



Impulsivity and Risk-Taking Propensity as Predictors of Accident-Proneess among Long Distance Commercial Drivers

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ABSTRACT

The need to improve traffic safety requires identification of personality traits that increase the odds of involvement in road traffic accidents. This study investigated impulsivity and risk-taking propensity as predictors of accident-proneess among long distance commercial drivers in two local government areas in Oyo State, Nigeria. The study adopted cross-sectional survey design using three instruments: Barratt Impulsive Scale, General Risk Propensity Scale, and Accident-Proneess Scale to collect data from 231 long distance commercial drivers. Data were analyzed using T-test for independent sample and standard multiple regressions analysis. The result indicated that impulsivity and risk-taking propensity jointly predicted accident-proneess among long distance commercial drivers [$F(2, 299) = 88.82, R^2 = .44, p < .05$]. Also, impulsivity independently predicted accident-proneess ($\beta = .66, t = 13.20, p < .05$). However, risk-taking propensity did not independently predict accident-proneess ($\beta = .07, t = 1.46, p > .05$). The study concluded that impulsivity and risk-taking propensity are excellence predictors of accident-proneess among long distance commercial drivers. It is recommended that screening tests on impulsivity and risk-taking propensity be regularly administered to long distance commercial drivers to ensure safer journey that reduces road accidents.

INTRODUCTION

The term ‘accident-proneness’ was coined by psychological researchers in 1926 to mean a situation whereby certain individuals are always more likely than others to sustain accidents, even though exposed to equal risk (Froggatt & Smiley, 1964). Simply stated, it means that some people are more likely to suffer from or cause accidents than other people. The accident-prone concept means that people who have accidents at one time may have accidents over extended periods of time (Wahlberg & Dorn, 2019). For example, if 10% of the population have accidents during, say, a two-year period, during the next two years, that 10% of the population may include the same individuals (Wahlberg & Dorn, 2019).

Accident is unplanned or unforeseen injurious events. Individuals who are prone to make decisions which lead to injurious consequences, or prone to make decisions which lead to consequences not planned or foreseen, can be assumed to be accident-prone. On the other hand, individuals who are not prone to make decisions which lead to injurious consequences or lead to unplanned or unforeseen consequences are not accident-prone. Some studies have analyzed the effects of personality traits as predictors of accident-proneness among drivers (Elander & French, 1992; Lucidi et al., 2014; Moeller et al., 2001; Pearson et al., 2013). However, there are other studies that did not find personality traits as predictors of road traffic crashes (Ulleberg & Rundmo, 2003).

One personality trait considered in this study as likely predictor of accident-proneness is impulsivity which is defined as a tendency to react quickly and unexpectedly without thinking about the negative consequences of such a response or alternative reactions (Plutchik & van Praag, 1995; Moeller et al., 2001). According to Plutchik and van Praag (1995), impulsivity is the tendency to act on immediate urges either before the action, or despite consideration of negative consequences. In this study, impulsivity is taken as a rapid, spontaneous, excessive, and unplanned behaviour which affects a person’s daily activities including those engaged in long distance

driving. When applied to accident-proneness, impulsive driving involves a tendency to immediately satisfy drivers’ needs and to neglect the needs of other road users as well as overall traffic safety. Given that impulsivity implies a predisposition toward rapid, unplanned reactions to internal or external stimuli, it could, therefore, lead to unsafe behaviours such as not wearing seat belts, driving under the influence of alcohol, ignoring traffic signs and signals, risky and aggressive driving styles as well as increased accident-proneness (Bicaksiz & Ozkan, 2016; Constantinou et al., 2011). While impulsive behaviour is affected by fast decision-making and insufficient self-control, it is rather different from aggressive behaviour which includes the intention to harm the other persons. Individuals who often display impulsive behavioural tendencies in daily activities tend to react in similar manner even on the roadways (Pearson et al., 2013).

