

## Socio-Demographic Factors, Personality Traits and Job Stress as Predictors of Driving Anger Behavior among Drivers in Ijebuode, Nigeria

Johnson Tunde OYELEKE Ph.D.

Victoria BADA Ph.D.

Olusegun Dele AJIBEWA Ph.D.

Department of Psychology  
University of Ibadan  
Ibadan, Nigeria

### Abstract

*The aim of this study was to investigate the influence of job stress on driving behavior among group of drivers assessing possible differences between a group of commercial and non-commercial drivers using standard psychometric scales. The study employed cross-sectional design. Personality traits and job stress are considered as independent variables in this study while drivers' anger or angry behavior is taken as the dependent variable. The study was conducted in Ijebu-Ode in Ogun State. The research was conducted on a group of 341 commercial drivers and 372 non-commercial drivers using two psychometric scales: Anger Driving Behavior Scale, and Job Stress Scale. A structured questionnaire consisting of 35-item was used as tool for collection of data in the study. The questionnaire has three sections: namely, demographic characteristics, driving behavior scale and job stress scale. Result showed that participants with high extraversion significantly reported higher driving anger behavior than those with low extraversion ( $t(711)=-12.31, p<.001$ ), also participants with high level of job stress significantly score higher on measure of driving anger behavior than those with low level of job stress at ( $t(711)=-4.29, p<.001$ ). Further in the study participants with high level of job stress significantly reported higher driving anger behavior than those with low level of job stress ( $t(711)=-4.29, p<.001$ ). There was significant main effects of drivers category and level of stress on driving behavior ( $F(1,709) = 316.83; p<.001$ ), ( $F(1,709) = 129.017; p<.001$ ) respectively. Lastly, driving experience and educational level had significant joint effect on driving anger behavior ( $F(2,710)=61.05; p<0.001$ ), The implication of the findings shows that Job stress is positively associated with distraction in driving and other risky driving behaviour. It is recommended that there should be educational training programmes and psychotherapy for both commercial and non-commercial drivers.*

**Key Words:** resilience, adverse events, coping, supportive environment, adjustment, mental health, antisocial behaviors, interventions.

### Background to the Study

The phenomena of angry drivers as well as "road rage" have attracted considerable public attention in the past few years (Elvik, 2000). Anger while driving is a type of anger that represents a significant and dangerous phenomenon that commonly occurs in our roads daily. In the world, road rage is becoming a growing problem as the number of vehicles on the road increased steadily in the last five to ten years that are causing traffic jams, mental stress, road rage, road traffic crashes faced by motorists are being reported by the media, aggressive acts like tailgating or cutting people off in anger, hostile gestures, angry epithet, and elevated blood pressures are some signs of anger on the road (Deffenbacher, Lynch, Oetting & Yingling (2001).

Spielberger (1988) in his theory of state-trait anger indicated that individuals high in trait anger are expected to interpret a wide variety of situations as being anger provoking, and to react to situations with an elevated level of anger. How people express their anger is important for example two people may be equally angered by the same situation, but they might express that anger in different ways. Thus, the form of expression as well as the intensity of anger may play an important role in a driver's safety, health and well being on the road as well as that of others who ride with him/her or share the road with him/her.

