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PSYCHOACTIVE SUBSTANCE USE AS A PREDICTOR OF ROAD RAGE BEHAVIOUR IN A SAMPLE OF COMMERCIAL DRIVERS IN ENUGU, SOUTH-EASTERN NIGERIA

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ABSTRACT

Two objectives were examined in the present study. The first described the prevalence of psychoactive substance use in a sample of 208 commercial drivers; while the second examined whether psychoactive substance would predict road rage behaviour in the same sample. Purposive sampling technique, which targeted only drivers who were willing to participate at no fee, was utilized to select commercial drivers from 4 motor parks in Enugu, South-Eastern Nigeria. All the drivers were male; there were 102 (49.04%) married and 106 (50.96%) single drivers. Their ages range from 27 years – 52 years (Mean age = 33.52years; SD = 6.04). The years of driving experience of the commercial drivers ranged from 4 years – 29 years. The Psychoactive Substance Use Questionnaire and the Driving Anger Scale (DAS) were instruments used for the collection of data. Data were analyzed with preliminary statistics and a simple hierarchical multiple regressions and correlation (MRC). Results showed that alcohol was the most prevalently used psychoactive substance in the sample, and that alcohol, cocaine, and amphetamine, predicted road rage behaviour ($p < 0.001$) in the sample. These findings were discussed and the limitations of the study and recommendations were highlighted.

Keywords: Commercial driver; Driving Anger Scale (DAS); Psychoactive substance use; Road rage behaviour; South-Eastern Nigeria.

INTRODUCTION

Enugu is a town characterized by a huge population of about 3.2 million residents (National Population Commission, 2007). Although the town has a functional airport and a completely moribund rail transport system; road transportation is the major form of transportation in and out of Enugu. Road transportation accounts for more than 92% of freight and passenger movement in the town (Onah, 2008). With more and more commuters on the road, many drivers are driving less

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courteously and even more recklessly that other drivers seem to get angry at their driving. In general, when drivers become annoyed and frustrated on the road, they respond with aggression. A driver's underlying predisposition for anger is what people describe as road rage behaviour. Coleman (2003) defines road rage behaviour as grossly disproportional outburst of aggression by a driver of a motor vehicle in response to perceived discourtesy or transgression by another driver. Road rage has also been seen as a psychological disorder. Ayer (2006) argues that road rage is a psychological disorder where an individual experiences heightened levels of stress, anxiety, or hostility because of their driving environment.

Road rage behaviour or aggressive driving manifest in a variety of ways; there are at least three distinct forms of anti-social behaviour that is generally regarded as road rage behaviour. These are active-aggressive road rage behaviour, passive-aggressive road rage behaviour, and road hostility (Butters, Smart, & Mann, 2006). Active-aggressive road rage behaviour involves a grossly disproportional outburst of aggression by a driver of a motor vehicle specifically targeted at another driver. It often involves extreme punitive measures, such as intentionally causing a collision between vehicles or assaulting another motorist. When tempers rage out of control, the active aggressive road rager can become very angry that the individual can kill or injure somebody. Passive-aggressive road rage behaviour involves ignoring other road users or refusing to respond appropriately. The passive-aggressive road rage behaviour is not specifically targeted at any particular driver, the aggressing individual just want to cause obstruction. Stopping on the road to have a conversation with a person in another vehicle or with a pedestrian on the sidewalk is a good example of passive-aggressive road rage. Finally, road hostility refers to driving-related non-violent but hostile behaviour, such as, yelling or making rude gestures, weaving a fist, shouting verbal abuses, spitting at another driver, or horning excessively, that are specifically targeted at another driver. The active-aggressive and the road hostility road rage behaviours are related in that both are actions deliberately targeted at another. However, in one case, the action is punitive, while in the other, it is simply hostile.

The frustration-aggression hypothesis (Berkowitz, 1989; Dollard, Doob, Miller, Mowrer & Scars, 1939) is the general theory of human aggression that best explains road rage behaviour. This hypothesis proposes that frustration leads to aggression – either against the source of frustration or against an innocent but vulnerable substitute, or "scapegoat". The frustration-aggression framework is a general rule that aversive stimulation sparks aggression. Being trapped in a clogged traffic or being held up by a driver who obstinately observes the speed limit in the fast lane, despite the signaling by speeding drivers to go ahead, is likely to arouse anger and frustration. Because substance use increases arousal level by altering brain's normal activity, there is possibility that psychoactive substances use may predispose a driver to engage in road rage behaviour. Psychoactive substance use has been identified as possible risk factors for road rage behaviours (Butters, Mann, & Smart, 2006; Butters, Smart, Mann, Asbridge, 2005). Research (e.g., Harrison, Erickson, Adlaf & Freeman, 2001; Mann, Smart, Stoduto, Adlaf,

& Lalomiteanu, 2004) has broadly shown that heavy drinkers and consumers of alcohol and other psychoactive substances are often victims or perpetrators of aggression, as well as being "at fault" in traffic crashes.

