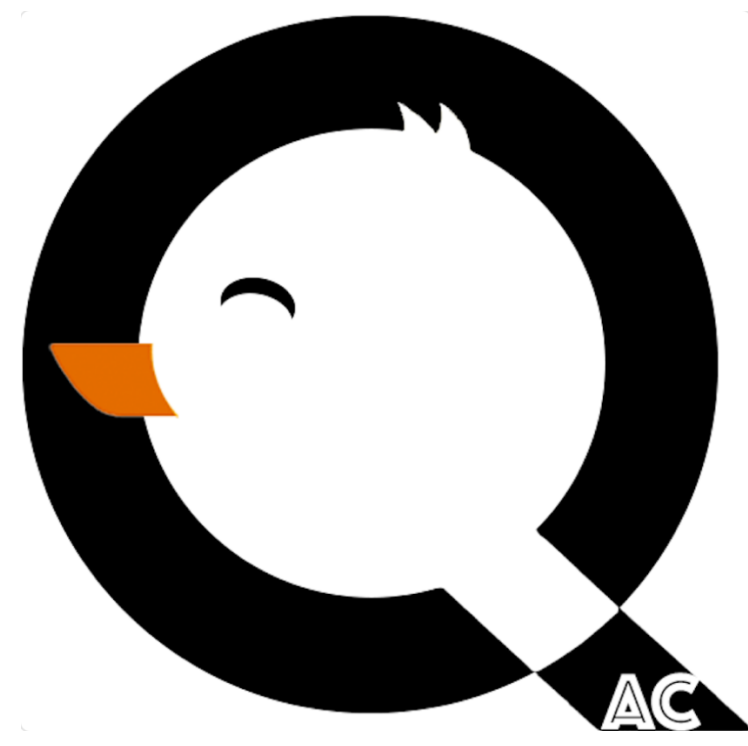


The Association Between Social Phobia, Various Substance Addictions, and Depression

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Introduction

- Social phobia is described as intense anxiety or fear of being judged, negatively evaluated or rejected in a social or performance situation (ADAA, 2023).
- One way people may try to cope with their social phobia is by engaging in substance use behaviors, which can eventually develop into an addiction (Rosentröm & Fartein Ask Torvik, 2023).
- The use and misuse of alcohol, cigarettes, and illicit drugs affect the health and well-being of millions of Americans (About Substances, 2024).
- Existing literature indicates that depression is a confounding variable that is strongly associated with both social phobia and substance use (Frojd et al., 2011).
- Historically, substance use has been a male-dominated activity. However, modern data reveals a narrowing gender gap, where drinking habits between genders have converged (White, 2020). Despite this, gaps continue to persist in literature when examining the association between social phobia, substance addictions and depression by gender.

Methods

Sample: Respondents (n = 43,093) were drawn from the first wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative sample of the non-institutionalized adult population of the U.S.

Measures

- **Alcohol_addiction** is an aggregate variable based on drinking frequency 1 (“Every day”) to 3 (“3 to 4 times a week”), excess drinking (5+ drinks daily weekly, etc.), tolerance level (one standard deviation above the mean).
- **Cigarette_addiction** is an aggregate variable based on lifetime smoking and smoking frequency - considered cigarette addicts if they had smoked 100+ cigarettes in their lifetime and smoking frequency is 1 (“Every day”).
- **Drug_addiction** is an aggregate variable based on the drug frequency for sedatives, tranquilizers, opioids, amphetamines, cannabis, cocaine, hallucinogens, inhalants, heroin, and other drugs - a value of 1 if any of the drug variables is between 1 (“Every day”) and 3 (“3 to 4 times a week”).
- **Have_socialphobia** is a univariate variable based on lifetime measure “Ever had strong fear or avoidance of social situation” (Yes = 1)
- **Have_depression** is a univariate variable based on whether the participant met DSM-IV criteria for a major depressive episode in the past 12 months. (Yes = 1)
- Demographics included “**Age**” (numeric), “**Sex**” (1: Male, 2: Female), “**Race**”, “**Highest Grade** or Year of School Completed” (1: None - 14: master’s degree or higher), and “**Total Household Income** in last 12 months” (1: Less than \$5,000, 21: \$200,000 or more).

