

# PERCEPTION ON THE EFFECTS OF SUBSTANCE ABUSE IN A COMPREHENSIVE UNIVERSITY: A CASE OF GENDER

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## **Abstract**

**Purpose:** Substance abuse has been identified to interfere with the students' physical, cognitive and affective development. The main aim of this study was to determine the perception of gender on the effects of substance abuse on their physical, cognitive and affective development.

**Methodology:** The research philosophy adopted was positivism and the approach was deductive. A self-administered questionnaire containing items developed from literature review was administered to 199 built environment and civil engineering students at a South African university. The data was analysed using the Statistical Package for the Social Sciences (SPSS) version 21. Cronbach alpha was used to achieve the reliability for internal consistency of the measured constructs i.e. physical, cognitive and affective development. Item correlation identified the correlation of the measures of physical, cognitive and affective development. T-test was further conducted to test gender perception on the effects of substance abuse on the physical, cognitive and affective development.

**Findings:** The measures of physical, cognitive and affective development had a strong relationship and were reliable measures. Furthermore, the results suggest that there was no statistical significant difference on the perception of the effect of substance abuse on cognitive development as informed by male and female students. However, there was a significant difference on their perception on substance abuse on physical and affective development.

**Limitation(s):** The respondents were from one comprehensive university, therefore the findings cannot be generalized for all the tertiary institutions in South Africa.

**Value:** It is recommended that the scale of physical, cognitive and affective development can be used in future studies in other tertiary institutions. These scales are reliable and the measures have strong relationship. Furthermore, male students should be informed of the effects of substance abuse on their physical and affective development.

**Keywords:** Effects, Engineering, Gender, University, Substance Abuse

## INTRODUCTION

Parents expect a university to provide a nurturing environment for their children which would be conducive to studying. It is expected that a university should provide a safe, enriching and rewarding educational experience for a student. This will ensure that students would develop their social and intellectual skills without any hindrances. However, every university in South Africa faces challenges and students ought to be aware of these challenges. Students should not be deceived into thinking that they have entered an ideal educational environment which is free from the influences of drugs and alcohol abuse and similar vices <sup>[1]</sup>. One challenge indicated in South Africa is that university students are using bursary money to buy alcohol <sup>[2]</sup>. It is probably uncontroversial to indicate that most university campuses struggle with containing and controlling alcohol and drugs consumption by their students. It can therefore be suggested that substance abuse is a problem in higher institutions of learning <sup>[3]</sup>. This sentiment is supported by many other authors, <sup>[1] [4] [5] [6] [7]</sup>. Furthermore in the United States, alcohol use on college campuses has been documented in at least 50 years. The recent concerns have centered on heavy episodic drinking, a potentially dangerous practice often termed "binge drinking," and usually defined as consuming five drinks or more in a row for men and four drinks or more in a row for women <sup>[8]</sup>.

It is indicate that alcohol consumption has been described as a core component of student culture and is seen as a defining feature of tertiary education lifestyle <sup>[9]</sup>. Substance indulgence has prompted students to lose focus on their primary reason for embarking on higher education. They further indicated that a place of learning should never allow students to indulge in alcohol consumption. Universities need to take a firm stand to ensure their campuses are alcohol free zones. A stance against alcohol on campus requires regular policing. This will ensure the safety and success of our future generation. However, they indicated that alcohol is still freely available on campus in South Africa <sup>[1]</sup>. Contrary to this finding, a survey conducted in Purdue University showed

a sharp drop in drinking among students from 48% in 2006 to 37.3% in 2009. Much of this success is attributed to a new trend in alcohol free events on or around campus grounds <sup>[10]</sup>. In order to further stifle the consumption of alcohol among students. One centre developed a comprehensive approach to assist students with alcohol use. They addressed the issues not only through educational channels but also by bringing about change at the institutional, community, and public policy level. The premise of this approach is grounded in the principle that people's attitudes, decisions, and behaviour and those that relate to alcohol use are shaped by the physical, social, economic, and legal environments. This Centre argues that many aspects of this environment can be shaped by universities and government officials <sup>[11]</sup>.