Studies have shown that drivers who engaged in risky illegal driving and who have the highest crash rates are usually high in general anger, aggressiveness, risk taking, impulsiveness and social irresponsibility behaviors (Underwood, Chapman, Wright, & Crundall, 1999). Others also showed that anger while driving correlated positively with traffic violation and involved in aggressive incidents. (Underwood, et al. 1999; Dahlen, Martin, Ragan, & Kuhlman, 2005; Deffenbacher, Oetting, & Lynch, 1994), Deffenbacher, Lynch, Oetting, & Yingling, 2001). Previous studies, mainly conducted in the West, have identified several attitudinal and personality factors that are related to driving anger and aggression (Esiyok, Yasak, Korkusuz, 2007; Hennessy & Wiesenthal, 2001; Sullman, Gras, Cunill, Planes, Mayolas, 2007). For example, a study by Deffenbacher, Deffenbacher, Lynch & Richards (2003) compared low-anger drivers with high anger drivers using Driving Anger Scale (DAS), Driving Anger Expression Inventory (DAX), State Anger Scale (SAS), and Trait Anger Scale (TAS) that were administered to 121 respondents. The result of this study showed that high-anger drivers tend to use hostile aggression, more frequent, drove at higher speeds and had shorter times and distance to collision. High-anger drivers reported greater state verbal and physical aggression tendencies following high impedance simulation in a related study.

The Ijebu Ode Command of the FRSC (Federal Road Safety Corps) recorded 138 RTC involving 1,267 persons on Ijebu-Ode/Ore/Benin Expressway only in 2011 as a result of Driver's Behaviour. Road Traffic Crash (RTC) the term used by FRSC, also known as traffic accident, motor vehicle collision, motor vehicle accident, car accident, automobile accident, road traffic collision or car and crash occur when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction such as a tree or utility pole. Road Traffic Accidents may result in injury, death and property damage. Different terms are commonly used to describe vehicle collisions. Other terms used include: personal injury collision (PIC), Road Traffic Collision (RTC), Road Traffic Incident (RTI) and later Road Traffic Accident (RTA).

As far back as 1925, the Australian Government lamented over the death of 700 people in one year, from 306,000 registered vehicles. This was estimated at 12 deaths per 100,000 of her Population. Globally, road crashes account for a large share of total number of injuries and deaths. Every year there are about one million fatalities on the roads and the number of people injured in road crashes varies between 23 -32 million persons. These statistics may be frightening, but they have more profound significance in the developing countries in terms of fatalities per 100 million vehicle kilometers. In Nigeria alone, annual fatalities on the roads reached 6,452 and the number of injured persons amounted to nearly 18,116 in 2003. In 2005, the total number of casualties rose to nearly 20,298 and was about 34,641 in 2008 according to Federal Road Safety Corps.

Every year there are about one million fatalities on the roads and the number of people injured in road crashes varies between 23 to 32 million persons. These statistics may be frightening, but they have a more profound significance in the developing countries in terms of fatalities per 100 million vehicle kilometers. In Nigeria alone, annual fatalities on roads reached 6,452 and the number of persons injured amounted to nearly 20,298, and was about 34,641 in 2008, the severity of road crash measured in terms of the number of person killed in every 100 crashes has remained high, rising from 45 persons in 2003 to 59 persons in 2008. While this situation represents a gloomy picture of transport usage in the country, it is equally sad to note that over 80 percent of all crashes on Nigerian roads can be attributed to human causes (FRSC Report, 2008). Ogwude (2010) once remarked that "a man drives as he lives." Anger is psychological variable that one could relate to the occurrence of stressful driving that is prevalent on Nigerian roads. Driver's angry thoughts and outburst could be attributed to a number of factors such as their personality traits, job stress, substance abuse, economic hardship and so on.

According to the early stress researcher, Hans Selye (1976) posited that these reactions serve a survival function by helping human being to deal with potential dangers. In this response to stress, the body prepares to deal with the danger either by physical confrontation or by running away (Selye, 1976). The emotional reactions to stress include feelings of anxiety, fear, frustration and despair. A great deal of job stress is caused by stressors in the environment of the work setting. Some of this job stress is caused by work tasks themselves- physical and psychological demands of performing a job. A common source of such stress is work overload which results when the job requires excessive work speed, output, or concentration which is very peculiar to driving profession. Travelling a long distance on rough roads filled with potholes and gullies could stir anger and aggression in drivers towards self and others. This research therefore examines the relationship that exists between personality traits, job stress and driving anger among commercial and non-commercial drivers in Ijebu-Ode, Nigeria.