Alcohol is the most readily available drug in Africa and it is by far the most widely used drug by all age group (Van Heerden, Grimsrud, Seedat, Mayers, Williams & Stein, 2009). Alcohol encourage users to take more risks on the road or to behave more aggressively, studies (Ejikeme, 2004;) show that even a moderate high in-take of alcohol inevitably lead to problems at home and at workplace either from after-effects of drinking or from actual intoxication. There are evidence that being a frequent drinker was strongly associated with quarrelling, engaging in risky behaviours and experiencing physical aggression (Tumwesigye & Kasirye, 2005), which are all veritable conditions for road rage behaviour to fester. Mann et al. (2004) found a significant relationship between the problem drinking of alcohol – measured by the National Use Identification Test (AUDIT) – and the experience of road rage victimization and perpetration. Fierro, Morales & Alverez (2011) argue that driving under the influence of alcohol is associated with being a perpetrator of road rage behaviour. Although alcohol has been recognized as hazard to road traffic safety, the greatest increase in risk of being injured was for alcohol combined with any other substances. Dassault, Brault, Bouchard, and Lamire (2002) examined the urine sample of 5931 drivers and found substances other than alcohol in 11.8% of the urine sample, in the following proportion: cannabis 6.7%; cocaine 1.1%; benzodiazepines 3.6%; opiates 1.2%; PCP 0.03%; amphetamines 0.1%; and barbiturates 0.5%. Alcohol was found in 5.9% of all substance cases.

Several laboratory investigations on other psychoactive substances, such as cocaine, heroin and amphetamines reveal that these chemical substances tend to increase the activity of the central nervous system by replacing the blues with feeling of well-being, masking symptoms of fatigue, creating a sense of self confidence and competence, and encouraging users to go beyond normal levels of confidence. However, problematic ingestion of psychoactive substances carries potentially several hazards. Cannabis use constitute a risk to traffic safety, Walsh, Gier, Christopher and Verstraete (2004) argue that the prevalence of cannabis among drivers involved in accidents indicates a substantial quantitative traffic safety. A study carried out in Ilorin, South-Western Nigeria found that cannabis use was positively associated with anti-social behaviours, such as risky sexual practices (Abiodun, Adelakan, Ogunremi, Oni, & Obaga, 1994). Most drivers who consume cannabis do so because of its mild euphoric properties, but the substances can have some immediate undesired side-effects such as, decrease in short-term memory, dry mouth, impaired motor skills, reddening of the eyes, and feeling of paranoia or anxiety (Hall & Pecula, 2003). Similarly, a meta-analytic study based on more than 120 experimental studies, including laboratory, driving simulator, and on-road experiments, showed that impaired performance was directly related to increasing cannabis use (i.e., increased tetrahydrocannabinol, THC) in the blood levels (Berghaus, Sheer, & Schmidt, 1995). The effects of amphetamine on driving as summarized by Logan (2002) concluded that methamphetamine increases the likelihood of

performance deficit on complex psychomotor tasks such as driving. Butters et al (2006) maintain that the use of stimulants (e.g., cocaine, heroin, amphetamine, etc) significantly increased the likelihood of victimization and being classified as a serious road rage perpetrator.

So far, there seems to be limited knowledge on the prevalence of psychoactive substance use other than alcohol in road traffic studies in Nigeria. This study is an early effort to bridge this lacuna in literature. Secondly, the study examines the roles of psychoactive substances, namely: alcohol, cannabis, tobacco, cocaine, heroin, and amphetamine, in predicting road rage behaviour. Thus, the study has two objectives: to describe the prevalence of psychoactive substances use and to examine whether those substances would predict road rage behavior. Two questions that guide the present study are: what is the level of prevalence of those psychoactive substances in the sample of commercial drivers in Enugu, South-Eastern Nigeria? Would those psychoactive substances predict road rage behaviour? Because psychoactive substance causes significant modification of mood and behaviour, the study hypothesized that the six psychoactive substances would predict road rage behaviour.

METHOD

Participants

Participants for the study comprised of 208 commercial drivers who plied major roads linking Enugu and other towns or states in Nigeria. The sampling technique used was purposive sampling technique, in which only the drivers who willingly agree to participate in the study were given copies of the questionnaires to fill. All the 208 drivers were commercial drivers and all male. There were 102 (49.04%) married and 106 (50.96%) single drivers. The range of driving experience of the commercial drivers was from 4 – 29 years. Age of the drivers range from 27 – 52 years (Mean age = 33.52 years; SD = 6.04).