Students normally enter university to further their studies and acquire knowledge so that they can improve their chances of entering the job market. These students would expect to have a positive experience that will contribute towards successfully completing their studies. They believe that higher education is a genuine place for one to enjoy academic bliss <sup>[1]</sup>. However, these outcomes are not fully achieved because students abuse of drugs and alcohol in the universities and prevent them from attending classes and make them perform poorly academically <sup>[6]</sup>. In a South Africa found that alcohol abuse led to female students being raped on campus <sup>[1]</sup>. This is a worrying factor that would lead parents and guardians to be fearful of sending their female children to further their studies at higher institutions of learning in South Africa.

Substance abuse could be exacerbated with the age at which students first enter such institutions <sup>[6]</sup> <sup>[1]</sup>. This is an age of freedom and experimentation, where young students have the opportunity to test the limits previously set by parents and schools <sup>[1]</sup>. Furthermore, it has been found that male students consumed/abused alcohol more than female students in South Africa <sup>[6]</sup>. However, in a study conducted in Canada female consumption of alcohol was increasing relative to their male counterparts. Furthermore, non-binge drinkers and binge drinkers did not show significant difference in relation to

cognitive and behavioural impairment <sup>[12]</sup>. This study should be enhanced by comparing the effects of substance abuse on the cognitive and behavioural impairment in male and female students.

It can be inferred that students who have experimented on substances such as tobacco, alcohol eventuates in compulsive patterns of use characterized by psychological and physical dependence <sup>[13]</sup>. However, there is paucity of study in South Africa to compare the perception of gender on the effects of substance on their physical, cognitive and affective development. Hence, this paper examines the perception of student gender on the effects of substance abuse, on their- physical, cognitive and affective development. This paper is guided by a number of research questions and hypotheses:

- What is the reliability of the measures of physical, cognitive and affective development?
- What relationship exists between the measures that measure the physical, cognitive and affective development?
- Do male and female students differ on the effects of substance abuse on their physical, cognitive and affective development?

The following null hypotheses were tested:

- (*Ho1*) The measures measuring affective, cognitive and physical development are not reliable;
- (*Ho2*) There is no relationship within the measures that measure substance abuse effect on physical, cognitive and affective development; and
- (*Ho3*) There is no significant difference on the perception of the effect of substance abuse on physical, cognitive and affective development between male and female students.

## **LITERATURE REVIEW**

### **THE EFFECTS OF SUBSTANCE ABUSE**

The effects of substance abuse on the development of students can occur in the following areas:

- Their physical development; and
- Psychological development i.e. cognitive and affective development.

#### **Effects of substance abuse on students' physical development**

Physical development of a person concerns the growth of the body. This entails changes in the proportions between different parts of the body and changes in the internal structure and functioning of the body <sup>[14]</sup> <sup>[15]</sup>. Substance abuse has, amongst other, the effects on the physical development of the student. Smoking drugs such as marijuana causes various respiratory problems and diseases such as daily coughing, acute chest illness and risk of lung infections <sup>[16]</sup> <sup>[17]</sup>. Furthermore, smoking can aggravate asthma and prevent enough oxygen and nutrients from nourishing the skin, giving rise to bad skin and a disease called psoriasis <sup>[18]</sup>.

Furthermore, continued smoking causes breakdown of lung tissue and clogging of the air sacs <sup>[19]</sup>. Based on the aforementioned discussion the researchers infer that student will be less active in sports performance. The student will suffer from increased heartbeat, poor blood circulation and shortness of breath making it difficult for him to engage in activities that students of his age group engage in.