Due to driver anger, aggressiveness and road rage there have been many deaths due to furious driver's tail gaiting, giving obscene gestures, and even dragging people out of their cars. Recent vivid reports of the prevalence anger acts on Nigerian roads have led to an upsurge interest in estimating the true prevalence of anger and aggression in drivers. The relationship between anger and accident involvement is an issue of prime importance to traffic and transport psychologists. Such researchers are particularly interested in the safety aspects associated with such emotions. Whereas emotions as anxiety, depression and stress are widely acknowledged as having a detrimental effect on cognitive performance, the cognitive and behavioral effects of driving anger have received relatively little attention (Matthews & Desmond, (1995)

Deffenbacher, Oetting, & Lynch, (1994) speculated that anger experienced while driving might affect safety in various ways. Referring to the large body of literature devoted to the emotion-cognitive performance relationship. As Anxiety, Depression and Stress are widely acknowledged as having a detrimental effect on cognitive performance, the cognitive and behavioral effects of driving anger have received relatively little attention (Matthews & Desmond, (1995). Deffenbacher, et. al (1994) also postulated that anger might influence motivation to commit various risky driving behaviours that in turn may increase accident liability during the emotional episode. For instance they claim that anger experienced while driving might predispose an individual to engage in dangerous driving behaviours such as tailgating, speeding or flashing their lights.

Research conducted by Flaa, Ekeberg, Kjeldsen and Rostrup (2007) showed that stress reactivity is clearly related to different personality traits. This is concurrent with the findings of McManus, Keeling and Paice (2004) who also found that the way individuals approach stress and burnout is predicted by trait measures of personality. As it can be expected, Stress has been shown to negatively affect a person's performance in many different situations (Williams & Cooper, 1998). Whether it is a student taking an important test, a driver dealing with difficult traffic or an office worker struggling to meet a deadline, the stress felt from these situations can have a negative impact on performance or behaviour (Zeidner, 1998; Matthews & Falconer, 2002). Studies as early as 1960s have identified a relationship between aggression and accident involvement. Schuman, Pelz, Ehrlich and Selzer (1967) found an association in young drivers between accident and violation history and propensity to become involved in physical aggression.

Drivers' anger and aggressive outburst while driving has been attributed to their personality traits and job stress. Therefore this study investigated socio-demographic factors, personality traits and job stress as predictors of driving anger behavior among commercial and non-commercial drivers in Ijebu ode, Nigeria.

### ***Hypotheses***

- i. Participants who score high on personality traits of extraversion will significantly score higher on driving anger behavior
- ii. Participants with high level of job stress will significantly score higher on driving anger behavior than those with low level of job stress
- iii. Participants who are commercial drivers and who score higher on job stress will significantly score higher on driving anger behavior than participants who are commercial drivers but score low on job stress.
- iii. Participants who are commercial drivers will significantly score higher on driving anger behavior than those who are non-commercial drivers.
- v. Demographic variables of driving experience and educational level will independently and jointly predict driving anger behavior among commercial and non-commercial drivers

### ***Methodology***

**Design:** This study employed cross-sectional design. Personality traits and job stress are considered as independent variables in this study while drivers' anger or angry behavior is taken as the dependent variable.

**Setting:** The study was conducted in Ijebu Ode in Ogun State. The choice of this setting was based on the accessibility to a larger population sample.

**Sample and Participants;** A total number of 4000 and above drivers ply Ijebu Ode roads yearly according to law enforcement agencies at Ijebu Ode.(FRSC, 2012) The commercial drivers were selected through convenience sampling method at five different motor parks in Ijebu Ode, while the non-commercial drivers were selected through the same sampling technique from residential houses, business outlets and offices of law enforcement agencies in Ijebu Ode. The frequency data indicates that 659 (92.4%) were male, 54 (7.6%) participants were female.

