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Original article

# Examining the Relationship between Substance Use and Test Anxiety among Students in a Public University in Nigeria

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**Abstract**

Substance use and test anxiety are two phenomena critical to the academic achievement and well-being of university students, however, few studies exist examining the relationship between both. Extant literature suggests that students use substances to cope with test anxiety but reciprocal causality also suggests substance use may also result in test anxiety. Consequently, this study examined the effect of substance use on test anxiety among university students. Two hundred and eighty-six undergraduate students participated in the study. The inclusion criterion was having an upcoming test in at least two weeks. The Drug Abuse Screening Test (DAST-10) and Westside Test Anxiety Scale were used to obtain data on students' substance use and test anxiety. Results showed a positive association between substance use and test anxiety. Also, no gender difference was found in substance use and test anxiety. Recommendations offered include interventions aimed at reducing test anxiety, skills training to enhance coping and academic self-efficacy and the inclusion of the latter in future studies examining the relationship between the study's variables.

**Keywords:** Substance use, Test anxiety, Young adults, Gender, Undergraduate students.

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## INTRODUCTION

Undergraduate students are a widely researched population in Nigeria and globally. The volume of research being published using this specific population is enormous with a diverse focus such as their attitude, behaviour, well-being, and performance primarily for two reasons. Firstly, undergraduates are usually young adults brimming with energy and curiosity, prone to impulsivity, and the autonomy associated with campus life may predispose them to risky behaviours (Arora et al., 2015). Secondly, early adulthood is a critical developmental phase holding potential positive or negative implications for later life due to the opportunities and challenges contained therein (Wood et al., 2018). The developmental phase of undergraduates and the significance of the higher educational experiences and outcomes thus make a holistic understanding of their behaviour in this context a worthy venture. Two behaviours that are critical to the academic achievement and well-being of students are test anxiety and substance use.

Test anxiety is a phenomenon that may result in students' test scores not reflecting their preparedness or intelligence. It can be debilitating to students' academic functioning and outcomes much as generalised anxiety can impair an individual's occupational functioning. Theobald et al. (2022) saw test anxiety as a cogno-affective and physiological response typified by worries about likely negative outcomes or non-performance in situations where performance is being assessed. It is a psychological and physiological condition present before, during, or after a test characterised by distressing thoughts and feelings such as negative self-evaluation and beliefs about test outcomes that may cause procrastination and affect learning and test performance (Priebe & Kurtz-Costes, 2022; Ugwuanyi et al., 2020). Ugwuanyi et al. (2020 further placed the prevalence of test anxiety among students in Nigeria at over 50%. However, Porras and Ortega (2021) observed that low and moderate levels of anxiety can be stimulating and adaptive but severe level of test anxiety does impair test performance. Their study also showed a relationship between procrastination, test anxiety, and academic performance.

The literature consistently demonstrates the link between test anxiety and university students' academic achievement (Ahmad et al., 2018; Kärchner et al., 2021; Safeer & Shah, 2019; Theobald et al., 2022). More so, Priebe and Kurtz-Costes (2022) noted that while performance-related worries have been linked to lower performance on tests, physiological arousals associated with test anxiety such as increased heart rate and sweaty palms may negatively impact students' well-being. There are distinct but related notions on what constitutes test anxiety in the literature and existing measures of test anxiety differ in their conceptualisation of its facets. However, these conceptualisations usually centre on three dimensions: cognitive, emotional/physiological, and behavioural (see Schillinger et al., 2021 and Ugwuanyi et al., 2020 for a review).

The prevalence of substance use in today's society has become a public health concern due to its associated physical and psychological costs. Trafficking and use of illicit psychoactive especially among

young people has been on the rise in Nigeria leading to an increased burden of substance-related ailments (Jatau et al., 2021). Physical and mental healthcare institutions bear this burden as both physical and psychiatric illnesses are linked to the use of psychoactive substances. Blows and Isaacs (2022) noted that some students become first-time users of substances in tertiary institutions and those already using before admission often increase their frequency of use or the type of substances used. This can be traced to the availability and accessibility of drugs in the university environment. In Nigeria, the popularisation of internet fraud among young people may have inadvertently led to the rise of substance use as affordability is no longer a constraint. Data released by the United Nations Office on Drugs and Crime [UNODC] (2021) shows that in 2018, about 14.3 million people used psychoactive substances and about 3 million met the criteria for a substance use disorder. In 2021, the National Drug Law Enforcement Agency (NDLEA) in Nigeria reported that recent data suggests that 40% of young Nigerians between 18-35 years abuse drugs declaring the situation an "epidemic" (Premium Times, 2021).

