The Effects of High Caffeine and Marijuana Use on Academic Performance

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Abstract

- This study explores commonly used substances that influence academic performance, exposing potential drawbacks
- A total of 238 young adults (18-29) and 11 mature adults (30+) completed an anonymous online survey administered through Google Forms and distributed via multiple social media platforms. The survey included basic questions about demographics, academic standing, and caffeine and marijuana consumption
- Main findings from this study:
  - A negative correlation between individuals who consumed caffeine frequently and GPA (p<0.05)
  - A negative correlation between individuals who consumed cannabis more frequently and GPA (p<0.05)
- Substance use impacts academic performance potentially through the modulation of neurochemistry
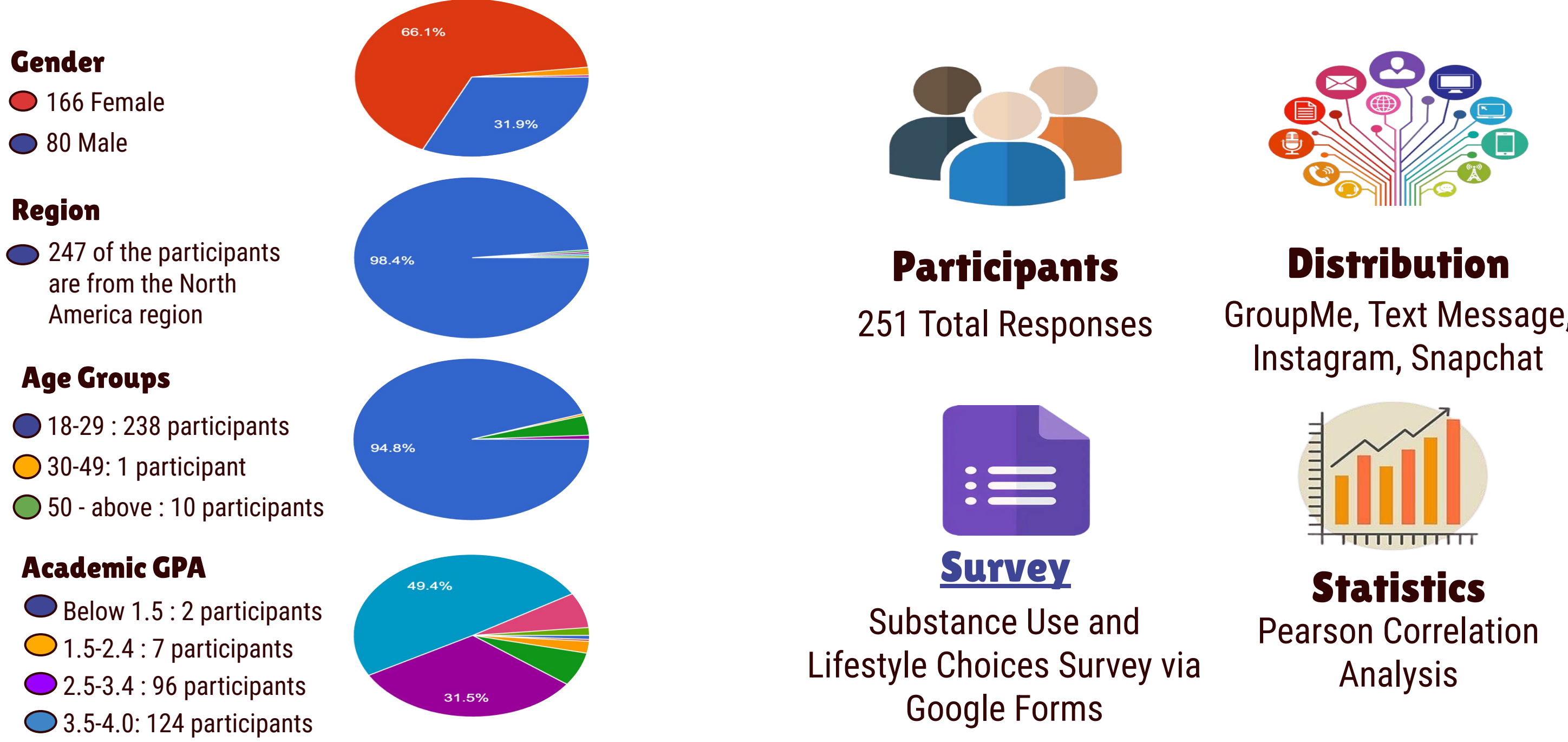
Introduction