The age analysis indicates that 39 (5.5%) were 18-25 years, 387 (54.3%) were 26-40 years, 224 (31.4%) were 41-50 years and 63 (8.8%) were 51-60 years. The participants distributions by Education showed that 60 (8.4%) were below SSCE, 317 (44.5%) were SSCE/GCE, 276(38.7%) were OND/NCE and 60 (8.4%) were HND/BSC. The participants by driving experience showed that 15 (2.1%) were below 2 years, 310(43.5%) were 2-5 years, 252 (35.3%) were 6-10 years and 136 (19.1%) were 10 years and above. The participants distribution by the trips made showed that 279 (39.1%) made more than two trips per day, 162 (22.7%) were twice/day, 242 (33.9 %) were daily, 30 (4.2%) were weekly.

The participants distribution by category of drivers showed that 372 (52.2%),  $\bar{x} = 35.22$ ,  $SD = 6.94$  were private (non commercial) drivers, 341 (47.8%),  $\bar{x} = 43.79$ ,  $SD = 7.06$  were commercial drivers. The participants distribution by job stress showed, that 450 participants, with  $\bar{x} = 38.11$ ,  $SD = 5.70$ , were low on job stress and 263 participants, with  $\bar{x} = 40.41$ ,  $SD = 7.52$  were high on job stress. The participants distribution by Extraversion showed 318 participants,  $\bar{x} = 36.22$ ,  $SD = 7.736$  were low on extraversion and 395 participants  $\bar{x} = 42-84$ ,  $SD = 6.337$  were high on extraversion.

### **Instruments**

A structured questionnaire consisting of 35-item was used as tool for collection of data in the study. The questionnaire comprises of the following sections:

**Section A:** This section consists of the demographic characteristics of the respondents which include sex, age, educational qualification, driving year(s) experience, category of driver, number of trip and driving school qualification.

**Section B:** This consists of 18 items anger driving behaviour scale developed by Deffenbacher et. al (1994), the Nigeria adapted version by Ogwude (2010) was used which has 5-point,likert type scale. The author report 0.84 for its validity, test-retest reliability and cronbach's alpha of 0.91. Meanwhile for this study cronbach's alpha is 0.86.

**Section C:** This consists of 10 items job stress scale developed by Sinha (2001). It has reliability coefficient and validity of 0.72 and it has Cronbach's Alpha of 0.70. In this research the Cronbach alpha is 0.94.

### **Procedure**

In carrying out this study, the researcher took the effort to train four research assistants that were involved in administration of the questionnaires to the commercial drivers after the informed consent of each participant were obtained with the assistance of some transport union members and staff. For non-commercial drivers, the two research assistants which had been trained by the researcher assisted in collection of data from selected residential houses, business outlets and law enforcement agencies at Ijebu-Ode. The participants were urged to give sincere responses to test items. The questionnaires were collected back immediately and later scored. Out of the 1000 questionnaires distributed, 723 were returned and 713 found to have been properly filled were used for data analyses.

### **Results**

Hypothesis one which states that participants who score high on personality traits of extraversion will significantly score higher on driving anger behavior than those with low extraversion was tested using an independent sample t-test. The result is presented in Table 1.

**Table 1: Summary table of independent sample t-test showing the significance difference between high and low extraversion on driving anger behavior among professional and non-professional drivers in Ijebu-Ode**

DV	Extraversion	N	$\bar{x}$	Std	df	t-value	Sig
Driving anger behavior	Low	318	36.22	7.74	711	-12.31	<.001
	High	395	42.84	6.34			

Table 1 shows that participants with high extraversion significantly reported higher driving anger behavior than those with low extraversion  $t(711) = -12.31, p < .001$ ). From the table above, participants with low extraversion scored 36.22 on driving anger behavior, while those with high extraversion scored 42.84 with a mean difference of 6.63. Therefore, the hypothesis was confirmed. Hypothesis two which states that participants with high level of job stress will significantly score higher on driving anger behavior than those with low level of job stress was tested using an independent sample t-test. The result is presented in Table 2.