Aside from the well-known or conventional psychoactive substances used by young people such as alcohol, tobacco, cannabis, etc., (Adesida et al., 2022; Aghoja et al., 2022), Dumbili et al. (2021) observed that newer psychoactive substances are fast becoming a trend. In their study, they observed that among undergraduates and other young people in Nigeria, unconventional substance use included smoking dried pawpaw leaf, lizard waste, mandrakes, ingesting 'Gutter-Water' (a cocktail of tramadol, cannabis, codeine, and vodka), 'Monkey-Tail' (a cocktail of locally-produced gin, cannabis seeds, leaves, stems, and roots), etc. (see Dumbili et al., 2021 for a review). Aghoaja et al. (2022) noted that the students cited improvement in their academic performance as a reason for use possibly because of the stimulating and calming effect of the substances which they believed necessary for staying alert and dealing with stress. However, sensation seeking, peer influences, poor coping self-efficacy and maladaptive coping style have all been associated with substance use which has also been associated with poor academic performance, study difficulties, psychiatric illness, and a tendency to engage in criminal activities (Patrick & Okwukwe, 2019; Uchendu & Ukonu, 2016).

While the link between generalised anxiety and substance use has been explored in extant studies among diverse populations, the link between test anxiety and substance use remains relatively underexplored. Anxiety and substance use commonly cooccur with studies suggesting that anxiety precedes substance use and others suggesting that substance use precedes anxiety (e.g., Bonner et al., 2021; Bushnell et al., 2019; Mohamed et al., 2020). In the former, substance use is seen as a coping mechanism for the anxiety experience which may be distressing to the individual while in the latter, anxiety is seen as an aftermath of substance use, i.e., psychoactive substances can alter brain processes causing changes in mood and affect. Also, anxiety may arise from worrying about the impact of substance use on one's functioning in various life domains as well as anxiety about the availability and accessibility of preferred substances. A study examining the relationship between test anxiety and

substance towed the former thought suggesting students use psychoactive substances to cope with test anxiety (e.g. Ne'Eman-Haviv & Bonny-Noach, 2019). This is also supported by Saxena et al. (2019) findings suggesting that students use psychoactive substances to cope with academic stress and associated psychopathological symptoms such as depression and anxiety. Also, studies have shown individuals use substance use to cope with social anxiety (Pant, 2023).

However, while not discounting extant literature, this study argues along the lines of the latter position proposing that substance use may also predict test anxiety among university students. Substance use may impact cognitive and intellectual functioning such as attention and memory, and lead to forming relationships with other users who are antisocial thus impacting academic engagement and learning, and predisposing the individual to social and behavioural problems such as truancy (Adeniyi, 2022; Gunjan et al, 2023). Thus, individuals who use psychoactive substances are likely less prepared for the assessment of learning outcomes than their peers who do not. Nwosu et al. (2022) observed that students who are more confident in their test-taking abilities due to their preparedness experience less test anxiety. Misuse of stimulants by college students has also been associated with increased deficits in executive functions (Edinoff et al., 2022) suggesting they may have trouble with cognitive flexibility and self-monitoring, planning and following it through to goal attainment, exhibiting inhibition and updating of working memory, and managing emotions, all of which are vital for academic success (Austin et al., 2020).

