

**SELF-CONTROL AS A PREDICTOR OF DRUG USE:
A STUDY WITH UNIVERSITY STUDENTS IN BOTSWANA**

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ABSTRACT

The study examined the relationship between self-control and drug use among university students in Botswana. Bandura's social cognitive theory of self-regulation provided the theoretical framework for the study. Among the 269 participants with a *mean* age of 20.9 years ($SD = 1.8$), 72.9% were female and 27.1% were male. Instruments employed were the Brief Self-control Scale and the Drug Abuse Screening Test. Drug users had significantly lower self-control scores than non-drug users ($t = 4.57, p = 0.000$). Levels of drug use were negatively associated with self-control ($r = -0.33, p = 0.006$). Participants who had stopped using drugs had significantly higher self-control scores ($t = 2.38, p = 0.020$). Low self-control, male gender and higher level of studies explained between 16.9% (Cox & Snell) and 29.9% (Nagelkerke) of the variation in whether or not students had used drugs, with self-control having the strongest predictive ability ($p = 0.001$). The results of this study imply that self-control does play a pertinent role in whether or not young people engage in drug use. The results are discussed with regard to drug use prevention and treatment strategies that should equip young people with skills and techniques in self-control to protect them against drug use and abuse.

Keywords: Botswana, drug use, gender, self-control, self-regulation, university students

INTRODUCTION

Drug use among young people is a global problem (UNDOC, 2017) that also affects the youth in African countries (Abasiubong, Udobang, Idung, Udoh, & Jombo, 2014; Derrick & Clark, 2013; Odejide, 2006; Osuafor, Maputle, & Ayiga,

2016; Tesfaye, Derese, & Hambisa, 2014). In Botswana, where the present study took place, a national youth survey conducted in 2011 revealed that 13.2% of primary and secondary school students reported using marijuana, 12.2% reported using glue, and smaller percentages reported using cocaine, mandrax, and

ecstasy (Letamo, Bowelo, & Majelantle, 2016). Social trends, accessibility, and affordability contribute to patterns of drug use and the types of drugs consumed (Griffith & McKetin, 2003). For example, a relatively new drug from South Africa referred to as Nyaope is spreading fast because of its relatively low costs (about US\$3 per fix). Nyaope contains a highly addictive mixture of heroin, methamphetamine, cocaine, and other ingredients such as paracetamol, antiretroviral medications, household detergents and rat poison that are rolled with cannabis, heated, and then inhaled (Mokwena & Fernandes, 2014).

In the African context, drug studies often focus on the prevalence of drug consumption and its socio-demographic correlates but few studies have investigated psychological variables that could explain why some young people engage in drug use while others do not. For example, in a study with university students in Botswana, Ludick and Amone-P'Olak (2016) determined that a temperamental disposition of 'novelty seeking' predicted the use of cannabis. Novelty seekers are known to be easily excitable and to react impulsively (Cloninger, 1986), which puts them at risk of using drugs (Mitchell & Potenza, 2016). In the study by Ludick and Amone P'Olak (2016), novelty seeking explained 35% of the variance in cannabis use. In another study with university students in Botswana, Gareikitse and Plattner (2016) found that students with low self-esteem were more likely to contemplate the use of drugs as a way of coping with emotional distress. Another psychological variable associated with drug use is self-control. Self-control is a self-regulatory behaviour through which a person controls his or her thoughts, emotions, motivations,

impulses, and desires (Bandura, 1991; Baumeister, 2018). Young people with low levels of self-control are more likely to engage in drug use than young people with high levels of self-control as they are less able to resist temptation and their behaviour is more likely to be influenced by impulses (Friese & Hoffmann, 2009).

Various studies established a relationship between self-control and drug use. For example, positive associations between low self-control and drug problems have been observed among adolescents (Vaughn, Beaver, DeLisi, Perron, & Schelbe, 2009). Longitudinal research with adolescents has shown that drug use was reduced among participants with higher levels of self-control (Wills, Ainette, Stoolmiller, Gibbons, & Shinar, 2008; Wills & Stoolmiller, 2002). A study of drug use offenders in the UK found that low self-control was associated with higher use of drugs as well as with earlier age of onset of drug use (Packer, Best, Day, & Wood, 2009). In a study of American high-school students, Sussman, McCuller, and Dent (2003) found that low self-control was a consistent predictor of use of marijuana and cocaine use. In a study of American undergraduate students, Ford and Blumenstein (2013) found that students with low self-control were more likely to use marijuana and to abuse prescription drugs than students with high self-control. Higgins, Mahoney, and Ricketts (2009) had found that low self-control was associated with non-medical use of prescription drugs among young adults.

