

Binghamton University

## The Open Repository @ Binghamton (The ORB)

---

Research Days Posters 2021

Division of Research

---

2021

### Analyzing The Connection Between Illicit ADHD Medication Use and Caffeine Use

Devon Umeozor

*Binghamton University--SUNY*

Rebecca Koltun

*Binghamton University--SUNY*

Jumza Khan

*Binghamton University--SUNY*

Sara Mccan

*Binghamton University--SUNY*

Follow this and additional works at: [https://orb.binghamton.edu/research\\_days\\_posters\\_2021](https://orb.binghamton.edu/research_days_posters_2021)

---

#### Recommended Citation

Umeozor, Devon; Koltun, Rebecca; Khan, Jumza; and Mccan, Sara, "Analyzing The Connection Between Illicit ADHD Medication Use and Caffeine Use" (2021). *Research Days Posters 2021*. 28.

[https://orb.binghamton.edu/research\\_days\\_posters\\_2021/28](https://orb.binghamton.edu/research_days_posters_2021/28)

This Book is brought to you for free and open access by the Division of Research at The Open Repository @ Binghamton (The ORB). It has been accepted for inclusion in Research Days Posters 2021 by an authorized administrator of The Open Repository @ Binghamton (The ORB). For more information, please contact [ORB@binghamton.edu](mailto:ORB@binghamton.edu).

# The Connection Between Illicit ADHD Medication Use and Caffeine Consumption

Humza Khan, Rebecca Koltun, Sara McCann, Devon Umeozor, Lina Begdache

## Introduction

Non-prescription use of ADHD medications, such as Adderall, Ritalin, and Vyvanse, has been a very prevalent issue seen in college students for decades. Studies have reported a wide range of usage, varying from 17% to even 43% of college students reporting illicit use (Benson et al., 2015; DeSantis et al., 2008). The concern with this abuse is the impact on the brain. ADHD medication blocks the reuptake of dopamine in the synaptic cleft, essentially flooding the brain with the neurotransmitter (or in the case of ADHD patients, restoring dopamine levels back to normal) (Papisova, 2016). Similarly, caffeine increases dopamine signaling in the brain by acting as an antagonist to adenosine A2A receptors (Volkow et al., 2015). Both substances are brain stimulants, which suggests that a dependence on one substance may stimulate use of others and may impact mental health. Therefore, the purpose of the study was to investigate the associations between non-prescription ADHD medication use, caffeine use, and a host of known hallmarks of mental stress.

## Hypothesis

We hypothesized that the hallmarks of mental stress typically found in non-prescription ADHD medication users (including nervousness, restlessness, depression, and worthlessness) would also be present in frequent caffeine users, and that there would be a positive correlation between caffeine use and non-prescription ADHD medication use.

## Methods

An anonymous Google survey was distributed through text message, email, class presentations, and social media platforms such as Instagram and Snapchat. The survey recorded responses over a four-month period, from November 2021-March 2021. Responses were collected from 598 undergraduate college students across the Northeastern United States. The survey consisted of 55 questions, with five sub-sections focusing specifically on demographic information, diet and activity, mental health and affect, Adderall use, and educating regarding ADHD drugs. Demographic information regarding gender, age, major, GPA, university attending, and region was collected. Additional questions in the survey inquired about diet, illicit Adderall use, frequency of Adderall use, and perception of Adderall use. Data collected was analyzed using Pearson's Correlation Coefficient in SPSS, version 25.0.

## Results

Table 1: Correlation Between Caffeine Use and Other Substance Use

ADHD medication use	0.132**
Stimulant Use	0.401**
Depressant Use	0.120**

Table 2: Correlation Between Caffeine and Various Hallmarks of Mental Stress

Restlessness	0.096**
Depression	0.072*
Worthlessness	0.081**

Table 3: Correlation Between ADHD Medication Use and Various Hallmarks of Mental Stress

Restlessness	0.156**
Depression	0.118**
Worthlessness	0.066*

Table 4: Correlation Between Negative Consequences Dissuading Future ADHD Medication Abuse and Specific Substance Use

Caffeine Use	-0.88*
ADHD Medication Use	-0.277**

Key  
N = 598  
\*(p < .05), \*\*(p < .01)

## Discussion and Conclusion

Our results suggest that there is a strong correlation between illicit ADHD medication use and caffeine consumption. Many students are familiar with the positive effects of caffeine can have when used to study. When excessively used, students can subsequently develop a tolerance towards the effects of caffeine. Thus, to get the same stimulant effect of caffeine, some students turn to illicitly taking ADHD medication. Although caffeine and ADHD medications such as Adderall operate in the brain through different mechanisms, they both help to temporarily improve one's focus and concentration, which leads students to believe using such substances may improve their academic performance. However, many students fail to ignore the serious side effects that may arise because of the use of such substances. Our results suggest that caffeine use was associated with various hallmarks of mental stress such as restlessness, depression, and worthlessness. Furthermore, these same side effects were found to be even more strongly associated with the use of ADHD medication. Given the substantial potency of ADHD medication in comparison to caffeine, this trend was expected. Despite these negative side effects, those who use ADHD medication and caffeine are both less likely to be dissuaded from future ADHD medication abuse because of negative consequences. Without exploring extenuating circumstances, it would be difficult to explain such an association. However, we have theorized such an association comes as a result of a lack of education that exists behind the possible ramifications prompted by use of these stimulants.

## Future Works

Future research should investigate the association between ADHD medication misuse and other abuse of other substances. Additionally, it would be beneficial to focus future studies on the relationship between the age at which regular caffeine consumption begins and likelihood of misusing Adderall.

## References

- Benson, K., Flory, K., Humphreys, K. L., & Lee, S. S. (2015). Misuse of Stimulant Medication Among College Students: A Comprehensive Review and Meta-analysis. *Clinical Child and Family Psychology Review*, 18(1), 50–76. doi: 10.1007/s10567-014-0177-z
- Desantis, A. D., Webb, E. M., & Noar, S. M. (2008). Illicit Use of Prescription ADHD Medications on a College Campus: A Multimethodological Approach. *Journal of American College Health*, 57(3), 315–324. doi: 10.3200/jach.57.3.315-324
- Papisova, Vera. "This Is How Adderall Really Affects Your Brain." Cliffordsegil.com, Dr Segil Neurology, 17 Feb. 2016, cliffordsegil.com/this-is-how-adderall-really-affects-your-brain/#:~:text=Adderall%20is%20an%20amphetamine%2C%20so,action%20o%20achieve%20our%20goals.
- Volkow, N D, et al. "Caffeine Increases Striatal Dopamine D2/D3 Receptor Availability in the Human Brain." *Www.ncbi.nlm.nih.gov, Translational Psychiatry*, 14 Apr. 2015, www.ncbi.nlm.nih.gov/pmc/articles/PMC4462609/#:~:text=Caffeine%2C%20the%20most%20widely%20consumed,receptors%20(A2AR).