Findings by Bugbee et al (2019) suggest that individuals who use psychoactive substances are more likely to skip classes and display lower academic self-efficacy and engagement than their peers who do not. Also, Yusefzadeh et al. (2019) in their quasi-experimental study found that students who were more prepared for a test had lower levels of test anxiety than others who were not and suggested that participating and actively attending classes could buffer against test anxiety and aid performance. Prior knowledge is also associated with academic engagement and positive learning outcomes (Dong et al.,2020), however, the use of psychoactive substances which have been associated with deficits in executive functioning may result in the individual being unable to retrieve prior knowledge leading to reduced feelings of academic self-efficacy and increased test anxiety. Consequently, the study seeks to examine the relationship between substance use and test anxiety, and to this end, the following questions are asked in this research study:

1. What is the level of substance use among university students in Delta State?
2. What is the level of test anxiety among university students in Delta State?
3. To what extent does substance use impact test anxiety among university students?

## MATERIAL AND METHODS

### Participants

Two hundred and eighty-six (286) undergraduate students were conveniently sampled from Delta State University, Abraka. The convenience sampling technique was used in selecting participants for the study due to its efficiency and ease of implementation (Jager et al., 2017). All of the participants met the inclusion criterion (students must have an upcoming examination within two weeks). 122 (42.7%) of the participants were male, while 162 (56.6%) were female. The minimum age of the participants was 16 years and the maximum was 27 years. The mean age of the participants was 22.1 years with a standard deviation of 4.89. 22.97% were in their first year, 36.49% were in their 200 level of study, 19.59 were in their 300 level of study, and 20.95% were in their final year.

### Instruments

The Westside Test Anxiety Scale (WTAS), a brief, ten-item instrument designed by Driscoll (2007) was used in assessing students' level of test anxiety. The WTAS was designed to identify students with anxiety impairments who could benefit from an anxiety reduction intervention The scale is constructed to measure anxiety impairments, with most items asking directly about performance impairment or about worrying, which interferes with concentration. The Westside scale combines six items assessing impairment and four items on worry and dread, Students were required to respond to the 10 WTAS items on a 5-point Likert scale extending from 1 (never or not at all true) to 5 (extremely or always true). According to WTAS recommendations, participants who recorded scores less than 1.9 depicted low test anxiety, scores of 2.0 to 2.5 indicated normal test anxiety, 2.6 to 2.9 showed high normal test anxiety, 3.0 to 3.4 was portrayed as moderately high, 3.5 to 3.9 as high test anxiety, and 4.0 to 5.0 as extremely high anxiety. A Cronbach alpha of .909 was found for the WTAS in this study.

Substance use was measured using the Drug Abuse Screening Test (DAST-10). DAST-10 is a 10-item brief screening tool that can be administered by a clinician or self-administered. The DAST-10 is a revised version of Skinner's (1982) 28-item Drug Abuse Screening Test, a self-report scale that yields a quantitative index of the range of problems associated with drug abuse. Responses are recorded on a dichotomous scale a yes (1) or no (0). The scale assesses the use of psychoactive substances excluding alcohol or tobacco in the past 12 months. Higher scores indicate a more hazardous drug-related problem where there are five categories: (1) Score (0): No problems; (2) Score (1–2): Low level; (3) Score (3–5): Intermediate level; (4) Score (6-8): Substantial level; and (5) Score (9–10): Severe level. A Cronbach alpha of .786 was found for the WTAS in this study.

### Procedure

Students from Delta State University, Abraka were conveniently sampled for this study. The paper-and-pen questionnaire was administered to students through face-to-face contact. The

questionnaire contained a letter reeling out the rationale for the research, rights of confidentiality, anonymity, and withdrawal, as well as a request for voluntary participation in the study. The questionnaires were administered to participants after obtaining their informed consent in their leisure time through the assistance of other students who have been trained by the researchers on the administration of the instrument. Three hundred (300) copies of the questionnaire were distributed within two weeks. Two hundred and eighty-eight questionnaires were retrieved. However, after sorting out the questionnaire, 286 were correctly filled out and were used for the analysis of data. Independent Sample T-test, Mann Whitney *U* test, and One-way Analysis of Variance were used in analysing the data. The empirical data were managed and analysed with the IBM SPSS Statistics v26 and Jamovi v2.3.38 (The jamovi project, 2022).

## RESULTS

Table 1 below presents and describes the level of substance use and test anxiety among participants.