Instrument

Two questionnaires were used in the present study. These were the Psychoactive Substance Use Questionnaire (Eze, 2006) and the Driving Anger Scale (DAS) (Daffenbacher, Oetting, & Lynch, 1994). The Psychoactive Substance Use Questionnaire assesses frequency of use of psychoactive substance on a scale of four degrees: never used it; have not used it more than two times; uses it less than three times in one week, uses it more than three times in one week; and used it frequently in the past but has stopped. Specific substances included in the questionnaire were alcohol, cannabis, tobacco, cocaine, heroin and amphetamine. These were substances known to be abused in Nigeria by many youths and adults, and which cause significant modification of mood, cognition or behaviour at the dosage in which they are normally taken. Instructions on the questionnaire require a participant to give a rating between 0 and 4 to each of the substances according to the degree of their use of each of them. The instrument has a content validity, and test-retest reliability index of r = .61 (N = 55) (Eze, 2006).

The Driving Anger Scale (DAS) measures general driving anger. The DAS is a 33-item scale, which requires respondents to imagine that incidents of unruly behaviours on the road are happening to them, and to indicate the extent to which

that behaviour would provoke them to anger. Response options on the questionnaire range from 1 – 5 (i.e., "not at all angry" to "very much angry"). Samples of items on the Driving Anger Scale were as follows: "Someone in front of you does not move off straight away when the light turns green"; "Someone coming towards you does not dim their headlights at night"; "Someone shouts at you about your driving"; "A cyclist is riding in the middle of the lane and slowing traffic". Mefoh, Ugwu Ugwu, and Samuel (2013) reported that DAS has a reliability coefficient of 0.93 among Nigerian commercial drivers (N = 150).

Procedure

Data were collected from commercial drivers at four motor parks in Enugu. The parks were: Enugu State Transport Company (ENTRACO) (51 commercial drivers), Peace Mass Transport Company (65 commercial drivers), Ifesinach Transport Company (43 commercial drivers), and Onitsha-South Transport Company (49 commercial drivers). Permission to conduct the study in the respective parks was given by the manager of each park. The managers gave the researcher stern warning not to interview any driver whose vehicle has started loading. This was a check to ensure that passengers are not kept waiting when the vehicle is fully loaded. In administering the instruments, the researchers gave the questionnaires only to drivers who freely agree to participate in the study at no cost and who also signed the researchers' consent form. Many drivers were unwilling to participate in the study when they realized that no payment would be made for participation. The researchers were standby to answer any participant's question and to explain any item the individual did not quite understand. This culminated in the proper completion of the questionnaire items and in 100% return rate. Apart from responding to items on the Psychoactive Substance Use Questionnaire and the Driving Anger Scale (DAS), each respondent was required to supply demographic information on age, driver experience, and marital status. The permission to execute this study was given by the Ethics Board, Department of Psychology, University of Nigeria, Nsukka.

Design/statistics

The design of the present study was cross-sectional design, in which data collection procedure was done once. A descriptive statistics was used to describe the prevalence of the various psychoactive substances use among the sample. The major statically tool used in the analysis of data was a simple hierarchical multiple regression and correlations (MRC).

RESULTS

A preliminary analysis involving descriptive statistics was used to assess the prevalence of psychoactive substance use in the sample. Also, Pearson's product-moment correlation was used to specify the degree of relationships among the studied variables. The results of the descriptive statistics in Table 1 indicated that alcohol was the most widely used psychoactive substance in South-Eastern Nigeria.

Of the 208 commercial drivers interviewed, 73 (35.1%) of the drivers declared that they had never used alcohol, implying that the rest 135 (64.9%) of the drivers have either used the substance more than three times a week, or use it

Table 1. Prevalence of psychoactive substance use among commercial drivers

Psychoactive Substances	Number of Users (%)	Number of Non-Users (%)
Alcohol	135 (64.9)	73 (35.1)
Cannabis	17 (08.2)	191 (91.8)
Tobacco	10 (04.8)	198 (95.2)
Cocaine	13 (06.2)	195 (93.8)
Heroin	10 (04.8)	198 (95.2)
Amphetamine	17 (08.2)	191 (91.8)

less than three times in one week, or use it more than three times in one week. Similar investigations were made for other psychoactive substances – cannabis, tobacco, cocaine, heroin, and amphetamine. These psychoactive substances were not so frequently used by the drivers as alcohol. However, all of them have been used to some extent. The prevalence of other psychoactive substances – cannabis, tobacco, cocaine, heroin, and amphetamine, were 17, 10, 13, 10, and 17, respectively.