To the knowledge of the authors, no studies investigated self-control as a predictor variable of drug use in Botswana. The present study, therefore, aimed to explore (1) whether young people who use drugs differ in their levels of self-

control from those who do not use drugs, (2) whether drug users who had stopped using drugs differed in their levels of self-control from drug users who reported drug use at the time of the study, and (3) whether level of self-control is associated with level of drug use. The target group for the study was university students. University students are known to have higher rates of drug use than young people who do not attend university (Ford & Blumstein, 2013). The study hypothesised (i) that students who had used drugs would have lower levels of self-control than students who had never used drugs, (ii) that students who had stopped using drugs would have higher levels of self-control, and (iii) that high levels of drug abuse would be associated with low levels of self-control; (iv) the study also hypothesised that self-control would predict drug use. The study considered differences in drug use behaviour based on gender, year of study, and whether students were raised in a rural or an urban area. The results of the study could be of benefit for the development of efficient drug use prevention and treatment programmes.

The study was entrenched within Bandura's social cognitive theory of self-regulation (Bandura, 1991). According to this theory, human beings have the capacity to control or regulate their own behaviour as part of an on-going process of self-influence. However, whether or not individuals are able to influence their behaviour will depend on (i) how well they monitor their own behaviour and its determinants and effects, (ii) how they react emotionally to their own behaviour, and (iii) how they judge their own behaviour while considering personal standards and environmental circumstances. For example, although peer pressure

has been identified as one of the strong determinants of drug use among young people (Lee, Neighbors, & Woods, 2007), Bandura (1991) pointed out that people with high levels of self-control are better equipped to follow their own standards, even when in situations of social pressure. The ability to exert self-control varies from situation to situation. For example, situations of distress can lower people's self-control (Baumeister & Heatherton, 1996) and make them behave in ways that they would otherwise not opt for. The concept of self-control helps to understand why some individuals may be more prone to getting involved with drugs while others are able to withhold any temptations of drugs. However, while low self-control appears to be a personal trait that makes individuals vulnerable to drug use, it should be noted that many of the illicit drugs contain psychoactive components that affect the same neural circuits in the brain that enable self-control (Baler & Volkow, 2006); that is, the more a person abuses psychoactive drugs, the more he or she will lose the ability to exert self-control and, as a result, gets absorbed by the vicious circle of drug addiction (Baler & Volkow, 2006; Leshner, 1997).

METHOD

Procedure

Applying convenience sampling method, 284 self-administered questionnaires were distributed in four undergraduate classes at the University of Botswana attended by students from various academic programmes. The participants completed the questionnaires individually in the lecture venues and returned them to the researchers in class. Participation in

the study was voluntary and anonymous and based on informed consent. Ethical clearance was obtained from an Ethics Board in the University of Botswana. The researchers debriefed all participants and offered them information about where they could seek psychological assistance. All questionnaires were returned, but 15 questionnaires were excluded from data analysis because they were either incomplete over large parts or because participants were below the age of 18 years and no informed consent was obtained from the participants' parents/guardians.

Participants

The final sample remained with 269 participants of whom 72.9% were female and 27.1% were male. Their *mean* age was 20.9 years (*SD* = 1.8). More than half (55.0%) of the participants were enrolled in the Social Sciences and 22.3% were enrolled in Business Studies; smaller percentages of participants were enrolled in Engineering (5.6%), Humanities (5.6%), Sciences (4.8%), Education (4.5%), and Health Sciences (2.2%).

Measures

The self-administered questionnaire contained questions asking whether or not participants had ever used illicit drugs, what kind of drugs they had used, and whether they had used drugs at the time of the study. The questionnaire also contained the Drug Abuse Screening Test (DAST-20; Skinner, 1982), comprising 20 items (e.g., "Can you get through the week without using drugs?") to determine the level of drug abuse; each item is presented with two response categories (i.e., "No", "Yes"). In this scale, total scores can range from 20 to 40 with high scores indicating high levels of drug

abuse. In this study, a Cronbach's alpha of 0.98 was obtained, suggesting strong internal consistency reliability for this scale.

