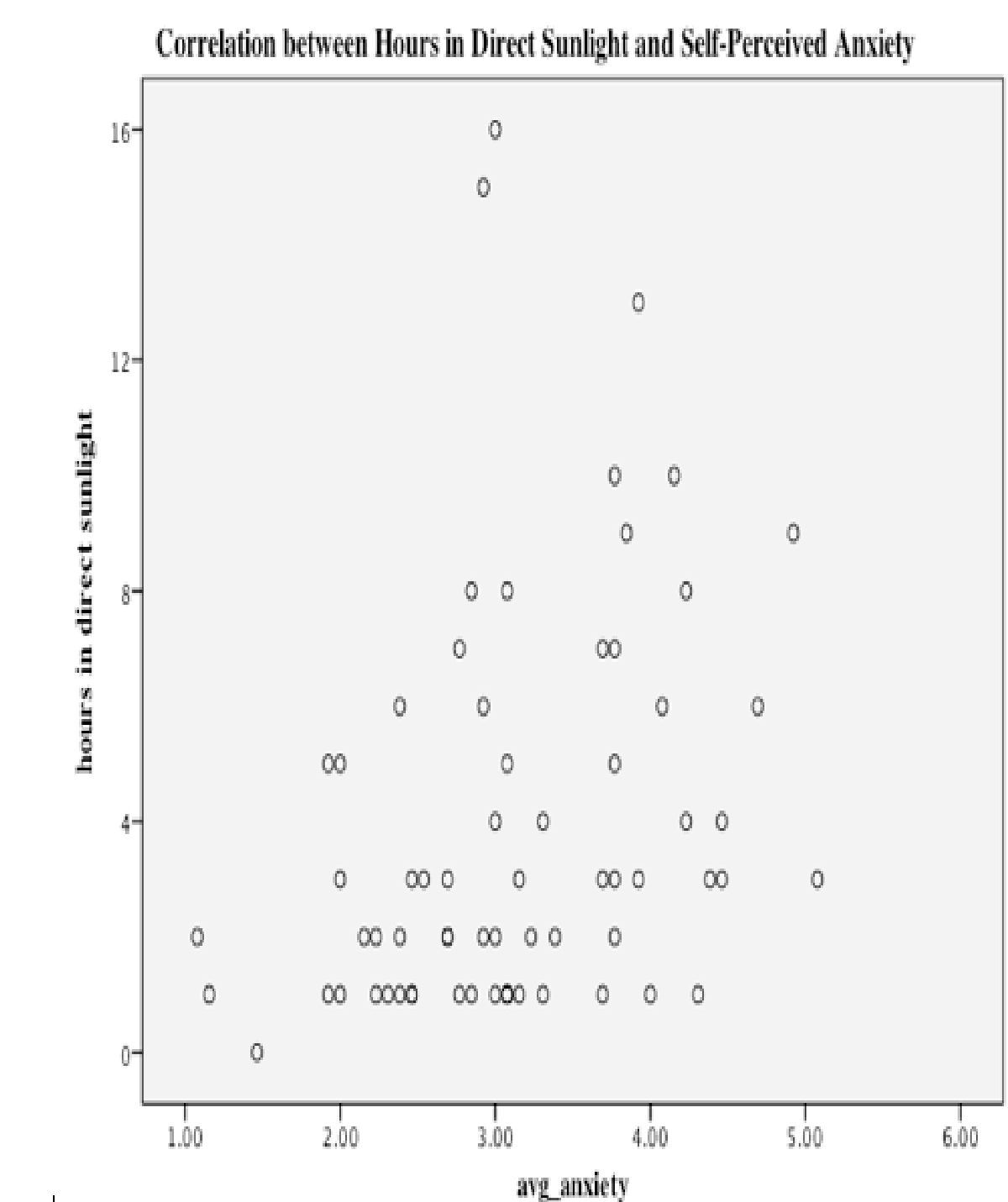
The Sophomore Research class constructed 30 survey questions that measured two variables: green-space exposure and self-perceived anxiety (15 questions each). Survey questions consisted of a combination of open-ended and 6-point Likert scale type questions. Participants were recruited from three freshman science classes. Surveys were administered to 74 students (30 males, 44 females). Demographic questions were also asked at the end of the survey.

Examples of survey questions:

- **Green Space Exposure:** How many plants are in your home? How much time per day are you exposed to direct sunlight (indicate # of hours)?
- **Self-Perceived Anxiety:** Do you have trouble staying calm? How often are you anxious about things you cannot control?
- **Demographic Questions:** What is your gender? How old are you? Do you take any medications?

## Results

Survey data was analyzed using the Pearson *r*, which revealed that out of the 15 green space exposure items that were asked, there was a relationship between hours in direct sunlight and self-perceived anxiety; specifically, a marginal increase ( $r=.315$ ,  $p < .01$ ). There was also an association between time in green spaces and anxiety ( $r=.246$ ,  $p < .05$ ); but given the standard deviation for time spent in green spaces was quite high ( $M=3.90$ ;  $s=3.491$ ), we decided to be conservative with our interpretation of this particular relationship.



## Discussion

Although the results at first glance do not appear to be consistent with our initial hypothesis, we surmised that students taking the survey during the winter season could account for these data. Perhaps spending more hours in direct sunlight in the winter also means spending time in cold air. Furthermore, green spaces in the winter are not "green" at all, since many trees are bare, and flowers and plants die in the winter. Therefore, cold weather and less "greenery" in the environment are some factors that could possibly explain the data in this sample. Future research will explore how administering the survey during different seasons (winter vs. summer) may yield different responses of self-perceived anxiety.

## References

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