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Psycho-demographic factors as determinants of perceived accident vulnerability among commercial motorcyclists in two Nigerian cities

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This study investigated the influence of psychological and socio-demographic factors on perceived vulnerability to road accidents (VTRA) among commercial motorcyclists. The cross-sectional survey included 292 participants following multi-stage sampling. A 65-item questionnaire was used for data collection. Analysis included ANOVA, regression, t-test, and descriptive statistics. Results showed that aged commercial motorcyclists operating in Ibadan with poor knowledge of road signs, who also rarely use psychoactive substances (n=25, =18.0), as well as aged motorcyclists operating in Ibadan with poor knowledge of road signs, who rarely use substances (n=21, =18.0) reported the highest level of perception of VTRA. Substance use pattern (F (292) = 51.25, P < 0.01), personality (F (292) = 4.70, P < 0.001), and a combination of substance use pattern, personality, location, and road signs knowledge (F (292) = 6.94, P < 0.01) significantly influenced perceived accident vulnerability among participants. Experience in riding commercial motorcycles (t (292) = 1.299, df=289, p < .05), and location/city (n=292, t= 1.688, p < .05) also significantly predicted perception of VTRA (t (292) = 1.299, p < .05). This highlights the importance of substance use, personality factors (openness and agreeableness), and experience as factors critical to the understanding of perception of VTRA, suggesting the need for strengthening anti-drug campaign, as well as psychological/personality testing in reducing road traffic accidents involving commercial motorcyclists.

Key words: Psycho-demographic factors, motorcyclists, perception, vulnerability, road traffic accidents.

Introduction

One of the consequences of uncontrolled population growth and urbanisation is pressure on social and transportation facilities (Tutorvista.com, 2010). In many societies, the consequent traffic congestion and need to arrive at destinations promptly often compel the choice of unconventional mode of transportation such as two-wheel commercial motorcycles (Justice, 2004, Odeleye, 2006). Even though transportation by any means could be risk laden; the dangers inherent in commuting using commercial motorcycles are often greater (Tutorvista.com, 2010).

In Nigeria, reports of commercial motorcycle operators' flagrant flouting of traffic regulations carrying of three or more passengers and other aberrant practices have been associated with fatal

road traffic accidents (Orivri, 2009). Based on a global review of literature, Walker (2004) earlier observed that vulnerable road users are usually not aware of their own vulnerability, and so do not usually act appropriately to protect themselves. This study investigates the influence of psychological and socio-demographic factors on perceived accident vulnerability among commercial motorcyclists.

No fewer than 952 persons were admitted at various medical centres across Oyo State, Nigeria particularly in January 2010 over various injuries sustained in motorcycle accidents within the state (Mende, 2010). Out of the number, 91 had head injuries, 251 sustained various types of leg fractures, while 177 had their hands broken (Jegade, 2010). In



Abia, a South East Nigeria state, at least 1,300 people were killed in road traffic accidents involving commercial motorcycles between June and December 2008. According to Federal Road Safety Commission (FRSC) officials, Abia ranks among the states in Nigeria with the highest motorcycle accident figures (Orivri, 2009).

Many times, accident scenes involving two-wheel motorcycles could be gory sites. For instance, on July 3, 2010 two people were crushed to death with their brain and intestines spilled on the highway while a trailer had brake failure crushing the duo riding on a commercial motorcycle. Reports had it that the trailer driver screamed to alert other road users of the brake failure, but the commercial motorcyclist never heeded the warning, probably thinking he could maneuver through without a scratch (Abegunrin, 2010).