Research Questions

- Is there an association between social phobia, substance addiction and depression?
- Does the relationship between social phobia, substance addiction and depression differ between males and females?

Results

Univariate

- Social phobia was present among 8.9% of participants. 8.1% of the NESARC sample met the criteria for depression. Cigarette addiction was the most common substance use, with 34.4% of participants. Alcohol addiction was recorded to affect 27.2% of the NESARC sample. Drug addiction was the least common substance use, with 1.7% prevalence.

Bivariate

- When examining the association between alcohol addiction and social phobia, a chi-square test of independence revealed that among frequent drinkers, there is *no relationship* between social phobia and alcohol addiction, $\chi^2 = 1.31$, 1 df, $p = 0.25$.
- The chi-square analyses showed significant associations between social phobia and both cigarette addiction. Among frequent smokers, those with social phobia are *more likely to have a cigarette addiction* (41.54% vs 34.90%; $\chi^2 = 67.28$, 1 df, $p = 2.35e-16$). Among frequent drug users, those with *social phobia are more likely to have a drug addiction* (3.37% vs 1.55%; $\chi^2 = 68.26$, 1 df, $p = 1.44e-16$).
- A chi-square test of independence demonstrated that depression was significantly associated with social phobia and was also significantly associated to both drug and cigarette addiction, but it is not a confounding variable.

Logistic Regression

- Social phobia (O.R. 1.32, CI 0.21-0.35) is significantly associated with cigarette addiction. Those with social phobia have an expected odds of cigarette addiction that is 1.32 times higher than those without social phobia.
- Social phobia (O.R. 1.32, CI 0.60-0.99) is significantly associated with drug addiction. Those with social phobia have an expected odds of drug addiction that is 1.32 times higher than those without social phobia.

Multivariate

Multiple Logistic Regression

- Social phobia (O.R. 1.59, CI 0.26-0.67) is significantly associated with drug addiction after controlling for age, race, education, household income, and depression. Those with social phobia have an expected odds of drug addiction that is 1.64 times higher than those without social phobia holding all other covariates (Figure 1).
- Depression (O.R. 3.23, CI 0.99-1.35) is strongly associated with higher odds of drug addiction after controlling for all other covariates. Individuals with depression have an expected odds of drug addiction that is 3.23 times higher than those without depression (Figure 1).
- Social phobia (O.R. 1.19, CI 0.10-0.24) is significantly associated with cigarette addiction after controlling for age, race, education, household income, and depression. Those with social phobia have an expected odds of cigarette addiction that is 1.27 times higher than those without social phobia holding all other covariates (Figure 2).
- Depression (O.R. 1.74, CI 0.48-0.63) is strongly associated with higher odds of cigarette addiction after controlling for all other covariates. Those with depression have an expected odds of cigarette addiction that is 1.74 times higher than those without depression (Figure 2).
- Females had lower odds of drug addiction (O.R. 0.46) and cigarette addiction (O.R. 0.57) compared to males. Additionally, sex moderates the association between social phobia and cigarette addiction. However, moderation was not observed for drug addiction.