**Table 2: Summary table of independent sample t-test showing the significance difference between high and low levels of job stress on driving anger behavior among commercial and non-commercial drivers**

DV	Job stress	N	$\bar{X}$	Std	Df	t-value	Sig
Driving anger behavior	Low	450	38.11	5.70	711	-4.29	<.001
	High	263	40.41	7.52			

Table 2 shows that participants with high level of job stress significantly reported higher driving anger behavior than those with low level of job stress ( $t(711) = -4.29, p < .001$ ). From the table above, participants with low level of job stress scored 38.11 on driving anger behavior, while those with high level of job stress scored 42.84 with a mean difference of 2.30. Therefore, the hypothesis was confirmed.

Hypothesis three which states that participants who are commercial drivers will significantly score higher on driving anger behavior than those who are non-commercial drivers was tested using an independent sample t-test. The result is presented in Table 3.

**Table 3: Summary table of independent sample t-test showing the significance difference between commercial and non-commercial drivers on driving anger behavior among professional and non-professional drivers in Ijebu-Ode**

DV	Drivers Category	N	Mean	Std	Df	t-value	Sig
Driving anger behavior	Non-commercial	372	35.22	6.94	711	-16.33	<.001
	Commercial	341	43.79	7.06			

Table 3 shows that participants who are commercial drivers significantly reported higher driving anger behavior than those who are non-commercial ( $t(711) = -12.33, p < .001$ ). From the table above, participants who are non-professional scored 35.22 on driving anger behavior, while those who are professionals scored 43.79 with a mean difference of 8.57. Therefore, the hypothesis was confirmed.

Hypothesis four, which stated that participants who are commercial drivers and score high on stress will be significantly report higher driving anger than those who are non-commercial drivers and score low on stress, was tested using a 2 x 2 ANOVA. The result is presented in Table 4

**Table 4: Two-way ANOVA showing the effects of category of drivers and level of job stress on driving anger behavior**

Source	SS	Df	MS	F	Sig.
Category of driver (A)	13102.153	1	13102.153	316.833	<.000
Job Stress (B)	5335.299	1	5335.299	129.017	<.000
A x B	838.764	1	838.764	20.283	<.008
Error	29319.612	709	41.353		
Corrected Total	47853.627	712			

The result in Table 4 shows that there was significant main effects of drivers category on driving behavior ( $F(1,709) = 316.83; p < .001$ ). There was also significant main effects of level of stress on driving behavior ( $F(1,709) = 129.017; p < .001$ ). The table also shows that drivers category and level of stress significantly interacted to impact driving behavior. As a result, a post-hoc tests below for multiple comparisons.

**Table 4b: LSD multiple comparison test showing interactive effects of category of drivers and level of job stress on driving anger behavior**

Drivers Category	Level of stress	N	Mean	SD	1	2	3	4
1. Non-commercial	Low	239	31.11	5.50	-			
2. Non-commercial	High	133	37.50	7.38	-6.39*	-		
3. Commercial	Low	211	40.72	5.92	-9.61*	-3.22	-	
4. Commercial	High	130	45.68	7.68	-14.57*	-8.18*	-4.96*	-

The result in Table 4b shows that commercial drivers with high level of stress reported significantly higher score ( $\bar{x} = 45.68$ ) on driving anger than non-commercial with both low and high level of stress ( $\bar{x} = 31.11$  &  $37.50$ ) with a mean difference of 9.61 and 14.57 respectively. Based on these results, the hypothesis was confirmed.