Lagos city, the commercial capital of Nigeria is often characterized by chaotic traffic. This encourages commuters to adopt the commercial motorcycle option. However, the incidence of accidents involving two-wheel commercial motorcycle is worrisome. According to the State Commissioner of Police, though the statistics of accidents in the first five months of 2010 is put at 523 for January; 376 for February; 481 for March; 619 for April and 556 for May, commercial motorcycle accidents accounted for 357 representing 68.1 per cent. A further breakdown of the data revealed that, there were 46 very fatal cases in May, 195 other cases with injuries, while 149 minor accidents were recorded. He attributed the causes of such accidents to poor attitudinal disposition to the use of the highway and failure to comply with the laws regulating human and vehicular conduct on the road. He also listed corrupt practices among the law enforcement agents in the state, drunk driving, overloading and over-speeding as reasons for such accidents (PMNews, 2010).

Crash helmets, according to road safety experts,

are designed specifically to protect the head from sustaining fatal injuries when an accident occurs. But no sooner had the enforcement of the regulation come into force that it attracted criticisms from a large section of commercial motorcycle operators, resulting in clashes with FRSC officials (FRSC, 2002; Ogbe, 2010). The reckless attitude of motorcycle riders in the state and their penchant for breaking traffic rules at will, especially failure to use the crash helmet accounted for 1276 arrests in January, 2001. He lamented that despite this many commercial motorcyclists have pseudo-infallibility (Jegade, 2010).

A review of the study done by Diamantopoulou, Skalova, and Cameron (1996) in Victoria, USA reveals that although motorcycles are 3% of all vehicles registered, motorcycle riders and pillion passengers accounted for 14 per cent of road fatalities in 2002, compared to 11 per cent in 2000. However, on Melbourne's arterial roads, for a range of reasons, riders are 30 times more likely than car drivers to be involved in serious casualty or fatal crashes.

An individual's perception of something is his or her impression or understanding of the concept, based on observation, knowledge or thought (Encarta Dictionary, 2008). It reflects an individual's belief about the likelihood of an occurrence (Weinstein & Nicolich, 1993). Considering these dangers, the question is, do commercial motor-cycle riders perceive any form of vulnerability to road accident while riding on motorcycles? Furthermore, what are the psychological and sociological factors that can predict their perceived vulnerability?

Although Lancaster and Ward (2002), as well as Horswill and Helman, (2003) earlier revealed the possibility of a variety of factors to predict perception of vulnerability, most previous research efforts have focused on the criminal, law

enforcement, and medical aspects of accident vulnerability in many parts of the world. As a result, knowledge of the psychological and demographic factors predicting perception of accident vulnerability from the perspectives of stakeholder remains poorly understood.

Some studies suggest that personality characteristics such as aggression and anger make some individuals more prone to behaviors such as "road rage" across situations than others (Arnett, Offer & Fine, 1997; Bushman, 1996; Dieffenbach et al., 2003). Also a large body of literature demonstrates that aggressive driving is associated with an increased risk of traffic accidents (Furnham & Saipe, 1993; Lajunen & Parker, 2001). The influence the Big Five personality characteristics, deviant motorcycling and perceived accident vulnerability remains largely unknown.

Another variable associated with human perception is psychoactive substances. The use of many prescription and illicit drugs affect the nervous system (Ramaekers, 1998). Several classes of drugs including amphetamines, anti-histamines, and cannabis among others have been shown to impair driving skills in laboratory tests and driver-stimulation studies (O'Hanlon & Volkerts, 1996; Robbe, 1998; Smiley, 1986). This in turn could distort proper cognitive functioning, thinking, as well as judgement of vulnerability to risk, hence considered to be an increasing cause of traffic accidents worldwide (Morland, 2000).

There is evidence that motorcyclists do indeed travel faster than car drivers (Horswill & Helman, 2003) and that younger people travel faster than older road users (Stradling, Meadows, & Beatty, 2004), regardless of their experience (Lajunen, & Summala, 1997). A study of novice versus experienced young drivers indicated that, when novice drivers feel they are in a competitive environment, they make rasher speed choices than

their more experienced counterparts (Delhomme & Meyer, 1997). The effect of these variables on perception of accident vulnerability is worth examining. The purpose of this study is therefore to investigate the influence of psychological and demographic factors on commercial motorcycle riders' perception of accident vulnerability.