Drug abuse may make the student giddy, stagger, lose balance and will affect his motor co-ordination <sup>[17]</sup>. Motor dysfunction (especially dysfunction regarding fine motor co-ordination as required for articulation, writing and eye movements) may cause students to

experience speaking, writing and reading difficulties <sup>[20]</sup>. Substance abuse robs the body of essential vitamins and minerals and interferes with the digestion of food <sup>[17]</sup>.

### **Effects of substance abuse on students' psychological development**

Psychological development refers to the development of mental characteristic or attitude of a person with specific emphasis on those factors affecting behaviour in a given context <sup>[21]</sup>. Health issues that interfere with good health are heavy drinking, drug use, and stress. The major causes of death among college students are auto accidents and suicides. In a high percentage of cases, alcohol use is involved with both causes of death <sup>[22]</sup>. Therefore, the psychological development of the student will be discussed by distinguishing between the cognitive and affective aspects.

#### ***Cognitive development***

The term cognitive development refers to the continuous and cumulative development of the intellect and has to do with thinking skills, creatively, perception, conceptualization, insight, knowledge, imagination and intuition <sup>[20]</sup>. It can be inferred that secondary school learners display different characteristics during their cognitive development. The authors believe that these characteristics will also be experienced by university students. The student will have a conscious focus on the world and acquires knowledge of the world in a cognitive and formal manner. They acquire further new skills in calculation of mathematics, physics and also incorporate new concepts in his knowledge structure. Furthermore, the student is expected to remember information and apply the information when solving problems and be able to reproduce it a later stage <sup>[15] [23]</sup>.

The student can communicate effectively and his vocabulary is large enough to follow teaching. Perceptually, the student can assign meaning to sensation and can recognize, memorize, integrate, differentiate and imagine. The student learns by personal

experience and by active participation. His attention span improves and he is able to concentrate for longer periods. The student is capable of devoting himself seriously to his tasks and completing them properly. Furthermore the student is willing, eager and ready to learn <sup>[20]</sup>.

#### *Effects of substance abuse on students' cognitive development*

Substance abuse can affect the cognitive development of the students. This can occur when substance being abused interferes with a good nutrient supply to the brain and may result in brain damage, which is done in a cognitive and formal manner. Excessive alcohol use causes the brain to age prematurely. Brain disorders commonly associated with alcoholism are Weenicke's Syndrome, Koraskoff's Psychosis and Marchiafava's Disease <sup>[24]</sup>.

The use of addictive substance for example marijuana over a long period of time may impair the memory and problem solving abilities of the student <sup>[16]</sup>. This has serious consequence on academic achievement as well as appropriate life decisions that a student has to make.

Furthermore, it erodes the self-discipline necessary for learning. The student may experience problems with reading, calculating, writing and incorporating new concepts into his knowledge structure. Ultimately, the student may experience falling grades and may drop out of school <sup>[20]</sup>.

The student who abuse alcohol finds it more difficult to be cautious and to use good judgment to protect him/herself. They find it more difficult to think clearly because the more they drink, the more slowly their brain works <sup>[18]</sup>. This in turn can lead to difficulty in reading, calculating and writing skills.

Marijuana smoking may result in the loss of short-term memory and impairs a person's ability to learn and concentrate, which in turn affects his problem solving abilities and the ability to reproduce information at a later stage. The marijuana user experiences a lack of initiative, motivation and concern about the future <sup>[16]</sup> <sup>[25]</sup>.

### ***Affective development***

The affective development is an emotional development concerned with emotions, feelings, passion, moods, sentiments and whims and determines the students' personality <sup>[26]</sup>. The students emotions are aroused by internal rather than external factors. The student shows a greater understanding for the feelings of others and simultaneously displays a greater degree of empathy and sympathy. They also express, control, suppress or hide emotions according to social rules thus meeting the requirements of his cultural groups, his peer group and his community. The students express aggression (anger, rage, stubbornness) becomes more refined and he/she uses the social skills that he/she has acquired to cope, i.e., communication and co-operation. Anger and rage make him moody and he/she will sometimes tend to use force to solve his/her problems or relieve his frustrations <sup>[20]</sup>.