**Table 1.** Participants level of substance use and test anxiety

| | Male | | Female | | Full Sample | |
|---|---|---|---|---|---|---|
| | *n* | *%* | *n* | *%* | *n* | *%* |
| Substance Use | | | | | | |
| No problems reported | 36 | 12.7 | 46 | 16.2 | 82 | 28.7 |
| Low level | 43 | 15.1 | 79 | 27.8 | 123 | 43 |
| Moderate level | 23 | 8.1 | 28 | 9.9 | 52 | 18.2 |
| Substantial level | 15 | 5.3 | 28 | 9.9 | 22 | 7.7 |
| Severe Level | 5 | 1.8 | 2 | 0.7 | 7 | 2.4 |
| Test Anxiety | | | | | | |
| Low | 37 | 13.1 | 43 | 15.2 | 80 | 28.1 |
| Normal | 37 | 13.1 | 41 | 14.5 | 79 | 27.7 |
| High | 26 | 9.2 | 52 | 18.4 | 79 | 27.7 |
| Extremely high | 21 | 7.4 | 26 | 9.2 | 47 | 16.5 |

As seen in Table 1 above, approximately 10% of the participants have had substance-use-related problems in the past 12 months and it was more prevalent among females than males. A larger part of the sample had none or low level of substance-use-related problems while less than a quarter have had moderate problems due to their substance use. More than half of the participants had low to normal levels of test anxiety and the rest had high to extreme levels. Again, the high and extremely high levels were more prevalent among females than males. To test the significance of gender differences in test anxiety and substance use, an independent sample t-test and Mann-Whitney U test were used respectively. Independent sample t-test revealed no significant gender difference, $t(281) = -1.51$, $p = .133$, despite women ($M = 2.83$, $SD = 1.05$) attaining higher scores than men ($M = 2.64$, $SD = 1.09$).

The result from the Mann-Whitney U test indicated no gender difference in substance use, $U$= 8717.50, $p$ = .081.

Table 2 below presents the result of one-way ANOVA examining differences in test anxiety among different levels of substance use.

**Table 2.** One-way analysis of variance of substance use and test anxiety

| | $F$ (4, 280) | $p$ | $\eta^2$ |
|---|---|---|---|
| Test anxiety | 12.7 | <.001 | 0.15 |

As seen in Table 2, the one-way ANOVA test conducted to examine differences in test anxiety among different levels of substance use revealed a significant effect. The assumption of homogeneity of variance was satisfied via Levene's test. The effect size, eta squared ($\eta^2$) indicated a large effect. Tukey's HSD post hoc test showed the participants who reported no problems with substance use had lower test anxiety than participants who had moderate ($p$ < .001, Cohen's $d$ = -0.80, 95%CI = [-1.16, -0.44]), substantial ($p$ = .007, Cohen's $d$ = -0.82, 95%CI = [-1.29, -0.34]), and severe ($p$ < .001, Cohen's $d$ = -2.26, 95%CI = [-3.06, -1.46]) substance use-related problems. Participants who reported low substance use-related problems had lower test anxiety than those who reported moderate ($p$ = .023, Cohen's $d$ = -0.50, 95%CI = [-0.83, -0.17]) and severe ($p$ < .001, Cohen's $d$ = -1.96, 95%CI = [-2.75, -1.18]) substance use-related problems. Also, participants who reported moderate levels of substance use-related problems had lower test anxiety than participants who had severe levels ($p$ = .003, Cohen's $d$ = -1.46, 95%CI = [-2.26, -0.66]). Lastly, participants who had substantial substance use-related problems had lower anxiety than those with severe levels ($p$ = .009, Cohen's $d$ = -1.44, 95%CI = [-2.31, -0.58]). These findings suggest that the higher the level of substance use-related problems, the higher the test anxiety. The effect size confirms the practical significance of the observed differences.