Furthermore, the questionnaire included the Brief Self-control Scale (Tangney, Baumeister & Boone, 2004), which contains ten items (e.g. "I am good at resisting temptation") measuring levels of self-control with 5-point response categories (i.e., "Not at all like me", "A little like me", "Somewhat like me", "Mostly like me", "Very much like me"). Total scores in this scale can range from 10 to 50, with high total scores indicating high levels of self-control. In the present study, a Cronbach's alpha of 0.83 was obtained for this scale.

The questionnaire also explored demographic and personal background variables (i.e., age, gender, year of study, faculty enrolment, place of upbringing, and parents' level of education).

Data Analysis

Data were analysed with IBM SPSS Statistics 25, utilising descriptive statistics, correlation analysis (Pearson's product-moment correlation co-efficient), independent samples *t*-test, *Chi*-square test (including continuity correction for 2x2 tables), and binary logistic regression analysis.

RESULTS

Personal background of the participants

The sample (*N* = 269) consisted of 196 (72.9%) female and 73 (27.1%) male participants. Their average age was 20.9 years (*mean*; *SD* = 1.8), ranging from 18 to 27 years. Slightly more than a third (36.6%) of the participants were raised in a rural area (i.e., village or agricultural lands) and 63.4% were raised in an urban area (i.e.,

city or town). Slightly more than half of the participants (53.0%) had a mother/female guardian who had completed university/college level education and fewer (42.7%) had a father/male guardian who had completed university/college level education. About a quarter (24.7%) of the participants were in their first year of university studies, 29.2% in their second year, 22.5% in their third year, and 23.6% in their fourth year.

Self-reported drug use among participants

The majority of participants ($N = 183$; 68.0%) reported that they had never consumed illicit drugs while 86 participants (32.0%) had consumed illicit drugs at some point. In addition, 34 (12.6%) of the participants reported that they had abused prescription drugs. Among the drug users, 40 (46.5%) had consumed drugs at the time of the study.

Among the participants who reported drug use, marijuana was the most commonly used drug (72.5%), followed by codeine (17.5%) and Nyaope (7.5%); cocaine, heroine, and paint were mentioned only once each; six participants did not specify what kind of drugs they had used. Twelve (14.5%) participants reported that they used more than one drug at a time.

Gender, place of upbringing, and year of study by drug use

An independent samples t -test revealed that drug users were significantly older ($mean = 21.4$ years, $SD = 1.8$) than non-users ($mean = 20.7$ years, $SD = 1.7$; $t(266) = -3.25$, $p = 0.001$). Table 1 shows that male participants were more likely to use illicit drugs than female participants ($\chi^2(1) = 17.34$, $p = 0.000$). Participants who were raised in an urban area were also more likely to use drugs than participants raised in a rural area ($\chi^2(1) = 12.38$, $p = 0.000$). Participants in their fourth year of study were more likely to use illicit drugs than participants in lower levels of study ($\chi^2(3) = 15.13$, $p = .002$).

Self-control

Participants' total self-control scores ranged from 15 to 50 (out of a possible score range from 10 to 50), with a $mean$ total score of 36.05 ($SD = 7.8$). Female participants had significantly higher self-control scores ($mean = 37.16$, $SD = 7.6$) than male participants ($mean = 33.00$, $SD = 7.7$; $t(260) = 3.91$, $p = 0.000$). Age was not associated with self-control ($r = -0.02$, $p = 0.703$). Participants who grew up in a rural area had significantly higher self-control scores ($mean = 38.01$, $SD = 6.3$) than participants who were raised in

Table 1. Gender, place of upbringing, year of study, and drug use

Variables		Total		Non-drug users	Drug users	$\chi^2(df)$, p -Value
		N	%	%	%	
Gender	Female	196	72.9	80.9	55.8	17.34 (1), 0.000
	Male	73	27.1	19.1	44.2	
Place of upbringing (1 missing)	Rural	98	36.6	44.0	20.9	12.38 (1), 0.000
	Urban	170	63.4	56.0	79.1	
Year of Study (2 missing)	First	66	24.7	27.1	19.8	15.13 (3), 0.002
	Second	78	29.2	33.7	19.8	
	Third	60	22.5	22.1	23.3	
	Fourth	63	23.6	17.1	37.2	

an urban area ($mean = 34.90$, $SD = 8.4$; $t(243.6) = 3.40$, $p = 0.001$). Year of study was not associated with self-control ($r = 0.01$, $p = 0.846$).

