



Perceived Stress Effect and Socio-demographic Factors in Substance Use: A Study of Undergraduate Students in a South African University

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ABSTRACT The study examined the effects of stress, year of study, gender and race on substance use among university undergraduates in the North-West province of South Africa. Respondents were 318 (mean age = 1.48; SD = 0.50, female = 63.5%) undergraduate students in the North-West university of South Africa. Respondents completed the stress component of the Drug, Anxiety and Stress Test as well as the Drug Abuse Screening Test. Data were subjected to two-way ANOVA analyses. Results showed a between subject significant main effect of stress, $F(2,309) = 7.11, p < .05, \eta_p^2 = .044$ and a between subject significant main effect of year of study, $F(3,310) = 5.08, p < .05, \eta_p^2 = .047$ on substance use among university undergraduate students. Thus, the finding emphasized the importance of basic stress management training to undergraduate students, particularly in their first year to reduce the reliance on substance use as a way of mitigating academic stress.

INTRODUCTION

Studies have showed that university students have experienced numerous life challenges that constitute stress in their daily survival during college years (Kim et al. 2010; Mudhovozi 2011). Experiences such as workload, financial problems, interacting with new people (Essel and Owusu 2017) may pose negative impacts on their academic performance (Mudhovozi 2011; Lewin and Mawoyo 2014). Thus, they would attempt to suppress such experiences if they do not have the requisite capacity to cope with them. Available studies associate the ability to cope with stress and mental health concerns like depression (Tompkins et al. 2011). Therefore, a possible way by which college students attempt managing stress is reliance on substance use. Mohasoa (2010) opined that youths in South Africa opt for substance usage due to overwhelming challenges in their personal

and family lives as well as the society. The danger is the inability to control its usage leading to substance use disorder (drug addiction).

Factors that may be responsible for substance use include stress, gender, year of study and race. Previous studies by Mphele et al. (2013) and Mudavanhu and Schenck (2014) reported stress as responsible for substance use within the youth population in two separate communities in South Africa. Similarly, Atwoli et al. (2011) reported that majority (60.8%) of the sampled population among Kenyan youths indulge in substance abuse in order to relieve stress. In Nigeria, it was also found that stressed students often use different substance brands to cope with stress (Oshodi et al. 2010). Again, studies on gender differences in substance use as a means of stress management are well documented. For instance, higher substance use has been reported among male students as a coping strategy for stress-related elements in school activities than is their female counterparts (Debnam et al. 2016; Moodley et al. 2012). However, studies that examined the effects of year of study and race are scanty in literature. Thus, the study aimed at (a) investigating the influence of perceived stress on substance use and (b) examining the influence of socio-demographic factors such as gender, year of study and race on sub-

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stance use among undergraduate students in North-West University, South Africa.

MATERIAL AND METHODS

Participants

The study sample consisted of 318 (mean age = 1.48; SD = 0.50, female = 63.5%) undergraduate students conveniently selected from the North-West University (NWU), Mafikeng Campus, South Africa. Respondents were recruited from undergraduate classes in six faculties, viz. Agriculture, Education, Commerce and Administration, Health Sciences, Human and Social Sciences, Law as well as Science and Technology. The distribution of respondents' demographic characteristics is presented in Table 1.

Measures

Socio-demographic Variables

Variables included in this section were age, gender, race, and students' year of study.

Substance Abuse

Data on substance use were assessed through the Drug Abuse and Screening Test (DAST-10). It is a 10-item scale developed by Skinner and Harvey (2001) as a tool to measure substance use in the past 12 months. It has the Yes (1) and No (0) response format. The scale has an internal consistency reliability (alpha) of 0.95 for the total sample. The suitability of DAST-10 for South African samples had been reported by Peltzer et al. (2017). Furthermore, a Cronbach alpha internal reliability coefficient of 0.78 was established for this study.