The second personality trait considered as predictor of accident-proneness in this study is risk-taking propensity which is defined as the degree to which an individual is willing to take chance with respect to risk of loss (Olapegba et al., 2021). Risk-taking propensity measures the willingness to take risks. It is the consistent patterns of risk taking or risk aversion that influence how risks are evaluated and what risks are deemed to be acceptable (de Haan et al., 2022). Therefore, risk-taking propensity in this study is the tendency of the long distance commercial drivers to either take or avoid risks while driving. Studies have implicated risk-taking propensity to accident-proneness and risky driving. For example, Hatfield et al. (2017) examined effects of perceived risk-taking on risky driving behaviour which could lead to road traffic accidents and found perceived risk-taking to have significantly predicted accident-proneness.

Statement of Problem

Injuries and deaths due to road traffic accidents have emerged as an important public health issue which needs to be tackled by state institutions, researchers and society in general. According to the World

Health Organization (WHO, 2021), about 1.3 million people die each year as a result of road traffic accidents globally. In Nigeria, the Federal Road Safety Corps (FRSC, 2021) reported 5,320 crashes and 2,471 deaths while 15,882 people were injured in the first six months in 2021 across the country.

Studies have shown that human behaviour is responsible for about 90-95% of the road traffic accidents (Hatfield et al., 2017). The first studies with a more scientific approach on accident-proneness were carried out in England in the 1920s. The studies investigated the relationship between accident-proneness, on one hand, age, experience, and education on the other. It was hypothesized that some individuals will have psychological predispositions toward accidents. The results showed that in the majority of the studies, individuals were directed towards accident-proneness (Wahlberg & Dorn, 2019). Based on the findings of these early studies, the next line of research was to determine those personality traits in individuals that make them accident prone. Personality traits including impulsivity (Pearson et al., 2013) and risk-taking propensity have been identified as possible predictors of accident-proneness among individuals that could include commercial drivers.

Impulsivity has been linked to many types of behaviours with direct impact on daily functioning including those involving long distance driving. Individuals who score higher on measures of impulsivity report higher levels of risky motorcycle driving behaviour, motor vehicle accidents (de Haan et al., 2022), and reckless driving (Bicaksiz & Ozkan, 2016).

Aside from engaging in more physical activities, those who score higher on measures of impulsivity engage in many deviant behaviours such as maladaptive cell phone use (Billieux et al., 2008) and social adjustment (Whiteside & Lynam, 2001). Also, their behaviour and thought patterns set them up for social and cognitive consequences. For example, individuals with high levels of reported impulsivity

have been linked to peers' rejection (de-Juan-Ripoll, 2021) and various types of cognitive distortions (Gagnon et al., 2013).

If there is a propensity to take risks, then there is propensity to make decisions which leads to injurious consequences. Individuals who are bold (risk-takers) meet with injurious consequences of their decisions more often than do cautious (non-risk takers) individuals. Consequently, individuals who are bold can be assumed to be accident-prone if they are also prone to making decisions which leads to unplanned or unforeseen consequences (de-Juan-Ripoll, 2021).

Accident-proneness poses a lot of harm to individuals who are accident prone in the transport system. It has led to series of highway accidents and loss of lives. In addition, it has been used by insurance companies as a reason to deny insurance benefits to so many individuals. In order to improve traffic safety, it is important that personality traits which increase the odds of being involved in accidents be identified and investigated with the aims of preventing their occurrence. Therefore, the aim of this study is to investigate impulsivity and risk-taking propensity as predictors of accident-proneness among long distance commercial drivers in Oyo State, Nigeria.

Research questions

1. Will impulsivity significantly predict accident-proneness among long distance commercial drivers?
2. Will risk-taking propensity significantly predict accident-proneness among long distance commercial drivers?
3. Will impulsivity and risk-taking propensity jointly predict accident-proneness among long distance commercial drivers?

Purpose of the Study

1. To examine whether impulsivity will significantly predict accident-proneness among long distance commercial drivers.
2. To establish whether risk-taking propensity will significantly predict accident-proneness among long distance commercial drivers.

3. To demonstrate whether impulsivity and risk-taking propensity will jointly predict accident-proneness among long distance commercial drivers.

The result of this study will shed light on impulsivity and risk-taking propensity as predictors of accident-proneness among long distance commercial drivers. Besides, the study will be relevant to managers in the transport businesses, road safety agencies, and the commercial drivers. Finally, the study will serve as a guide for traffic psychologists to design intervention studies to improve on road traffic management.