Self-control and drug use

An independent-samples t -test was conducted to compare the self-control scores for drug users and non-drug users. The results revealed that drug users had significantly lower self-control scores ($mean = 32.9$, $SD = 8.0$) than participants who had not used drugs ($mean = 37.5$, $SD = 7.3$; $t(260) = 4.57$, $p = 0.000$). Therefore, the hypothesis that drug users would have lower self-control scores than non-drug users was supported.

The study had also hypothesised that drug users who had consumed drugs at the time of the study (current drug users) would have lower self-control scores than drug users who had stopped their drug use. This hypothesis was supported by the results of an independent-samples t -test which showed that current drug users had significantly lower self-control scores ($mean = 30.68$, $SD = 8.3$) than drug users who had stopped using drugs ($mean = 34.80$, $SD = 7.3$; $t(80) = 2.38$, $p = 0.020$).

Among those participants who reported drug use, the results of the Drug Abuse Screening Test revealed a $mean$ score of 24.82 ($SD = 3.4$), ranging from 21 to 36 (out of a possible score range from 20 to

40), indicating that on average drug using participants had a low level of drug abuse. It was hypothesised that higher levels of drug abuse would be associated with lower levels of self-control. Correlation analysis revealed a negative, moderate association between levels of drug abuse and self-control ($r = -.33$, $p = 0.006$), thus, supporting the hypothesis.

Predictors of drug use

Binary logistic regression analysis was employed to test a model which assumed that self-control, gender, age, place of upbringing, and year of study would predict drug use. The results revealed that only three of these variables contributed significantly to predicting drug use, with self-control having the strongest predictive ability, followed by gender, and year of study (Table 2). The results suggested that an increase in self-control would decrease the probability of drug use. The results also revealed that the odds of using drugs were more than three times higher for male participants and more than two times higher for student participants in higher levels of their studies. The predictive power of the model was supported by the 'goodness of fit' test ($\chi^2(5) = 48.08$, $p = 0.000$) and by the Hosmer and Lemeshow test ($\chi^2(8) = 10.45$, $p = 0.235$). However, self-control, gender, and year of study explained only between 16.9% (Cox

Table 2. Binary logistic regression predicting the likelihood of drug use based on self-control, gender, age, place of upbringing, and year of study

Variables	Ever used illicit drugs				
	<i>B</i>	(<i>SE</i>)	Wald	<i>OR</i> (95% <i>CI</i>)	<i>p</i> -Value
Self-control	-0.09	0.03	10.77	0.92 (0.87,0.97)	0.001
Gender	1.24	0.41	9.17	3.46 (1.55, 7.74)	0.002
Age	-0.18	0.17	1.05	0.84 (0.59, 1.18)	0.304
Place of upbringing	0.55	0.48	1.34	1.74 (0.68, 4.43)	0.247
Year of study	0.88	0.31	8.27	2.42 (1.33, 4.42)	0.004

& Snell *R* Square) and 29.9% (Nagelkerke *R* Square) of the variation of whether or not participants had ever used drugs.

DISCUSSION

This exploratory study aimed to investigate the relationship between self-control and drug use among university students in Botswana. Most of the participants in this study did not use drugs and most of those who did, had used marijuana. Marijuana is a commonly used substance in Botswana (Diraditsile & Rasesigo, 2018) and is also used frequently among university students elsewhere (Ford & Blumenstein, 2013).

While drug abuse may not have been a protuberant problem in the sample of this study, the results supported the hypotheses of the study. More specifically, participants with lower levels of self-control were more likely to have engaged in drug use than participants with higher levels of self-control. Self-control predicted drug use and the results suggest that an increase in self-control will decrease the probability of drug use. These results are consistent with findings from other parts of the world where self-control was found to be inversely associated with drug use (Ford & Blumenstein, 2013; Higgins et al., 2009; Packer et al., 2009; Sussman et al., 2003; Vaughn et al., 2009). The results of this study imply that self-control does play a pertinent role in whether or not young people engage in drugs.

