

The Need

To improve the mental health of college students at WPI in order to reduce depression rates and increase GPA among students.

Background Information

Depression/Anxiety rates

A study done on a broad range of US college students found that about 10% had a mood disorder and about 12% had an anxiety disorder³

A study done at a large public mid-western US university found depression rates of 12% to 16% and anxiety rates of 4% to 7% among students¹⁰

Effects of Depression/Anxiety

“Depression is a significant predictor of lower GPA and higher probability of dropping out, particularly among students who also have a positive screen for an anxiety disorder.”⁵

Combating Depression/Anxiety

Going outside is beneficial, since it means more exposure to UV light, leading to higher Vitamin D levels¹ and thus higher levels of Dopamine⁴. Dopamine is a “feel-good chemical”⁸ and helps combat depression⁹

Studying inside with a natural element in view such as water, whether it be a painting or through a window can be restorative^{2,6}, meaning students feel rejuvenated and can work for a longer period of time.

The Approach

To encourage students to spend more time outside by renovating Higgins Lawn or to renovate an area inside to include an aspect of nature.

Step 1

- Students study outside for 5-30 minutes a day - twice a week⁷

Step 2

- The increased UV light exposure causes more Vitamin D to be produced leading to an increase in Dopamine

Step 3

- Dopamine is described as a “feel-good chemical” and helps combat depression

Step 4

- As the severity of depression decreases, GPA will increase

Further Development

Students who utilize an area that includes an aspect of nature can study longer and feel better at the end of studying. This is because indoor areas that include an aspect of nature are found to be restorative or rejuvenating^{2,6}. A future extension of this project could be exploring the possible development of an indoor study area at WPI with this in mind.

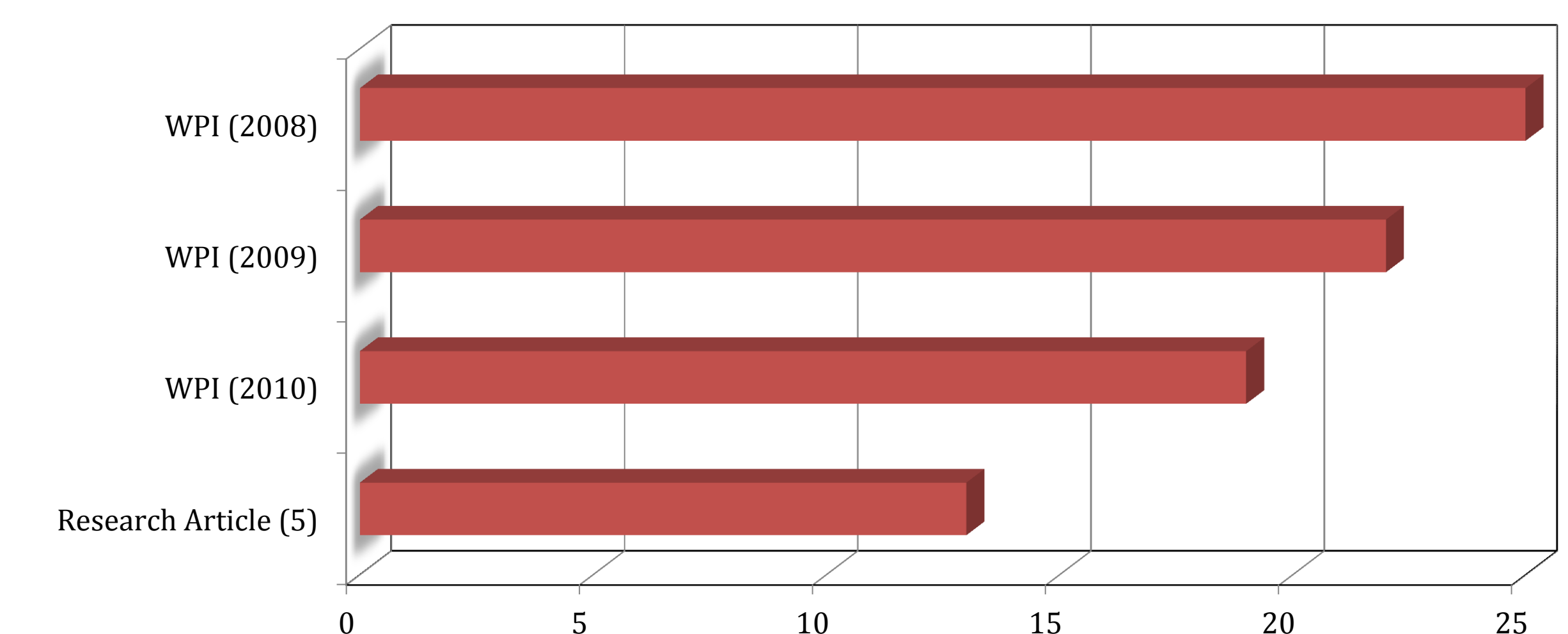
Statistics at WPI

At WPI several hundred students visit the Student Development and Counseling Center each year. Of those students approximately 1 in 5 visited because of depression and 1 in 6 because of anxiety.

It is also know that men seek out help at half the rate women due, and since WPI is about three-quarters male, we determined that this warranted attention.

Year	Students who visited SDCC	% visiting for depression	% visiting for anxiety
2008	257 Different Students	25%	22%
2009	278 Different Students	22%	18%
2010	334 Different Students	19%	10%

Out of students who reported a mental issue, the percent who reported depression



Acknowledgments

We would like to thank Charles Morse for providing data from the Student Development and Counseling Center. We would also like to thank Helen Vassallo and Jill Rulfs for being great teachers and helping us at every step.

References

1. Webb, A. R., et al. - *the Role of Sunlight Exposure in Determining the Vitamin D Status of the U.K. White Adult Population*. - 163 Vol. - Blackwell Publishing Ltd. - 2010. Web.
2. Berto, Rita. "Exposure to Restorative Environments Helps Restore Attentional Capacity." *Journal of Environmental Psychology* 25.3 (2005): 249-59. Web.
3. Blanco, Carlos, et al. *Mental Health of College Students and their Non-College-Attending Peers: Results from the National Epidemiologic Study on Alcohol and Related Conditions*. (Report). 65 Vol. - 2008. Web.
4. Cui, Xiaoying, et al. "Maternal Vitamin D Deficiency Alters the Expression of Genes Involved in Dopamine Specification in the Developing Rat Mesencephalon." *Neuroscience Letters* 486.3 (2010): 220-3. Web.
5. Eisenberg, Daniel, Ezra Golberstein, and Justin B. Hunt. "Mental Health and Academic Success in College." *The B.E. Journal of Economic Analysis and Policy* 9.1 (Contributions) (2009)Print.
6. Felsten, Gary. "Where to Take a Study Break on the College Campus: An Attention Restoration Theory Perspective." *Journal of Environmental Psychology* 29.1 (2009): 160-7. Web.
7. Holick, Michael F. "Vitamin D Deficiency." *New England Journal of Medicine* 357.3 (2007): 266-81. Web.
8. Libers, Abigail. "Six Easy, Natural Mood Lifters." *Self* May 2010: 173. Web.
9. Wang, Xukun, et al. "Effect of Flavonoids in *Scutellariae Radix* on Depression-Like Behavior and Brain Rewards: Possible in Dopamine System." *Tsinghua Science & Technology* 15.4 (2010): 460-6. Web.
10. Zivin, Kara, et al. "Persistence of Mental Health Problems and Needs in a College Student Population." *Journal of affective disorders* 117.3 (2009): 180-5. Web.