Research Questions: The study was designed to answer the following questions:

- i. Do substance use pattern, knowledge of road signs, age and location have any independent and interaction effect on perceived accident vulnerability among commercial motorcyclists?
- ii. Will substance use pattern, personality, location, and knowledge of road signs have significant main and interaction effect on perceived vulnerability among commercial motorcyclists?
- iii. Will differences in the levels of age, commercial motorcycling experience, and location lead to differences in the perception of road accident vulnerability?
- iv. Is there any significant difference among participants with high and low commercial motorcycling experience in perception of accident vulnerability?
- v. Is there any significant difference in perceived accident vulnerability between Ibadan and Lagos, Nigeria commercial motorcyclists?

Method

Design: The explorative survey adopted the cross-sectional design. The independent variables of the study are; psychological (i.e. personality, substance use pattern), and demographic (age, location, experience in riding motorcycle, and knowledge of road signs). Each of the independent variables exists at two levels yielding a 2 X 2 X 2 X 2 factorial matrix. The dependent variable of the study is perceived vulnerability to road accident.



Setting: The study took place in two South West Nigerian cities i.e. Lagos and Ibadan. Lagos is a metropolitan city and former capital of Nigeria. Going by the 2006 census, Lagos has a population of about 15.5 million with inhabitants reflecting a miniature of the cultural and economic diversities of Nigeria (Wikipedia, 2010a). Ibadan, the capital city of Oyo state, is the third largest Nigeria city with a population of 5.6 million in 2006 (Wikipedia, 2010b). Commercial motorcycling is a popular mode of privately-owned public transportation in the two cities.

Participants: Registered 2-wheel commercial motorcycle riders were drawn from the Association of Commercial Motorcycle Riders Association in Nigeria (ACOMORAN) in various zones in the two cities. Following a review of the purpose, risks, benefits and ethical protection of potential participants in the study, the researcher obtained permission from the Department of Psychology, University of Ibadan, Ibadan, Nigeria to conduct the study. Information about the research was discussed with officials of the ACOMORAN in the selected locations in Lagos and Ibadan. Each of the officers ascertained that the research is of minimal psychological, social, or physical harm (if any at all); they thereafter gave permission to conduct the study.

Participants were selected following multi-stage sampling. The list of the zonal ACOMORAN branches/clusters in Lagos was obtained from where 5 zones were selected through balloting. Through this the clusters of Epe, Mushin, Badagry, Obalende and Ojo branches were randomly selected. From the 11 local governments in Ibadan, 5 local governments (Akinyele, Ibadan South West, Ona-Ara, Ibadan North and Ibadan South East) were randomly picked. Prospective participants in each of the areas were purposively selected, but

were required to fulfil an inclusion-exclusion criteria including: 1. Being a currently registered ACOMORAN member. 2. English literate and 3. Autonomous desire (informed consent) to participate.

During the participants' queue up for passengers at their respective stations, the researcher accidentally selected prospective participants. Two hundred and twenty questionnaires were distributed in Lagos, while 200 were distributed in Ibadan, thus 420 questionnaires were administered in all. However, only 292 responses were correctly filled and returned, representing 69.5 % response rate.

All the respondents were males with a mean age of ($N=292$, $\bar{x}=37.5$ $SD=15.7$). Of these, 130 participants representing (44.5%) were young while 162 participants representing (55.5%) were old. With regards to their marital status; 102 (34.9%) were single, 186 (63.7%) were married, and 4 (1.4%) were divorced. Concerning their ethnic background, 182 (62.3%) were Yorubas, 69 (23.6%) respondents were Igbos, 16 (5.5%) were Hausas, and 25 (8.6%) respondents were from other tribes. As regards ever had road traffic accident while riding two-wheel motorcycle; 186 (63.7%) respondents have been involved at one point or the other with or without a passenger, 106 (36.3%) reported to have never been involved in a road accident. About correct and consistent use of helmet; 243 (83.2%) respondents use helmets, while 49 (16.8%) respondents testified not to use helmet while riding. Concerning regular substance use (i.e. beer, marijuana, hot liquors, cigarettes, and kolanut / bitter kola); 129 (44.2%) respondents take only one substance, 79 (27.1%) respondents don't take any substance at all, 63 (21.6%) take two of the substances, 18 (6.2%) take 3 of the substances, 2 (0.7%) take 4 of the substances mentioned and 1 (0.3%) take all the five substances listed.