Perceived Stress

This was measured with the stress section of the short version of the Depression, Anxiety and Stress Scale (DASS-21; Lovibond and Lovibond 1995). The stress subscale (DASS-S) consists of the 7 items scored on a four-point Likert format ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the

time). Masureik et al. (2014) found the scale appropriate for South African samples while a Cronbach reliability coefficient of .83 was established for this study.

Procedure

The North-West University Institutional Research Ethics Regulatory Committee approved the study. Data were collected in the school context at participants' respective faculties after they had been assured of anonymity of their responses. Participants were informed that participation was voluntary and were free to quit whenever they so wish. They were also encouraged to append their signature on the consent form attached to the research instrument. Only undergraduate students who voluntarily appended their signature on the informed consent participated in the study.

Data Analysis

Data were analysed with IBM Statistical Package for the Social Science (IBMSPSS-version 25). Both descriptive and inferential statistical analyses were conducted. The descriptive data were analysed using mean, standard deviation, and percentages while the inferential statistical techniques used in the study included a two-way ANOVA to examine the effects of stress, race, gender and year of study. The partial ETA squared was also conducted to ascertain the relative contributions of each factor in the observed variations.

Table 1: Respondents' socio-demographic characteristics (n=318)

Variable	N	Percentage	M	SD
<i>Gender</i>				
Female	202	63.5	-	-
Male	116	36.5		
<i>Age (years)</i>				
18-21	116	52.2	-	-
22-25	152	47.8		
<i>Race</i>				
Black	298	93.7		
Coloured	16	5	-	-
White	4	1.3		
<i>Year of Study</i>				
1 st	105	33	12.5	2.16
2 nd	97	30.5	12.45	2.18
3 rd	70	22	11.58	1.69
4 th	46	14.5	11.57	1.51

RESULTS

Table 2 shows the mean and standard deviation of substance use at different levels of stress. Results indicate that there is no significant difference between mild ($X=11.97$; $SD=1.88$) and moderate ($X=11.97$; $SD=1.87$) levels of stress. However, a sizeable number of respondent indicated that severe level of stress may attract greater use of substances ($X=13.30$; $SD=2.57$). This suggested that a moderate number of respondents might indulge in substance use in order to relieve of stress.

Table 2: Mean and standard deviations of stress on substance use

<i>Stress</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>N</i>
Mild	11.9706	1.88306	204
Moderate	11.9718	1.87443	71
Severe	13.3023	2.56844	43
Total	12.1509	2.03189	318

The results of the 3x3 ANOVA, as presented in Table 3, revealed a between subject signifi-

cant main effect of stress, $F(2,309) = 7.11$, $p < .05$, $\eta_p^2 = .044$ and a non-significant main effects of race, $F(2,309) = 2.82$, $p > .05$, $\eta_p^2 = .018$ on substance use. It further showed a significant interaction effects between stress and race $F(4,309) = 7.11$, $p < .05$, $\eta_p^2 = .035$. The partial ETA squared implies a thirty-five percent practical significance of the interaction effects as observed in the Table 3.

Results of the 2x4 ANOVA, as presented in Table 3, showed a between subject a significant main effect of year of study, $F(3,310) = 5.08$, $p < .05$, $\eta_p^2 = .047$ and a non-significant main effect of gender, $F(1,310) = 0.06$, $p > .05$, $\eta_p^2 = .000$ on substance use. It also revealed a non-significant interaction effects between year of study and gender, $F(3,310) = 0.27$, $p > .05$, $\eta_p^2 = .003$. The partial ETA squared implies a three percent practical significance of the interaction effects as observed in the Table 4. Furthermore, year one ($X=12.50$; $SD=2.16$) and two ($X=12.45$; $SD=2.18$) had similar mean and standard deviation while year three ($X=11.58$ $SD=1.69$) and four ($X=11.57$; $SD= 1.51$) were also closely related, indicating that students at lower classes are more likely to indulge in substance use than those in higher classes.