As mentioned, Pearson r was conducted with the hope that given one variable, the other can be predicted. The results of the Pearson r are presented on Table 2. Schwartz, Wilson, and Goff (2015) proposed that a strong relationship is declared if Pearson r is +/- 0.50 or beyond; a moderate relationship is depicted by a Pearson's r value of approximately +/- 0.30 or above; and a weak relationship is illustrated by an r value of less than +/- 0.30. Following this classification, alcohol has a strong positive correlation with road rage ($r = 0.52$, $p < 0.001$). The Pearson r for cannabis ($r = 0.42$, $p < 0.001$), tobacco ($r = 0.34$, $p < 0.001$), cocaine ($r = 0.40$, $p< 0.001$), heroin ($r = 0.40$, $p < 0.001$), and amphetamine ($r = 0.43$, $p < 0.001$) showed that these were all positive and moderately associated with road rage. Also, aside alcohol, all the other psychoactive substances strongly and positively correlated with each other. Of all the demographic variables examined in the study, only marital status showed a

Table 2. Pearson's correlation matrix showing the correlation scores of the studied variables and the dependent measure

Variables	1	2	3	4	5	6	7	8	9	10
Road rage	-									
Age	-.06	-								
Driver experience	.07	-.17*	-							
Marital status	-.28**	-.01	-.40**	-						
Alcohol	.52**	-.03	.05	-.13	-					
Cannabis	.42**	-.11	-.09	.01	.04	-				
Tobacco	.34**	-.09	-.01	.04	-.16*	.74**	-			
Cocaine	.40**	-.10	.02	-.02	-.10	.73**	.95**	-		
Heroin	.35**	-.09	.01	.03	-.15*	.76*	1.0**	.96**	-	
Amphetamine	.43*	-.12	-.14*	.09	.05	.94**	.74**	.71**	.75**	-

Table 3. A simple hierarchical multiple regression

	Step 1			Step 2		
Variables	B	β	t	B	β	t
Age of driver	-2.86	-.07	-1.08	.31	.01	.16
Driver experience	-.18	-.07	-.87	-.05	-.18	-.38
Marital status	- 8.14	-.30	- 4.12**	-6.32	-.24	-4.27**
Alcohol				7.44	.48	9.69**
Cannabis				-4.08	-.11	-.73
Cocaine				7.01	.43	2.59*
Heroin				-2.48	-.15	-.81
Amphetamine				5.36	.34	2.22
R square	.08			.54		
R square change	.08			.46		
F change	6.18			39.30		
F value	6.18			29.06		

Keys: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

negative weak relationship with road rage ($r = 0.28$, $p < 0.05$).

The result of the simple hierarchical multiple regressions and correlation (MRC) showed that among the control or demographic variables, namely: age, driver experience, and marital status, that only marital status significantly and negatively predicted road rage behaviour ($t = -4.27$, $p < 0.001$). This finding implies that road rage behaviour increases if a driver of a vehicle is married rather than if is single. Marital status was coded '0' for single and '1' for married in the analysis. Age (of driver) and drivers experience did not significantly predict the dependent measure. Overall, the control variables in step 1 of the regression model explained an insignificant proportion of 7% of the variance in road rage behaviour. In step 2, marital status continued to negatively predict road rage behaviour ($t = -4.27$, $p < 0.001$), while the other two control variables did not. With regards to the psychoactive substances examined in this study, only alcohol, cocaine, and amphetamine, were found to be significant positive predictors of road rage behaviour. These psychoactive substances predicted road rage behaviour as follow: alcohol significantly (and positively) predicted road rage behavior ($t = 9.69$, $p < 0.001$); similarly, cocaine ($t = 2.59$, $p< 0.01$) and amphetamine ($t = 2.22$, $p < 0.05$) significantly and positively predicted road rage behaviour. The other three, namely: cannabis, tobacco, and heroin, were not significant predictors ($p > 0.05$) of road rage behaviour. However, all the psychoactive substances combined to explain 52% of the variance on road rage behaviour.

In summary, results show that alcohol is the most prevalent psychoactive substance that is frequently used by commercial drivers in South-Eastern Nigeria. Alcohol is closely followed by the use of cannabis and amphetamine, then cocaine; tobacco and heroin were the least used psychoactive substances reported by the commercial drivers. On the specification of the relationship between psychoactive substances use, alcohol showed a

strong positive association with road rage behaviour, while cannabis tobacco, cocaine, heroin, and amphetamine were all moderately correlated with road rage behaviour. Finally, the results of the simple hierarchical multiple regressions showed that alcohol, cocaine and amphetamine significantly and positively predicted road rage behaviour, but cannabis, tobacco and heroin did not.