Instruments: A 65 item self report questionnaire

was used. Section A of the questionnaire with 17 items tapped information on respondents' socio-demographic characteristics such as; age, and substance use etc.

Section B with 10 items assessed personality traits (Extroversion, Neuroticism, Agreeableness, Openness to experience and Conscientiousness) of the participants using the 10-item short version of the Big Five Inventory (BFI) developed by Rammstedt & Oliver, (2007). The BFI has a 5-point Likert response format ranging from "Strongly Agree"=5 to "Strongly Disagree" A Cronbach alpha coefficient of .86 was reported. In the present study, an item-total correlation coefficient ranging between .40 and .60 were obtained across the various sub-scales of the instruments. The 9-item Section C which measured substance use pattern was developed by Knight, Wechsler, Kuo, Seibring, Weitzman, and Schuckit, (1999). The items have a Yes and No response format. An alpha coefficient of 0.85, Guttman split half of .75 and reliability of .75 were obtained during revalidation. The norm was =2.8. A score above the mean is interpreted as substance abuser, while a below mean score interprets as rare substance abuser.

Section D was the perceived road accident vulnerability scale (PRAV) developed for the study. Fifteen items were generated through two focus group discussions (FGD), literature review and suggestion of experts. To achieve these, the first FGD was conducted among 8 ACOMORAN members in Abeokuta, a nearby city. The second FGD took place in Ago-Iwoye with 10 ACOMORAN members, assisted by a trained facilitator. Topics discussed included dangers inherent in commercial motorcycling and perception of road traffic accidents, especially by commercial motorcyclists. The outcome of the FGDs were transcribed and analysed. Themes and concepts gathered from related literature (e.g.

Morland, 2000) were added to the items obtained from the FGDs and used in developing a 15-item scale. An initial content analysis by experts from the Transport Department of the Olabisi Onabanjo University, Ago-Iwoye, and three lecturers from the Department of Psychology, University of Ibadan, Ibadan led to deletion of 3 items. After minor wording changes, each of the remaining 12 items were placed on a five-point response scale with responses ranging between strongly agree to strongly disagree.

Psychometric analysis of the items included item analysis, confirmatory principal component analysis (PCA), and internal consistency analysis using Cronbach alpha. The reliability of the test items were found to be within the range of .35 and .60. It also had split half reliability of .50 and .45 for the two halves of the test items. The 12 items were subjected to PCA with iterations, mean substitution of missing values, varimax rotation, and Kaiser normalisation. Application of Kaiser's criterion of using all un-rotated factors with Eigen values >.30 resulted in 3 components accounting for 34.4% variance. The rotated component matrix was parsimonious and interpretable with all the 12 items loading on one of the 3 components. The 3 components accounted for 46.1% of initially extracted common variance. Component 1 had Eigen value of 7.1 with 14.7% variance, component 2 had Eigen value of 5.6 with additional 12.5% variance, and component 3 had Eigen value of 9.4, and added 18.9% variance. Component 1 had a Cronbach alpha of .88, component 2 had .40, while component 3 had .95. The overall Cronbach alpha for the scale was 0.78. The mean score on the instrument was =35.75. An individual's score higher than the mean is interpreted as high level of perception of vulnerability to road traffic accidents while riding commercial motorcycles, and vice versa.