Table 3: A two-way factorial ANOVA of the effects of stress and race on substance use

<i>Source</i>	<i>Type III sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial ETA squared</i>
Corrected model	117.595 ^a	8	14.699	3.813	0.001	0.09
Intercept	4289.197	1	4289.197	1112.665	0.001	0.783
Stress	54.806	2	27.403	7.109	0.001	0.044
Race	21.753	2	10.876	2.821	0.061	0.018
Stress* race	42.571	4	10.643	2.761	0.028	0.035
Error	1191.16	309	3.855			
Total	48260	318				
Corrected total	1308.755	317				

a. R Squared = .090 (Adjusted R Squared = .066)

Table 4: A Two-Way factorial ANOVA testing the effects of year of study and gender on substance use

<i>Source</i>	<i>Type III sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial ETA squared</i>
Corrected model	64.343 ^a	7	9.192	2.290	.027	.049
Intercept	37630.927	1	37630.927	9374.380	.001	.968
Year of study	61.182	3	20.394	5.080	.002	.047
Gender	.259	1	.259	.064	.800	.000
Year of study* gender	3.304	3	1.101	.274	.844	.003
Error	1244.412	310	4.014			
Total	48260.000	318				
Corrected total	1308.755	317				

a. R Squared = .049 (Adjusted R Squared = .028)

DISCUSSION

The study investigated the effect of stress, race, gender and year of study on substance use among undergraduate students at North-West University, Mafikeng Campus. Results showed a significant effect of stress on substance use. This is not far from the arguments of previous scholars that stress significantly influenced substance use (Mohasoa 2010; Mudavanhu and Schenck 2014; Debnam et al. 2016). When combined with race, it was found that stress accounted for forty-four percent of the variations in observed effects. Interestingly, race did not show any significant influence on substance use among the sample population. Daily hassles and academic challenges such as meeting deadlines for submission of assignments may be plausible reasons for students' indulgence in substance use. Thus, increase in stress equals increase in substance use. Similarly, the university environment, which often encourage students to work with new people (Essel and Owusu 2017) may pose undue stress, hence, their resort to through substance use.

On socio-demographic variables, only year of study was found to have a significant effect on substance use. Substance use as a means of stress reduction was found to be higher among students in lower classes (year one and two) while it was not very common among undergraduates in higher classes (year three and four). Plausible explanation could be due to spending significant number of years in the university and undergraduates develop better skills in managing academic-related stress. On the contrary, gender did not have any effect on substance. However, this finding contradicts previous study (Debnam et al. 2016; Moodley et al. 2012) which reported that substance use was higher among male students as coping strategy for stress-related school activities than their female counterparts. The discrepancy in these findings may be due to the fact that previous studies focussed on secondary school students with less academic challenges than college students.

CONCLUSION

It can be concluded from the findings of the survey that the perceived stress influenced substance use by undergraduate students at lower

classes in the sampled university in South Africa. Further studies may be carried out on other relevant personal and situational variables to enhance generalisation to a broader context.

RECOMMENDATIONS

As much as the participants in the study were not clinical sample, it portends some clinical/psycho-social implications. Thus, given that stress influences substance use, the following recommendations were made. Students (especially freshmen) should be informed and encouraged to visit the counselling and psycho-social facilities on campus to enhance their responses to stressful situations. These include time management skills, ability to prioritize and interpersonal skills among others. However, these psycho-social facilities should be staffed with competent and friendly personnel. Furthermore, the class advisory system should be encouraged through level advisers to identify and provide timely assistance to stressed students before they resort to substance use.

LIMITATIONS

This study is not without certain limitations. First is the scope that centred primarily on in-school undergraduate students. Further studies may want to consider the inclusion of out-school undergraduates as well. Second is its inability to investigate the mediating roles of contextual variables like course workload, extra-curricular activities and so on. Therefore, studies that will investigate the mediating effects of variables like personality, self-esteem, peer influence and course workload on the existing relationships are encouraged.

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