Theoretical Framework

The study utilized two theories: Risk Homeostasis Theory and Motivational Model of Driving Behaviour to investigate accident-proneness.

Risk Homeostasis Theory (RHT) This is the best-known motivational theory which accounts for a host of overall driver behaviour (Shinar, 2017). The central ‘driver’ (processor) in this theory is called ‘target risk’ which refers to the level of risk to individuals’ particular safety or anything else they value that would be accepted in order to gain benefits from a particular activity (Wilde, 2014). Target risk can either be relatively stable and long lasting that is related to cultural norms and values (e.g., economy, peer-group attitudes, level of education, age group, and gender) (Wilde, 2014). Or, it could be short-termed and occurred within an individual (e.g. specific purpose of trip or urgency to arrive on time, mood, fatigue) (Wilde, 2014). People tend to evaluate the risks they are taking presently and compared to the amount of risks they would like to accept (Wilde, 2014). Precisely, if the risk is lower than acceptable, drivers will change behaviour to be more dangerous; and if risk is evaluated as higher than acceptable, drivers will compensate risks with more cautious behaviour.

Motivational Theory of Driving Behaviour

This theory was proposed by Taylor (1994). According to this theory, driving is more than a

passive response to the traffic situation. It is the level of emotional tension or level of anxiety the driver wishes to tolerate that motivates driving behaviour. The driver is thought to adjust his level of risk taking while driving in order to keep his emotional responses at a constant level. Taylor (1994) based his hypothesis on a study of drivers who drove a car on three specific routes under varying conditions in a city while their galvanic skin response (GSR) was monitored. The GSR remained stable during the entire trips, even though the drivers changed their behaviour while driving.

Hypotheses

1. Long distance commercial drivers with high level of impulsivity will significantly report higher on accident-proneness than those with low level of impulsivity.
2. Long distance commercial drivers with high level of risk-taking propensity will significantly report higher on accident-proneness than those with low level risk-taking propensity.
3. Impulsivity and risk-taking propensity will jointly predict accident-proneness among long distance commercial drivers.

METHOD

Research design

A cross-sectional research design was adopted for the present study while data were collected using validated questionnaires on impulsivity, risk-taking propensity and accident-proneness.

Research setting

The study was carried out in six long distance motor parks: Iwo Road Bus Park, Sango Bus Park, Peace Mass Transit, Edo Line, Abia Line, and Calculus Transit located in Ibadan North and Ibadan North-East Local Government Areas (LGAs), Oyo State.

Participants

The population for this study was all long distance commercial bus drivers in Ibadan North and Ibadan North-East LGAs in Oyo State, Nigeria. The participants were 100% male drivers, 58.4% of them

were married, 10.8% single, 24.7% divorced, 5.6% separated, and 0.4% widowed. Forty-two percent of the drivers have between 1 and 2 years driving experience, 32.95% have 3-5 years driving experience, while 25.5% have 6 years and above driving experience.

Sampling technique

Two LGAs were purposively selected for this study while 231 long distance commercial bus drivers were conveniently sampled from the six motor parks selected for the study. The samples were all male drivers as they are the ones who engage in long distance commercial driving.

Instruments

Three instruments were used for data collection.

Barratt Impulsiveness Scale (BIS-11)

This scale was developed by Barratt (1994). This scale is adapted to measure impulsivity among long distance commercial drivers. It is a self-reported instrument that contains 30 items scored to yield six first-order factors (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability impulsiveness) and three second-order factors (attentional, motor, and non-planning impulsiveness). All items are presented using a 4-point Likert's format ranging from never to always (never, occasionally, often, and always). Samples of items in the scale include: 'I plan tasks carefully' and 'I make up my mind quickly'. Patton et al., (1995) reported internal consistency coefficients for the BIS-11 total score as ranging from 0.79 to 0.83. Higher scores indicated high level of impulsivity and lower scores indicated lower level of impulsivity.

General Risk Propensity Scale (GRiPS)

The scale was developed by Zhang, Highhouse, and Nye (2018) and is used to measure driver's level of risk-taking propensity. It is an 8-item scale answered using a 5-point Likert's format ranging from strongly disagree to strongly agree. Some items in the scale are: 'Taking risk makes life more fun' and 'I commonly make risky decisions'. The GRiPS has

excellent reliability of $\alpha = 0.92$. The GRiPS had a 3-month test-retest reliability of $\alpha = 0.80$.