Among those participants who had engaged in drug use, about half of them had not used drugs at the time of the study, suggesting that they had been able to stop their drug consumption and that they had not developed an addiction. This

assumption was supported by the results which showed that participants who had not taken drugs at the time of the study had significantly lower scores in the drug abuse screening test than those participants who had taken drugs at the time of the study. As hypothesised, those who had been able to stop their drug use had significantly higher levels of self-control than those who took drugs at the time of the study. This result suggests that even when young people had used drugs at some point in their life, perhaps out of curiosity (Lee et al., 2007), higher levels of self-control may have enabled them to stop using drugs and protected them from developing an addiction. Such interpretation is in line with Bandura's theory of self-regulation (Bandura, 1991), according to which self-control empowers people to consciously and pro-actively decide upon their own behaviour. Bandura (1991) emphasised that the capability of self-reflection and self-reaction enables individuals to exert control over their thoughts, emotions, and actions. Therefore, participants with higher levels of self-control may have found ways to stop using drugs.

However, it is imperative to consider that a person's willpower to exert self-control in order to stop drug consumption may not just be a question of a personal trait. While self-control can be learned and trained (Diamond, Barnett, Thomas, & Munro, 2007; Romer, Duckworth, Snitman, & Park, 2010), the ability to exert self-control is a function of the brain. As mentioned earlier, many of the psychoactive drugs affect the same neural circuits in the brain that enable self-control; drugs deplete a person's ability to exert self-control (Baler & Volkow, 2006). While people with low self-control may be more prone to start using

drugs, drugs on their own can lower a person's self-control. This means that stopping drug use may not simply be a question of personal willpower but also a question of the chemical composition of the drug. In the present study, participants with higher scores in the drug abuse screening test had significantly lower levels of self-control than participants with lower drug abuse scores. The cross-sectional design of the present study did not allow determining whether participants' level of self-control was already low before they started using drugs or whether their self-control had diminished over time resulting from the effects of the drugs they had consumed. A longitudinal design would be necessary to investigate the effects of drug use on self-control.

While self-control predicted drug use in this study, other variables also contributed to use of illicit drugs. Male participants were more likely to have used illegal drugs than females. This is consistent with findings of other studies that have reported that males were more likely to use drugs (e.g. Cotto et al., 2010; Letamo et al., 2016; Ludick & Amone P'Olak, 2016; Mitchell & Potenza, 2016). Reasons given for gender differences are that men seem to have more positive attitudes towards drugs than women (Wagner, Stempliuk, Zilberman, Barroso, & Andrade, 2006) and that men are more impulsive than women, making them more likely to use drugs (Mitchell & Potenza, 2016). In the present study, males had significantly lower levels of self-control. Therefore, they were likely to have engaged in impulsive behaviour, which could have contributed to their drug use.

Older participants and participants in their fourth year of studies were more likely to use drugs than younger students

and those in lower levels of their studies. Interestingly, only year of study, but not age, predicted whether or not participants had engaged in drug use. The result suggests that the longer young people are at university the more likely they get involved in drugs, which raises the question as to how much university life on its own contributes to students' drug use.

Limitations

One of the limitations of this study is that it had not explored the length of time participants had been using drugs. Another limitation is that based on the self-report questionnaire, participants may have over or underreported their drug use. The study did not control for moderating or mediating variables such as personality characteristics, relationship with parents, stability of the family environment, or adjustment to university life. Further research is necessary to attend to these limitations.

Conclusion

The results of this study suggest that self-control does play a crucial role in whether or not young people use illicit drugs. Low self-control makes young people vulnerable to drug use and subsequent addiction. In Botswana, where drug use is a problem, it could be important to address self-control as a psychological variable when targeting young people's drug use behaviour. Regardless of whether low self-control is a personal trait or the result of long-term drug use, a person's improvement or restoration of self-control is key for the prevention and/or treatment of drug abuse. Drug use prevention and treatment strategies should aim to strengthen young people's self-control. In university contexts, it may be useful to offer specific self-control

enhancing counselling services, particularly to first-year students, that equip them with skills and techniques to regulate their own behaviour so that they are more protected against the temptation of drug use while at university.

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