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Analysis of the Connection Between ADHD Medication Misuse and Risk-Taking Behaviors

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ABSTRACT

ADHD medications (such as Adderall, Ritalin, Vyvanse) are frequently misused on college campuses to enhance academic performance. Research shows that ADHD medication misuse is associated with Prefrontal Cortex (PFC) dysfunction, and may lead to impaired decision making abilities and riskier behaviors such as the use of illicit substances. An anonymous survey was administered to 863 college students. Data was analyzed using Pearson's Bivariate Correlation in SPSS Version 25.0. Results displayed significant positive correlations between alcohol, recreational opioid, cocaine and/or marijuana use and ADHD medication use. There were also positive correlations found between cocaine and recreational opioid use and not being dissuaded by any information against taking ADHD medications. These behaviors may be evidence of PFC dysfunction in college students illicitly using ADHD medications.

INTRODUCTION

- Up to 43% of college students have used ADHD medications illicitly (DeSantis, Webb, and Norr, 2008).
 - Medications include Adderall, Ritalin, Vyvanse, and other stimulants that use dopamine pathways to treat symptoms of Attention Deficit Hyperactivity Disorder.
- Neuroimaging research has shown dysfunctional Prefrontal Cortex (PFC) in drug dependent individuals. (Goldstein & Volkow, 2011).
- A dysfunctional PFC is linked to impaired response inhibition and riskier decision making, such as the comorbid use of other illicit substances (Goldstein & Volkow, 2011), like cocaine, marijuana, alcohol and illicit painkiller use.
- Dysfunction of the PFC has been proposed as a possible neurophysiological mechanism for compulsive use and impaired self-awareness (or denial of the illness or addiction). (Goldstein & Volkow, 2011)

METHODS

- An anonymous electronic **survey** containing multiple-choice and open-ended questions regarding adderall use, perceptions of adderall, comorbid substance use, and demographic information of participants was developed and utilized.
- The survey was distributed via media, email, and in-person at tabling and other events to **college students** attending universities across the United States, with a concentration in Northeastern campuses.
- Data collected was analyzed using SPSS version 25.0 to examine trends and correlations, measured by Pearson's Correlation Coefficient

RESULTS

TABLE 1: Analyzing Comorbid Frequency of ADHD medication and Recreational Substance Use

Frequency of ADHD Medication Usage	Comorbid Substance	Significance
Once a day	Cocaine	.096**
Once a month		.289**
Once a year		.072*
Once a week	Marijuana	.076*
Once a month		.215**
Once a semester		.220**
Once a week	Alcohol	.091**
Once a month		.184**
Once a semester		.167**
Once a year		.106**

TABLE 2: Analyzing Comorbidity of ADHD Medication and Prescription Painkillers

Use of ADHD medications for recreational purposes	Use of prescription painkillers (Oxycodone, Percocet, Vicodin, etc.) for recreational purposes	Significance
		.224**

TABLE 3: Analyzing Relationship between Drug Use and Dissuading from Illicit ADHD Medication Use

No information could dissuade from use	Comorbidity	Significance
	Cocaine use	.133**
	Recreational use of prescription painkillers	.107**

Key

* p<0.05	** p<0.01
N=879	

CONCLUSIONS

Table 1 shows the positive statistically significant correlations between substances that are comorbidly used with ADHD medications (such as Adderall, Vyvanse, Concerta or Ritalin) and the frequency of ADHD medication use, broken down into once a day, month, semester, and year. Substances associated with ADHD medication use as shown in Table 1 include cocaine, marijuana, and alcohol. Table 2 includes the correlation between comorbid use of prescription painkillers (such as Oxycodone, Percocet, and Vicodin) with recreational ADHD stimulant use. This correlation demonstrates that individuals who use ADHD stimulants with any frequency are much more likely to also be using additional substances such as alcohol, marijuana, cocaine, or prescription narcotics (Tamm et. al., 2013). Risk-taking behavior is often characterized by impulsive aggression and decision-making, manifesting in rash decision making that can take the form of multiple drug use (Sea, Patrick, Kenneally, 2008). This supports the existing literature associating comorbid drug use involving ADHD stimulants with similar risk-taking behaviors.

CONCLUSIONS

Table 3 shows the positive and statistically significant correlations between cocaine and opioid use and not being dissuaded from illicit ADHD medication use. This correlation reflects that those who use other risky drugs may be less likely to change their behaviors, resulting in a continuation of illicit ADHD medication use. This is consistent with literature that discusses how engaging in risk taking behaviors can result in the inability to change one's habits. Once a reward and habitual use pathway is established the inability to stray from this pathway becomes more difficult because the resulting factor of impulsivity becomes a driving force for partaking in such behaviors (Gardner, 2011) Along with impulsivity becomes the stronger urge to relapse and return to risky behaviors, especially as time proceeds. These effects connect to comorbid substance abuse as well, with existing literature discussing the connection between the vulnerability of impulsivity and drug addiction (Gardner, 2011).

FUTURE WORKS

This research can contribute to a more narrow study of the association between ADHD medication use and solely recreational opioid use. Further research can be done examining the extent of the comorbidity and the similarities or differences in effects on the PFC. Future works may also include a behavioral analysis to examine the correlation between ADHD medication use and different risk taking behaviors not previously considered, such as criminal activity, sexual activity, weapon use, or other generally harmful activities. This would not only expand the understanding of the relationship between risk and illicit ADHD drug use but it could also connect to other fields of study, such as the economics of risk, public health reform, or education.

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