Accident-Prone Scale

This scale was developed by As (2001) to measure drivers' accident-proneness. It is a 6-item scale with an equal weighted combination of the (near) accident subscale and mistake subscale. Each item is rated on a 5-point Likert's format ranges from strongly disagree to strongly agree. Items in the scale include: 'Many long distance drivers do not have enough skills to drive safely on the road' and 'It happens regularly that long distance drivers make mistakes'. The Cronbach alpha of the accident-proneness subscales was 0.75. Demographic factors including gender, marital status and years of driving experience were also collected from the participants.

Procedure

The researchers visited the six long distance park stations selected for the study. They sought the permission of each of the bus operators and explained the purpose of the study to them. When permission was granted, the researchers met with the drivers individually and asked for their consents to participate in the study. One inclusion criteria for participation in the study was the ability of the participants to understand English Language including pidgin English. Questionnaires were thereby distributed to those drivers who were willing and ready to participate in the study. Participation was voluntary. It took less than 15 minutes to complete the questionnaire. A total of 239 questionnaires were distributed from where 231 (response rate 97%) were completely filled while 8 questionnaires were incompletely filled and were discarded.

Statistical analysis

Data collected in this study were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Hypotheses one and two were tested using t-test for independent samples while hypothesis three was tested using standard multiple regressions analysis at a 0.05 level of significance.

Results

Hypothesis one

Long distance commercial drivers with high level of impulsivity will significantly report higher on accident-proneness than those with low level of impulsivity.

This was tested using t-test for independent sample and the result is presented in Table 1.

Table1: Summary of t-test showing the difference between impulsivity and accident-proneness among long distance commercial drivers in two LGAs in Oyo State

Dependent	Impulsivity	N	M	SD	t	df	p
Accident-proneness	High	130	25.30	3.44	8.31	229	<.05
	Low	101	20.77	4.84			

Table1 presents results on the influence of impulsivity on accident-proneness among long distance commercial drivers in two LGAs in Oyo State. The result showed that impulsivity had significant influence on accident-proneness [$t(229) = 8.31, P < .05$]. Furthermore, drivers with high level of impulsivity reported higher on accident-proneness ($M = 25.30, SD = 3.44$) than drivers with low level of impulsivity ($M = 20.77, SD = 4.84$). This confirmed the stated hypothesis.

Hypothesis two

Long distance commercial drivers with high level of risk-taking propensity will significantly report higher on accident-proneness than those with low level of risk-taking propensity.

This was tested using t-test for independent sample and the result is presented in Table 2.

Table 2: Summary of t-test showing the difference between risk-taking propensity and accident-proneness among long distance commercial drivers in two LGAs in Oyo State

Dependent	Risk-taking	N	Mean	SD	t	df	p
Proneness to accident	High	124	23.77	4.61	1.56	229	>.05
	Low	107	20.80	4.73			

Table 2 presents result on the influence of risk-taking propensity on accident-proneness among long distance commercial drivers in two LGAs in Oyo State. The result indicated that risk-taking propensity had no significant influence on accident-proneness [$t(229) = 1.56, P > .05$]. However, drivers with high level of risk-taking propensity reported higher on accident-proneness ($M = 23.77, SD = 4.61$) than drivers with low level of risk-taking propensity ($M = 20.80, SD = 4.73$). The hypothesis was partially confirmed.

Hypothesis three

Impulsivity and risk-taking propensity will jointly and independently predict accident-proneness among long distance commercial drivers in two LGAs in Oyo State. This was tested using multiple regression analysis and the result is presented on Table 3.