Section E of the questionnaire contained the Knowledge of Road Signs (KRS) scale developed during the study. Initial 23 items were generated by adapting the contents of the FRSC Highway Code (FRSC, 2002). These were presented to experts in Transportation Science (as described earlier) and two officials of the FRSC, Moniya, Ibadan for review, as well as for face and content validation. It had Yes or No responses. Three items were unanimously deleted, leaving 20 items. To determine the psychometric properties and further validate the scale, item analysis, confirmatory principal component analysis (PCA), and tests of internal consistency were done. Three of the 20 items were dropped for not meeting the minimum of .30 correlation set for the scale. No redundant items were found during the inter item correlation of the remaining 17 items. Correlation ranged between .34 and .60. The split half was .44 and .55 in the two halves respectively. Application of Kaiser's criterion of using all un-rotated factors with Eigen $>.30$ resulted in 7 components accounting for 53.2% variance. Examination of the rotated component matrix revealed a parsimonious and interpretable solution. All the 17 items loaded $>.30$ on one of the 7 components. They also recorded Eigen values ranging between 1.0 and 3.2. The values of loading of the 17 items ranged between .34 and .65, with Cronbach alpha between .31 and .72. The overall Cronbach alpha was 0.68. The norm of the scale is (N=292, =13.89, S.D.=2.39). A high score means high knowledge of road traffic signs, and vice versa.

Data Collection: Following permissions by the ACOMORAN officials and prospective participants as described, prospective participants were reassured that the study was not a ploy to expose them to any form of harm. The questionnaires were given to consented motorcyclists early in the day for collection within

24 hours in the same location. After collection, the items were coded, entered into a computer and analysed with version 11.0 of the SPSS software. The group mean score was used in dichotomising each of the variables to two levels in keeping with the $2 \times 2 \times 2 \times 2$ factorial matrix.

Descriptive and inferential statistics were calculated while research questions were explored with the results presented as follows.

Results

In order to provide answers to the research questions, a combination of both descriptive and inferential statistics were conducted. The $2 \times 2 \times 2 \times 2$ factorial combination of the levels of age, The $2 \times 2 \times 2 \times 2$ factorial combination of the levels of age, location, knowledge of road signs, and substance use pattern were compared against the criterion, perceived accident vulnerability. The results are presented in the Tables.

Table 1: Summary of $2 \times 2 \times 2 \times 2$ factorial matrix showing combinations, group mean, standard deviation and ranking on perceived accident vulnerability

Table 1 revealed that old commercial motorcyclists operating in Ibadan, with poor knowledge of road signs, who also abuse the use of psychoactive substances had the highest mean (n=25, =18.0, SD=4.0) on perceived vulnerability to road accidents. Similarly, old motorcyclists operating in Ibadan with poor knowledge of road signs, who rarely use substances (n=21, =18.0, SD=4.0) also recorded the highest mean on perceived vulnerability to road accident. This means that individuals in these two factorial combinations/groups have the greatest tendency to be aware of the possibility of being involved in accidents while engaged in commercial motorcycling. Young motorcyclists from Ibadan

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with good knowledge of road signs who also abuse psychoactive substances (n=9, \bar{x} =11.1, SD=3.3) ranked 16th, meaning that individuals in this group have the least awareness that they could have road traffic accidents while engaged in commercial motorcycling.

Key: Y = Young, O= Old, I = Ibadan, L=Lagos, G=Good Knowledge of Road Signs, P=Poor Knowledge of Road Signs, R = Rare User of

Psychoactive Substances, A= Abuser of Psychoactive Substances

In order to determine whether substance use pattern, personality factors, location/city, and road sign knowledge will have significant main and interaction effects on perceived accident vulnerability (PAV), a 2 X 2 X 2 X 2 matrix ANOVA was conducted with the results as follows:

Table 1: Showing the combined influence of substance use pattern, knowledge of road signs, and age on Perceived accident vulnerability among motorcyclists.