Happiness and cheerfulness is expressed within the confines of his peer group to which he constantly strives to be accepted. The student often prefers to gloat at a friend's defeat rather than express happiness outwardly for social reasons. They understand moods and mood changes and the positive and negative feelings with which they leave him. Furthermore the student learns to suppress his emotions leading to stress, depression, feelings of discontent and bad moods. They also learn to rid themselves of unpleasant feelings by having a good cry, doing rigorous exercise or having a good laugh <sup>[20]</sup>.

### ***Effects of substance abuse on students' affective development***

The following are some of the effects that substance abuse may possibly have on the affective development of the students: Alcohol intake can lead one being talkative and friendly or aggressive and angry. It can also alter emotions, movement, vision and hearing. In addition to this it can make people do embarrassing things like throwing up or urinating on themselves <sup>[27]</sup>.

Furthermore, alcohol intake causes a student to become more angry and stubborn or get into a rage without much provocation. The student has not learnt to express control, suppress or hide his emotions in line with expectation of his peer group, his cultural group and his community. Substance abuse can weaken a person's inhibitions, dull the common sense, brings out sexually aggressive behaviour and make the student more egocentric <sup>[28]</sup>.

Students sometimes attempt to hide feelings and emotions by abusing substances. The "high" that the substance abuser experiences can be a very happy or "spaced out" feeling or a feeling that he has special powers like the ability to fly or get rid of all his problems <sup>[29]</sup>. Since substance abuse has interfered with the students' ability to suppress his emotions, the student may display anger, rage, stubbornness and jealousy in an open and less refined manner <sup>[20]</sup>.

Marijuana use has been noted for blunting emotions and for making the student paranoid. The student will most probably end up becoming suspicious and fearful of the people around him causing him to bed-wet, stammer, boast, be anxious or engage in noisy behaviour, which are symptoms of suppressed fear <sup>[30]</sup>. Jealousy may be displayed by anger, rage and the use of force rather than by teasing, lying and bullying.

Substance abuse and addiction may cause stress and anxiety, which in turn may cause the user to increase the substance dosage to cope with the situation. When this fails, the

individual may suffer from uncontrolled depression and may commit suicide <sup>[28]</sup>. Once the student becomes psychologically dependent on drugs and alcohol they find it difficult to stop. Bezuidenhout, <sup>[24]</sup> inferred that 90% will experience some degree of relapse. Even if the student wishes to stop they will not know how to because they have relied on the substance to resolve problems and escape from the reality. The student may become less co-operative, less friendly and less sensitive to others who may want to assist him.

## **RESEARCH METHODOLOGY**

The research philosophy of the study was positivism adopting a deductive approach. Based on the research philosophy and approach adopted in this study the review led to the identification 23 items measuring three constructs i.e. physical, cognitive and affective depicting the effect of substance abuse on students. The use of structured questionnaire survey in an in-depth exploration of the constructs underlying the subject matter of the research was used.

A survey can be described as a quantitative or numeric description of some fraction of the population – the sample, which enables researchers to generalize their findings from a sample of respondents to a population within the limitations of the sampling method <sup>[31]</sup>.

A purposive sample was used where the researchers selected sample members to conform to some or other criterion in this case university students. The respondents were reading for the qualifications on Baccalaureus Technologiae (BTech) Civil Engineering, Construction Management or Quantity Surveying programs. Furthermore, those who were reading for National Diploma in Civil Engineering and Building were also included. A total of 199 usable questionnaires were gathered of which 51 were reading for National Diploma in Civil Engineering, 137 pursuing National Diploma in Building and 11 were reading for BTech in Construction Management, Quantity Surveying and Civil

Engineering. This sample size was sufficient to meet the statistical test requirements for group statistical testing. As part of the delimitation of this research, few respondents reading for BTech in quantity surveying, civil and construction management did not complete the questionnaire. This limits the generalization of the sample.