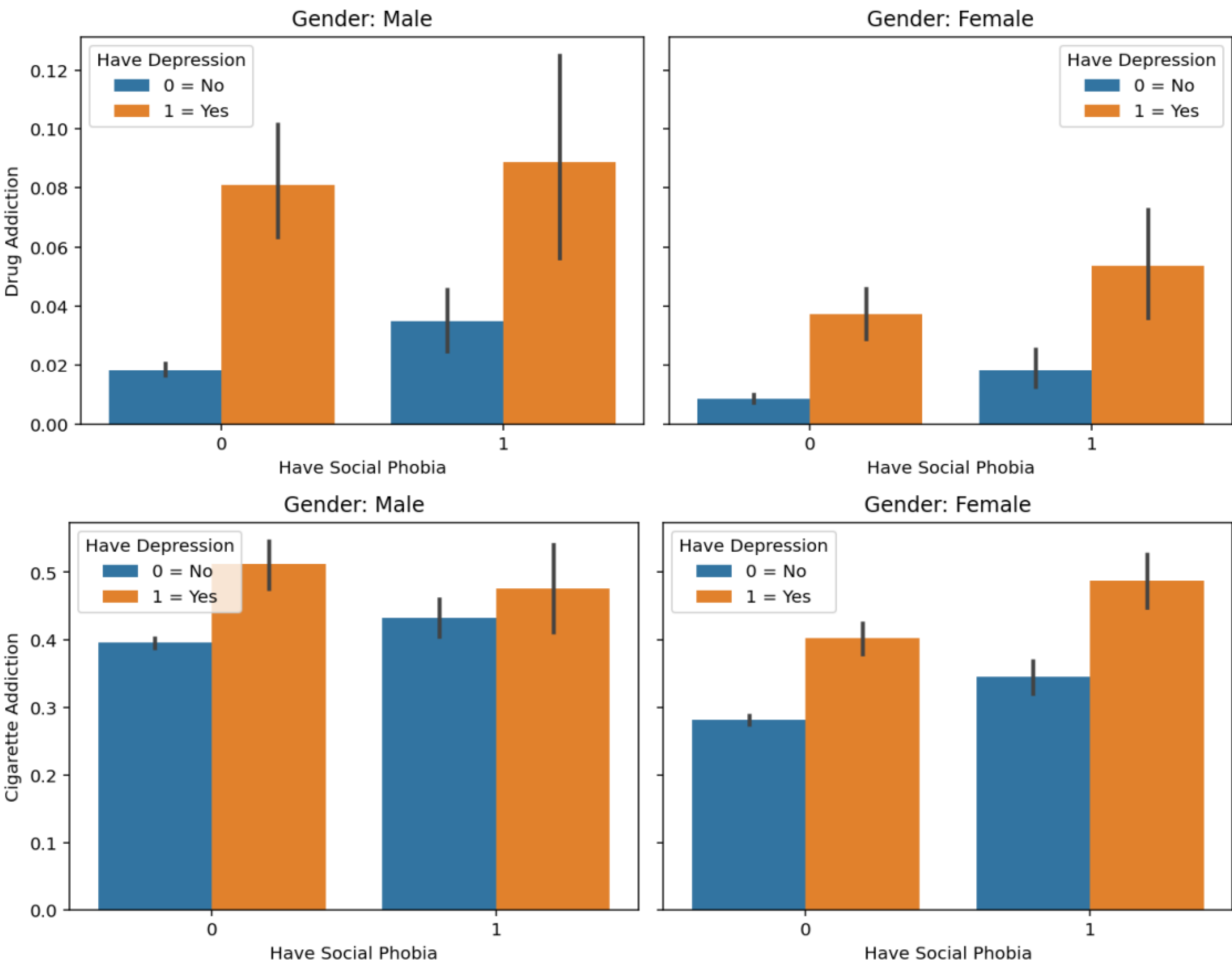


Figure 1: Association between Drug Addiction, Social Phobia and Depression by Gender

Figure 2: Association between Cig. Addiction, Social Phobia and Depression by Gender

Discussion

- Results reveal that social phobia and depression are significantly associated with both drug and cigarette addiction. Sex moderates the relationship between social phobia and cigarette addiction but not drug addiction. This may reflect differences in social practices of cigarette and drug use across gender. Multivariate analysis did show that females are less likely to develop an addiction for both drug and cigarette addiction. Additionally, findings indicate that depression is not a confounding variable in the association between social phobia and substance addiction.
- Existing literature indicates a significant relationship between social phobia and alcohol addiction. However, chi-squared analysis indicated there was no relationship between social phobia and alcohol addiction. This discrepancy may be due to differences in the samples used, as **alcohol_addiction** was based on drinking frequency and tolerance in this study, whereas previous research used multiple samples that reflected alcohol addiction and social phobia. A key limitation of this study was the inability to run a logistic regression plot, since all variables were binary categorical.
- Social phobia and depression is strongly associated with various substance addiction, with depression further increasing addiction prevalence. The hypothesis being evaluated in the present study is that the association between social phobia, various substance addictions and depression differs across gender. Results show that males have a higher prevalence of substance addiction than females. If individuals with social phobia and depression are more vulnerable to the development of addiction regardless of gender, they would represent an important population subgroup for targeted substance use and addiction intervention programs.