Age	Location	Knowledge of road signs	Substance Use pattern	Variable interaction	Score on Vulnerability			Perceived Ranking
					N	\bar{x}	SD	
Young		Poor	Rare User	YIPR	14	15.0	5.1	5 th
			Abuser	YIPA	15	16.0	5.0	3 rd
	Ibadan	Good	Rare User	YIGR	17	13.5	4.9	8 th
			Abuser	YIGA	9	11.1	3.3	16 th
	Lagos	Poor	Rare User	YLPR	13	13.0	4.8	12 th
			Abuser	YLPA	14	13.5	4.9	8 th
Good		Rare User	YLGR	11	12.7	4.6	13 th	
		Abuser	YLGA	37	13.7	4.6	7 th	
Old		Poor	Rare User	OIPR	21	18.0	4.0	1 st
			Abuser	OIPA	25	18.0	4.0	1 st
	Ibadan	Good	Rare User	OIGR	16	15.0	5.1	5 th
			Abuser	OIGA	17	15.2	5.1	4 th
	Lagos	Poor	Rare User	OLPR	12	13.3	4.9	10 th
			Abuser	OLPA	12	11.6	3.8	15 th
		Good	Rare User	OLGR	22	13.1	4.7	11 th
			Abuser	OLGA	37	12.1	4.1	14 th
Total					292			

Key: O= Old age, Y= Young age, I=Ibadan, L= Lagos, R=Rare Substance user, A=Abuser of substances, P=Poor knowledge of road signs, G=Good knowledge of road signs.



Table 2: Summary of 2 X 2 X 2 X 2 matrix ANOVA testing the independent and interaction effects of substance use pattern, and personality, location, and road sign knowledge on perceived accident vulnerability (PAV).

Source	SS	Df	Ms	F	P
Main effects	113501.110	4	4500.37	20.96	<.001
Substance use pattern (A)	11002.54	1	11002.54	51.25	<.01
Personality (B)	1008.36	1	1008.36	4.70	<.001
Location (C)	18.52	1	18.52	.09	N.S
Road sign knowledge (D)	256.13	1	256.13	1.19	N.S
A x B x C x D	1490.22	1	1490.22	6.94	<.01
Explained	14427.18	5	2061.03		
Error (Within)	255746.16	287	213.12		
Total	272068.88	292	225.41		

Table 2 reveals that substance use pattern $F(292) = 51.25, P < 0.01$, personality $F(292) = 4.70, P < 0.001$, and a combination of substance use pattern, personality, location, and road signs knowledge ($F(292) = 6.94, P < 0.01$) significantly influenced perceived accident vulnerability among participants.

In order to determine the influence of substance use pattern, personality factors, and knowledge of road signs in predicting perceived accident vulnerability (PAV), regressions analysis was carried out as presented in Table 3.

Table 3: Stepwise regression Table showing the prediction of PAV by substance use pattern, personality factors, and knowledge of road signs

Predictor variables	Beta	SEB	R ²	R ² CUM	T	P	F	P
Substance use pattern	-3.48	-0.35	25.36	25.36	1.41	<.05		
Road signs Knowledge	-2.01	-2.01	01.14	26.50	1.47	>.05		
Openness	3.01	-0.1	13.65	40.50	7.49	<.05		
Conscientiousness	-1.53	0.24	-0.03	40.43	1.62	>.05		
Extraversion	1.07	0.32	0.04	40.39	5.01	>.05	5.46	<.05
Agreeableness	2.32	-0.05	16.24	56.63	1.58	<.05		
Neuroticism	1.34	0.27	-0.62	56.01	4.05	>.05		

Table 3 reveals that substance use, personality factors, and road signs' knowledge jointly predicted PAV ($R^2 = .56, F(3, 289) = 5.46; P < .05$) accounting for 56% variance in perceived vulnerability to road traffic accidents. Substance use pattern ($R^2 = .25, F(1, 291) = 1.41, p < .05$), openness ($R^2 = 13.65, F(1, 291) = 7.49, p < .05$), and agreeableness ($R^2 = 2.32, F$

(1, 291) = 1.58, $p < .05$) also predicted PAV. However, road signs knowledge ($R^2 = 1.14, F(1, 291) = 1.47, p > .05$), conscientiousness ($R^2 = 0.0325, F(1, 291) = 1.62, p > .05$), extraversion ($R^2 = 1.07, F(1, 291) = 5.01, p > .05$), and neuroticism ($R^2 = -.062, F(1, 291) = 4.01, p > .05$) were not significant predictors of PAV.