Purposive sampling is a non-probability method of sampling it is impossible to evaluate the extent to which such samples are representative of the relevant population <sup>[32]</sup>. In some respects purposive sampling gives the research qualities of a case study <sup>[31]</sup>. These problems with generalizing from the sample to the whole population of built environment and civil engineering students are limitations of the research design and fully acknowledged in this research.

The questionnaire surveys were administered under controlled lecture room conditions to ensure the standardization of data gathering, to decrease non-response errors and to increase response rates <sup>[33]</sup>. The data was gathered using self-administered questionnaires <sup>[34]</sup>. Furthermore, as the questionnaires were completed anonymously, the collection of the data and the presentation of this report cannot harm the respondents or their organization in any way.

The structured questions were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. This resulted in the computation of frequencies, parametric statistics in the form of independent sample t-test to test the hypotheses of gender perception on the effects of substance abuse. The mean scores of the male and female students in the t-test were interpreted using the bands; strongly disagree (1.00-1.80); disagree (1.81-2.60); uncertain (2.61-3.40); agree 3.41-4.20; and strongly agree 4.21-5.00.

The reliability for internal consistency of the constructs of physical, cognitive and affective development was determined using Cronbach's alpha test <sup>[33]</sup>. Hair et al., <sup>[35]</sup> advocated

for a cut-off value of 0.70 and above as sufficient in achieving internal consistency of a construct. This cut-off value was adopted for this present study.

## **RESULTS AND DISCUSSIONS**

The demographic result indicates that majority, i.e. slightly over 61% of students were male and 38 % were female. This is an indication that gender transformation is taking place in the faculty of the built environment and engineering. It can be indicated that this particular university is adhering to the South Africa government policy of allowing female to pursue built environment and engineering qualification. Furthermore majority of the students were Blacks (92.0%), Whites (5.0%), Indians (1.5%) and Coloureds (1.5%). As per the qualification 25.6% of the students were pursuing National Diploma in Civil Engineering, 68.8% pursuing National Diploma in Building and 5.5% were reading for Baccalaureus Technologiae (BTech) in Construction Management, BTech Quantity Surveying and BTech Civil Engineering. The result also suggests that slightly over 40 percent of students in this university are not aware of the substance abuse policy in the university. This might be the reason why students are abusing substance in the campus.

The results in Table 1 indicate the reliability of the effects of substance abuse. The results found that the measures of physical development were reliable, as the group Cronbach alpha was greater than 0.70 at 0.86. The result also found that cognitive and affective development measures were reliable as the Cronbach alpha was above 0.70 as advocated by Hair et al.,<sup>[35]</sup>. The Cronbach alpha was 0.91 and 0.92 respectively. These results do not support the null hypothesis (*H1*).

**Table 1** Reliability statistics of the substance abuse factors

<b>Variables</b>	<b>Cronbach alpha</b>	<b>Cronbach alpha based on standardized measures</b>	<b>Number of measures</b>
Physical development	0.864	0.866	6
Cognitive development	0.913	0.914	8
Affective development	0.920	0.920	9

According to Pallant <sup>[36]</sup>, it is ideal to analyze and report the mean inter-item correlation when the measures of each construct is less than 10 items. The physical, cognitive and affective development measures had less than 10 items. The result in Table 2 suggests that physical development attained mean inter-item correlation value of 0.513 with values ranging from 0.348 to 0.661. This indicates a strong relationship between the measures measuring physical development. Cognitive development attained mean inter-item correlation value of 0.57 with values ranging from 0.413 to 0.703. This indicates a strong relationship between the measures measuring physical development. Lastly affective development attained mean inter-item correlation value of 0.562 with values ranging from 0.364 to 0.744. This indicates a strong relationship between the measures measuring physical development. The null hypothesis ( $H_2$ ) is not accepted.