DISCUSSION

This study examined two objectives. First, was to describe the prevalence of psychoactive substances, namely: alcohol, cannabis, tobacco, cocaine, heroin, and amphetamine, among a sample of commercial drivers in Enugu, South-Eastern Nigeria. Descriptive statistics revealed that alcohol was the most prevalently used substance among commercial drivers in the region. This is consistent with the report by Van Heerden et al (2009) that alcohol is the mostly widely used drug in Africa. This is especially true for people in Enugu; one of the biggest brewery plants in Nigeria is located at 9th mile corner in Enugu and this makes availability and excessive use easy. Other psychoactive substances like cannabis, tobacco, cocaine, and so on, are not so widely used as alcohol, but they have been used to some extent. Converging evidence in literature (e.g., Abiodun, et al., 1994; Walsh, et al., 2004) showed that communities should be worried about the use of psychoactive substances by vehicle drivers, because the psychoactive substances pose safety risks to road users.

The second objective was to investigate whether those psychoactive substances would predict road rage behaviour. The result on this objective indicated that alcohol, cocaine, and amphetamine predicted road rage behaviour. In other words, driving under the influence of these three substances is related to road rage behaviour. This finding partially supports the hypothesis that psychoactive substances would predict road rage behaviour. The finding is somewhat consistent with previous related studies (Butters, et al. 2005; Fierro, et al. 2010; Mann, et al. 2004), which consistently reported that substances and road rage are associated. However, that cannabis, tobacco, and heroin failed to predict road rage behaviour in this study is difficult to explain, because most psychoactive substances, including these three, are generally known to predisposes a driver to excessive speeding, reckless driving, and impatience, which are all associated with perpetration of serious road rage behaviour, as well as experiencing road rage victimization (Gjerde, Normann, Christophersen, Samuelsen, Morland, 2011). The moderately positive correlation that cannabis, tobacco and heroin shared with road rage behaviour in this study makes it more plausible to argue that driving under the influence of any of those psychoactive substances would be associated with road rage behaviour. This conclusion can be explained on the grounds that since psychoactive substances generally produce a change in conscious experience by altering brain's normal activity, they would likely disrupt normal daily activity, such as driving. Commercial drivers do not use psychoactive substances for medical reasons; rather they use them for increased alertness, to experience pleasure, and to mask symptoms of fatigue, which allow them to go beyond normal level of performance. Drivers under the influence of psychoactive substance usually see

driving as a contest or as a thrill, and drivers who view driving as an opportunity for thrill-seeking usually drive recklessly and in style. Such a behaviour has been found to correlate with aggressive driving (Krashe & Fenske, 2002). The thrill-seeking drivers often engage in potentially rapidly escalating conflict with other drivers; they drive aggressively, which pit them with other drivers, and which in turn feeds a tendency to react in a more aggressive manner (Forward, 2004).

Limitations and suggestion for future research

Although the explanatory power of correlational research is often enhanced by using a complex correlational procedure like the MRC, many of the assumptions underlying such correlational study are questionable (Rogosa, 1980). This implies that casual statement made on the basis of correlational evidence is suspect. The researchers therefore propose that future research in road traffic studies in Nigeria should employ experimental design, which would present results that researchers can accept with greater confidence.

Conclusion and recommendations

Identifying factors which are likely to engender unruly behaviours on the road is a major step towards reducing harmful outcomes associated with road rage behaviour. The present study was designed to meet this goal, its major research question is: would psychoactive substances predict road rage behaviour? Results showed the answer to be in the affirmative, psychoactive substance use are indeed possible risk factors for road rage behaviour (Butters, et al. 2006). The motor parks are frequently safe heavens for the distribution and consumption of illicit and licit psychoactive substances, and these accounts for most of the road rage incidents or its predictable consequences – violence, injury, and traffic accidents. There is urgent need therefore to put up effective policies and strategies that would help clean up motor parks of psychoactive substances. Road safety matters in Nigeria have often been treated with disregard and a tendency to bear the loss, instead of taking preventive measures. This need to change; psychologists and allied professionals should join hands with government agencies, such as the Federal Road Safety Corps (FRSC) to organize general driver education to teach drivers the dangers or related harm in the use of psychoactive substances, especially without a doctor's prescription. More importantly, it is the responsibility of government to institute effective regulations to the extent that on no account should banned substances finds their way to the motor parks. Also, substances not banned should attract more taxation in motor parks to discourage excessive use.

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