- Heavy marijuana use negatively impacts memory, attention, and executive function, which are critical for learning and academic success
- Multiple longitudinal studies illustrate that marijuana users have significantly lower GPAs than non-users
- Students using marijuana, especially their first year, are more likely to skip classes and delay or drop out of college
- High caffeine intake is linked to lower GPAs
- Excessive caffeine consumption disrupts sleep cycles and exacerbates stress, particularly during exams, reducing academic performance
- Excessive consumption of caffeinated beverages correlates with higher anxiety and depression, further impairing focus and assignment completion
- Students with lower GPAs consume more caffeine, suggesting a cyclical relationship between poor performance and stimulant use

Hypothesis

High caffeine and marijuana consumption negatively affects academic performance

Methods and Demographics

Gender
- 166 Female
- 80 Male

Region
- 247 of the participants are from the North America region

Age Groups
- 18-29 : 238 participants
- 30-49 : 1 participant
- 50 - above : 10 participants

Academic GPA
- Below 1.5 : 2 participants
- 1.5-2.4 : 7 participants
- 2.5-3.4 : 96 participants
- 3.5-4.0: 124 participants

Participants
251 Total Responses

Survey
Substance Use and Lifestyle Choices Survey via Google Forms

Distribution
GroupMe, Text Message, Instagram, Snapchat

Statistics
Pearson Correlation Analysis

Results

p<0.05= *   p<0.01= **

Table 1. Cannabis Consumption, Age, and GPA

Relationship	Pearson Coefficient
Frequency of marijuana consumption and GPA	-.154*
Frequency of marijuana consumption and Age	-.201**

Table 2. Caffeine Consumption, Marijuana Usage, and GPA

Relationship	Pearson Coefficient
Frequency of caffeine consumption and GPA	-.130*
Using marijuana (even once) and caffeine consumption	.187**

Table 3. Frequency of Marijuana Use and Self-perception

Relationship	Pearson Coefficient
I see myself as critical/quarrelsome and marijuana use	.168**
I see myself as reserved/quiet and marijuana use	-.255**
I see myself as calm/emotionally stable and marijuana use	-.166**
I see myself as conventional/uncreative	-.145*
I see myself as disorganized/careless and marijuana use	.183**

Table 4. Frequency of Caffeine Intake and Self-perception

Relationship	Pearson Coefficient
I see myself as critical/quarrelsome and caffeine intake	.170**
I see myself as calm/emotionally stable and caffeine intake	-.193**
I see myself as disorganized/careless and caffeine intake	.175**

Table 5. Self-perception and GPA

Relationship	Pearson Coefficient
I see myself as dependable/self-disciplined and GPA	.206**
I see myself as reserved/quiet and GPA	.146*
I see myself as calm/emotionally stable and GPA	.160*
I see myself as disorganized/careless and GPA	-.181**

Discussion

- High frequency of marijuana use is negatively correlated to GPA, which was also evident in prior research (Suerken et al., 2016)
- High frequency of caffeine intake has been found to be negatively correlated to GPA (Trunzo et al., 2014)
- The usage of marijuana is positively correlated to the usage of other substances, such as high doses of caffeine, which remains consistent with past research (Meda et. al, 2017)
- Increased marijuana consumption is associated with younger consumers, including college students (Arria et. al, 2015)
- Increased marijuana use is associated with negative self-perception. Negative self-perception is correlated to low GPA. This draws a direct relationship between marijuana consumption and its adverse effect on academic performance (Simpson et al., 2016)
- Similarly, increased caffeine intake is associated with negative self-perception. Negative self-perception is correlated to low GPA. This emphasizes the inverse relationship between caffeine consumption and academic performance (Simpson et al., 2016)

Future Research

- The participants of this study were mostly college students, thus it would be interesting to see how this study would portray with a different age group, such as high school students
- We could examine how the use of substances during adolescence affects an individual's cognitive abilities through a longitudinal study
- We could create a study on how the use of substances affects an individual's motivation and study habits to learn more about how academic performance is affected
- A larger sample size will always help to gain more insight into research and to see if there are similar results

Conclusions

- The excessive consumption of substances such as caffeine and marijuana can have a negative impact on an individual's academic performance
- College students should reevaluate their motives for consuming caffeine and marijuana, thinking about the effects of either on academic achievement

Acknowledgements

References