**Table 2** Mean inter-item correlation for substance abuse factors

	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Range</b>	<b>Maximum/minimum</b>	<b>Variance</b>	<b>Number of measure</b>
Physical development	0.518	0.348	0.661	0.312	1.898	0.005	6
Cognitive development	0.570	0.413	0.703	0.290	1.702	0.005	8
Affective development	0.562	0.364	0.744	0.381	2.046	0.008	9

The result in Table 3 indicates that the physical development construct was measured using six items. The measures were reliable and can be reused in other similar studies. A t-test was therefore conducted to compare the physical development scores of male and female students. There was significant difference in scores for male students ( $M=3.18$ ,  $SD=1.05$ ) and female students ( $M=3.52$ ,  $SD =1.07$ ,  $t(169)= 2.00$ ,  $p = 0.05$ , two tailed). Therefore, rejecting the null hypothesis ( $H_3$ ) stated. Male students were highly uncertain than female students on the effect of substance abuse on their physical development. Female students agreed that substance abuse affects their physical development. The groups mean score was 3.52 for female students and 3.18 for male students. In relation to this finding male students might be in denial that substance abuse affects their physical development.

The result in Table 3 further indicates that the cognitive development was measured using eight items. The measures (items) for cognitive development are reliable and hence reused in other similar studies. Furthermore, an independent sample t-test was conducted to compare the cognitive development scores of female and male students. There was no significant difference in the mean scores of female students ( $M=3.48$ ,  $SD=1.02$ ) and male students ( $M=3.20$ ,  $SD =0.98$ ;  $t(165)= 1.78$ ,  $p = 0.08$ , two tailed) as the p-value was greater than 0.05. Therefore, accepting the null hypothesis ( $H_3$ ) stated. This is an indication that the effect of substance abuse on cognitive development of the students was not different. However, the groups mean score for female and male students was 3.48 and 3.20 respectively. These mean scores suggest that the female students agreed that substance abuse had an effect on cognitive development, whereas male students were uncertain. Male students need to be more informed of the effects of substance abuse on their cognitive development.

Finally, the result in Table 3 indicates that the affective development construct was measured using nine items. The measures (items) for affective development are reliable and can be reused in other similar studies. An independent sample t-test was conducted

to compare the affective development scores of male and female students. There was significant difference in scores for female students ( $M=3.25$ ,  $SD=1.02$ ) and male students ( $M=2.92$ ,  $SD =0.99$ ;  $t(165)= 2.06$ ,  $p = 0.04$ , two tailed). Therefore, rejecting the null hypothesis ( $H_3$ ) stated and accepting the alternative hypothesis. However, both female and male students were uncertain on the effect of substance abuse on the affective development of students abusing substance. These finding suggests that both male and female students should be informed of the effects of substance abuse on their affective development.

**Table 6.3** T-test of gender on the physical, cognitive and affective development

Physical development		Items=6	
Variable	Levene test of equality of variances	t-value	Sig.(p)
Physical development	0.68	2.00	0.05
Cognitive development		Items=8	
Variable	Levene test of equality of variances	t-value	Sig.(p)
Cognitive development	0.88	1.78	0.08
Affective development		Items=9	
Variable	Levene test for equality of variances	t-value	Sig.(p)
Affective development	0.81	2.06	0.04

## CONCLUSIONS

The research established that measures for physical, cognitive and affective development were reliable and had strong relationship. Female students perceived that substance abuse affected their physical and cognitive development. However, male students were uncertain of the effects of substance abuse on their physical and cognitive development. Both male and female students were uncertain in relation to the effects of substance

abuse on their affective development. It is interesting to note that despite the uncertainty male students were less uncertain than the female students.

It is recommended that the scale of physical, cognitive and affective development can be used in future studies that will include all the universities in South Africa in the department of construction management and quantity surveying. These scales are reliable and the measures have strong relationship. The researchers further recommend that this university and others in South Africa should develop a policy to inform students of the dangers of substance abuse on their affective, physical and cognitive development. If the university has already developed the policy they should always remind students of the dangers of substance abuse on their affective, physical and cognitive development.

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