In investigating whether there would be differences in levels of age, motorcycling experience, and location/city on PAV, t-tests were computed and the results are presented as follows:

Table 4: Summary of independent t-test showing means and standard deviation of perceived road accident vulnerability among young and old motorcyclists

Variable	N	\bar{X}	SD	DF	T	P
Age						
Young	129	35.66	8.77			
Old	162	35.86	7.01	289	-0.222	>.05
Motorcycling Experience						
Less experienced	167	35.24	6.97			
More experienced	125	36.44	8.82	290	-1.299	< .05
Location / City						
Lagos	158	35.04	8.35			
Ibadan	134	36.59	7.09	290	-1.69	<.05

The above Table reveals that there was no significant difference between old and young commercial motorcyclists on perception of vulnerability to road accidents ($t(292) = -0.222, df = 289, P > .05$). It also reveals that there was a significant difference between participants that were more experienced, and those who are less experienced in commercial motorcycling in perception of road accident vulnerability ($t(292) = 1.299, p < .05$). Participants with more experience on the job actually reported a greater level of perception of vulnerability to road traffic accident. In the same vein, location significantly influenced the perception of vulnerability to road accidents among 2-wheel commercial riders ($t(292) = 1.688, p < .05$). It showed that commercial motorcyclists in Ibadan perceived higher vulnerability to road accident ($n=134, \bar{X}=36.59, S.D= 7.09$) than Lagos commercial motorcyclists ($n=158, \bar{X}=35.04, S.D.=8.35$).

Discussion

This study revealed that old commercial motorcyclists operating in Ibadan, with poor knowl-

edge of road signs, who also rarely use psychoactive substances, as well as old motorcyclists operating in Ibadan with poor knowledge of road signs, who rarely use substances recorded the highest level of perception of VTRA. Young motorcyclists from Ibadan with good knowledge of road signs who also abuse psychoactive substances recorded the lowest level of perceived VTRA. Further, substance use and personality significantly predicted perceived VTRA; while knowledge of road signs did not. The three variables significantly jointly predicted perceived VTRA. Age did not yield any significant difference in perceived VTRA. Experience in riding commercial motorcycles, and location/city yielded a significant difference in perception of VTRA. These findings show the importance of personality (especially openness and agreeableness), substance use pattern, motorcycling experience, and location in predicting perception of VTRA.

The finding that substance use pattern had significant influence on perceived vulnerability to road traffic accident is in agreement with other studies (Robbe, 1998; Morland, 2000). One feature



of motor parks and commercial motorcycle loading stations in Nigeria is uncontrolled accessibility to psychoactive active substances, most of which are readily affordable e.g. local liquors, spirits, kolanut etc. These substances affect the nervous system (Ramaekers, 1998) and have been shown to impair driving skills in laboratory tests and driver-stimulation studies by distorting proper cognitive functioning, thinking, as well as judgement of vulnerability to risk. In another dimension, most commercial motorcyclists in Nigeria belong to low socio-economic status. There is high probability that people with low socio-economic status might have less attention to primary health prevention, risky behaviours, and substance misuse among others. It could therefore be explained that those who feel that there is no danger in abusing substances would most likely see nothing risky in riding commercial motorcycles as suggested by Horswill and Helman, (2003).

This study reveals that a combination of characteristics such as older age, rare use of psychoactive substances, and location of commercial motorcycling in predicting perception of vulnerability to road accidents among riders of commercial motorcycles. However age is only significant in combination with other related psycho-demographic factors in predicting perceived vulnerability to road accidents among commercial motorcyclists in the setting.