Table 3: Multiple regression showing risk-taking propensity and impulsivity as predictors of accident-proneness among long distance commercial drivers in two LGAs in Oyo State

Criterion	Predictors	β	t	p	R	R ²	F	p
Proneness to accident	Impulsivity	.66	13.21	<.05	.66	.44	88.82	<.05
	Risk-taking	.07	1.46	>.05				

Table 3 presents results on the joint predictors of impulsivity and risk-taking propensity on accident-proneness among long distance commercial drivers in two LGAs in Oyo State. The results revealed that impulsivity and risk-taking propensity jointly predicted accident-proneness among long distance commercial drivers [F (2, 229) = 88.82, R² = .44, P<.05]. Collectively, impulsivity and risk-taking propensity accounted for about 44% variance in accident-proneness among long distance commercial drivers. Also, impulsivity (β = .66, t=-.13.21, p=<0.05) independently predicted accident-proneness among long distance commercial drivers. However, risk-taking propensity (β = .07, t=-1.46, p = > 0.05) did not independently predict accident-proneness among long distance commercial drivers in the study. This hypothesis stated was partially supported.

DISCUSSION

The study investigated impulsivity and risk-taking propensity as predictors of accident-proneness among long distance commercial drivers in two Local Government Areas in Oyo State. Three hypotheses were generated and tested using t-test for independent sample and standard multiple regressions analysis.

Hypothesis one that stated long distance commercial drivers with high level of impulsivity will significantly report higher on accident-proneness than those with low level of impulsivity was confirmed. Impulsivity had significant influence on accident-proneness among the drivers. Furthermore, drivers with high level of impulsivity reported higher on accident-proneness than those with low level of impulsivity. This finding remotely supported the result obtained by Olapegba et al. (2021) that people who are impulsive are prone to make mistakes that caused accidents. Specifically in traffic contexts, the finding collaborated with the work of Bicaksiz and Ozkan (2016) that many long distance commercial

drivers who are impulsive tends to have accidents on the roads.

The second hypothesis stated that long distance commercial drivers who are high in risk-taking propensity will significantly report higher on accident-proneness than those with low level of risk-taking propensity was partially confirmed. That is, risk-taking propensity had significant influence on accident-proneness to a certain level. Although, Constantinou et al. 2011; Pearson et al. 2013; de Haan et al., 2022) findings supported the present result, it is also in agreement with Ulleberg and Rundmo's (2003) finding that risk-taking propensity may not after all predict accident-proneness including those among long distance commercial drivers. In other words, whether a driver has high or low risk-taking propensity may not have anything to do with accident-proneness.

The third hypothesis that stated impulsivity and risk-taking propensity will jointly predict accident-proneness among long distance commercial drivers

was confirmed. Impulsivity and risk-taking propensity jointly predicted accident-proneness among long distance commercial drivers. Collectively, impulsivity and risk-taking propensity accounted for about 44% variance in accident-proneness among long distance commercial drivers. This finding lent credence to the finding by Hatfield et al. (2017) that risk-taking propensity and impulsivity greatly influenced driving behaviour including those among long distance commercial drivers. Also, it supported the finding by Gagnon et al. (2015) that drivers who engage in long distance journey tend to be accident-prone as their co-ordinations and decision-making are impaired due to fatigue on the road ways.

Implications of Study

The implication of the findings in this study is that before embarking on any journey, long distance commercial drivers should be properly checked to determine their levels of impulsiveness. An impulsive driver is unstable person when it comes to decision-making. Many factors could trigger off impulsiveness within minutes when embarking on a long distance journey. Because of the danger posed to the drivers, the passengers and other road users, it is importance that managers of interstate transportation outlets should try as much as possible to look into impulsivity traits and help drivers that are high on impulsiveness in order to avoid road traffic accidents.

Limitations and recommendations for further studies

Some limitations need to be mentioned. The study used self-report questionnaire for data collection. This does not rule out social desirability bias. Further studies should include qualitative methods such as interviews to increase reliability of the result. Two, the study purposively selected two out of thirty-three local government areas in Oyo state. The result, therefore, reduce generalizability to the other local government areas in the state and Nigeria at large. More local government areas should be included in further studies. Finally, the study investigated only two variables as predictors of accident-proneness.

Further studies should include other personality traits such as self-esteem and the big five personality traits for adequate investigation of long distance commercial drivers' accident-proneness behaviour.

CONCLUSION

This study has empirically established that impulsivity and risk-taking propensity jointly predicted accident-proneness among long distance commercial drivers in Ibadan North and Ibadan North-East Local Government Areas in Oyo State, Nigeria.

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