## DISCUSSION AND CONCLUSION

Results of the study revealed that approximately one-tenth of the participants have had substance use-related problems in the past year, the majority being females, and approximately 44% of the participants had test anxiety levels ranging from high to extremely high, again, the majority being females. However, no significant gender difference was found in substance use and test anxiety. This finding is inconsistent with some studies that have found gender differences in substance use (e.g., Aguocha et al., 2021; Uwadiae & Osasona, 2019). Obadeji et al. (2020) also reported that males are at a significantly higher risk of both lifetime and current use of substance use than their female counterparts. Adesida et al. (2022) on the other hand found substance use to be higher in women than men. McHugh et al. (2018) observed that while the prevalence of substance use in men seems to be much higher in men than women in extant studies, contemporary studies have seen a reduction in the

size of the disparity. They attributed this to the access and acceptability of substance use in modern times and noted that when access is controlled for, the gender difference in substance use will be nonsignificant. Thus, the non-significant gender difference in substance use observed in this study may be due to the equality of access to substances both genders enjoy. In Adesida et al. (2020) study among students in a Nigerian university, 39.4% of the participants reported that access to substances was easy in their environment which was a healthy percentage considering only 28.4% reported using substances. They reported having easy access to substances from bars/clubs, joints, and even petty traders around the campus area.

The non-significant gender difference in test anxiety is inconsistent with some studies (e.g., Akanbi, 2013; Balogun & Olanrewaju, 2016) though some studies have found no gender difference (e.g., Chukwuorji & Nwonyi, 2015; Onyeizugbo, 2010). This is not peculiar to the Nigerian context as Núñez-Peña et al. (2016) observed that results regarding gender differences in the literature have been mixed. In the absence of significant gender differences, test anxiety has been linked to personal characteristics such as self-esteem and self-efficacy (Chukwuorji & Nwonyi, 2015; Onyeizugbo, 2010). This is consonant with the school of thought that posits that female's belief in their academic competence and the stereotypes surrounding their academic ability puts them under more pressure than boys to succeed academically thus leading to test anxiety (Núñez-Peña et al., 2016; Rodríguez et al., 2020;). Thus, academic self-efficacy among females may serve as a protective factor against test anxiety.

Participants with a higher incidence of substance use experience more anxiety, i.e., the higher the substance use problem, the higher the test anxiety. This finding resonates with the author's propositions based on the reviewed literature. Substance use may affect the preparedness and academic self-efficacy of the students due to its effect on their academic engagement, class attendance, and executive functions. According to Mohamed et al. (2020), anxiety is often present in individuals with substance use disorder, especially during the withdrawal phase. Anxiety responses may thus be heightened in individuals who due to an upcoming test temporarily withdraw from drug use to have a lucid consciousness to prepare for the test adequately. Also, the confidence and self-esteem associated with substance may dissipate during withdrawal leading to heightened anxiety arousal and impairment.

The study's finding has relevant implications for counselling services in tertiary institutions. First, substance use and test anxiety are associated with academic performance and this study raises the possibility of test anxiety playing a mediating or moderating role in the relationship between substance use and academic performance. It is recommended that interventions designed to manage test anxiety among students should also screen for substance use. Also, self-efficacy particularly coping self-efficacy and academic self-efficacy is implicated both in the onset of substance use and the resulting test anxiety. Thus, skills and training aimed at enhancing the coping and academic self-efficacy of students should be included in counselling services. Psychoeducation aimed at enlightening students on

the harmful and long-term effects of substance use on educational outcomes is also necessary as some students' motive for substance use is improving their learning outcomes. Students should be aware of how their use may impact them at a later time and seek adaptive ways to reach their goals.

In conclusion, this study showed no significant gender difference in test anxiety and substance use among university students, and that substance use positively predicts test anxiety among the same. Aside from the use of a cross-sectional design that precludes causal inferences from being made, the use of self-report measures is also a limitation in this study. Thus, reciprocal causality, malingering, and social desirability bias could not be ruled out in this study. Future studies should adopt a longitudinal design and ratings from significant others in participants' lives. Also, while the role of coping self-efficacy, academic self-efficacy, and test preparedness were implied in the relationship between substance use and test anxiety, these were not measured. Future studies can include these constructs into their hypothesised model to better understand the relationship between substance use and test anxiety.

***Conflict of Interest:*** There is no conflict of interest between the authors of the article.

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