It is important to consider the social characteristics of the research setting that might provide explanations for these findings. In Nigeria, a greater percentage of people live on less than one dollar per day. The youth population is almost a third of the country's population. There is gross unemployment amidst poor social welfare programme, leaving a large pool of young people with very weak socio-economic characteristics. Further, many commercial motorcyclists are school dropouts, with little knowledge about road traffic

regulations. Many unemployed members of the society adopt commercial motorcycling as a means of economic survival; often not because such people are mentally or technically prepared for it. This often brings one form of stress or the other, with potential psychological, behavioural and physical health challenges.

Peculiar demands of riding a motorcycle require a greater level of bio-psychosocial skills for safe motorcycling than driving a car. This is exemplified in balancing, hand, eye and leg coordination. Contrary to the safety features available in four-wheel automobiles, rider and pillion do not enjoy protective features such as safety belts, airbags, and protection against impacts with other vehicles, the ground and roadside objects, and harsh weather when riding. Possibility of motorists inadvertently crashing into motorcyclists is also high. Therefore, riders can sustain injuries in minor crashes. These place a higher demand and burden on motorcyclists, making the need for perception of road accidents more critical. The problem however arises when at-risk people fail to perceive their vulnerability.

This study has further confirmed the relevance of personality in determining a commercial motorcyclist's perceived vulnerability to road traffic accidents in line with the opinion of Dieffenbach et al., (2003) as well as Lajunen and Parker, (2001). An individual's personality characteristics such as aggression and anger make some individuals more prone than others to behaviors such as "road rage" across situations, while aggressive driving is associated with an increased risk of traffic accidents (Furnham & Saïpe, 1993; Lajunen & Parker, 2001). It could be premised on the notion that an individual's personality is the totality of his/her attitudes, interests, behavioural patterns, emotional responses, social roles, and other individual traits that endure over long periods of time. This implies that an individual's make up (especially openness and agreeableness), and traits could influence his

disposition, behaviour and practices; and by extension, vulnerability to road traffic accidents.

The significant influence of location (Lagos or Ibadan) on perceived accident vulnerability in this study could be due to the variation in the social characteristics of the two cities. Compared to Ibadan, Lagos is three times more populated, cosmopolitan, and heterogenous than Ibadan. In other words, Lagos, being a former national capital is home to almost all other tribes and cultures in Nigeria, even though situated in the south west. As a result, it is more likely that there would be differences in the values, attitudes, and other characteristics in the two settings.

In conclusion, the uncontrolled surge in human population in Nigeria is correspondingly leading to failure to meet the transportation and social needs of the populace. The perennial traffic congestion in many cities; amidst growing pressures to arrive early at destinations is making the adoption of commercial motorcycles more popular. However, this mode of intra-city transportation is highly risk-laden as reported in many local and foreign literatures (Lajunen & Parker, 2001; Odeleye, 2006). Worse still, some psychological and socio-demographic factors have been implicated in commercial motorcyclists' perception of accident vulnerability. If an individual fails to perceive the risks inherent in any behaviour or attitude, it is very unlikely that the individual will adopt preventive measures.

Therefore, the need to create awareness about possible risks in commercial motorcycling among Nigerians is critical. This is necessary to increase risk perception and attitudinal change in motorcycling. A psycho-educational approach that combines information dissemination with cognitive restructuring will be appropriate in mental appreciation of vulnerability to road traffic accidents as well as accident prevention techniques. Personality appraisal of commercial motorcyclists

by FRSC officials are required to identify and help individuals with tendencies for pseudo-infallibility. FRSC officials should be further empowered to enforce the use of helmets and other road traffic regulations. Governments at all levels should provide more social amenities such as safe and affordable means of public transportation, especially for intra-city routes. Adequate attention to these by all stakeholders will go a long way in making intra-city transportation through commercial motorcycles safer than what it is today.

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