Hypothesis five which states that demographic variables of driving experience and educational level will independently and jointly predict driving anger behavior among commercial and non-commercial drivers was tested using multiple regression analysis. The result is presented in below

**Table 5: Relative contributions of driving experience and educational level to the prediction of driving anger behavior among commercial and non-commercial drivers**

Predictor	Beta ( $\beta$ )	t-value	Sig	R	R <sup>2</sup>	F	P
Driving experience	-0.382	-10.831	<.001				
Educational level	0.147	4.161	<.001	0.383	0.147	61.05	<0.001

Table 5 shows that driving experience and educational level yielded a coefficient (R) of 0.383 and r-square of 0.147. This shows that 15% of the total variance of driving anger behavior was accounted for by the linear combination of the two independent variables. This table also indicated that driving experience and educational level had significant joint effect on driving anger behavior ( $F(2,710)=61.05$ ;  $p<0.001$ ). Also, driving experience and educational level made significant contribution to the prediction of driving anger behavior. Driving experience ( $\beta = -0.382$ ;  $t = -10.831$ ;  $p<0.001$ ) and educational level ( $\beta = 0.147$ ;  $t = 4.161$ ;  $p<0.001$ ) were significant independent contributors. However, the result indicated that driving experience predicted driving anger behavior more than educational level. Based on this result, the hypothesis was confirmed.

### Discussion

This study investigated socio-demographic factors and job stress as predictors of driving anger behavior among drivers in Ijebu-Ode Nigeria. The study was conducted using a questionnaire to find out how these factors influence driving anger behavior. Two hypotheses were tested and all were confirmed. This chapter therefore discusses the findings in line with each of the hypotheses.

Hypothesis one which tested the significant difference between high and low extraversion personality trait on driving anger behavior was confirmed. The result indicated that drivers who score high on extraversion significantly reported high driving anger behavior. This is supported by previous research on personality traits and driving anger. For example, Santos, Correia, Gomes, Caldeira & Cunha, (1995). Reported that high extraversion is associated with high levels of anger driving behaviour among drivers and certain emotional states such as irritation, sadness, immaturity, aggressiveness, search for intense sensations, low tolerance to frustration, insecurity and low self-esteem are personality characteristics associated with risky driving behavior. Higher anger drivers seem to engage in a series of riskier types of behavior.

Hypothesis two which tested the significant difference between high and low level of job stress on driving anger behavior was confirmed. The result indicated that drivers who score high on job stress significantly reported high driving anger behavior. This is supported by previous research on job stress and driving anger. Deffenbacher and colleagues have identified trait differences in driving anger (Deffenbacher, Oetting & Lynch, (1994) and have shown that individuals who are higher in stress driving experience more frequent and intense anger, more aggressive and risky driving behavior, and have more accidents.

Hypothesis three which tested the main and interactive effects of category of drivers and job stress on driving anger behavior was confirmed. The result indicated that professional drivers with high job stress reported high driving anger behavior than non-professional drivers.

We suggest that, although high levels of stress do produce more driving anger and aggressive responses, anger is also, and perhaps more frequently, aroused by ego-defensive reactions to other drivers (e.g., perceiving another driver's actions as being personally directed at the self).

Hypothesis four which tested the difference between commercial and non-commercial drivers on driving anger behavior was confirmed. The result indicated that commercial drivers reported higher driving anger behavior than the non-commercial drivers. Thus, although individuals do differ in the extent to which they are generally pressured or ego-defensive across situations, some situations cause more stress and reactivity than others.

Hypothesis five which states that demographic variables of driving experience and educational level will independently and jointly predict driving anger behavior among commercial and non-commercial drivers was confirmed. This indicated that driving experience and educational level had significant joint effect on driving anger behavior of the drivers. This is supported by previous study by Underwood, Chapman, Wright, & Crundall, (1999) who reported that drivers who engaged in risky illegal driving and who have the highest crash rates are usually high in general anger, aggressiveness, risk taking, impulsiveness and social irresponsibility behaviors.

### **Conclusions**

Based on the results of this study, the following conclusions are made:

1. Drivers with high extraversion significantly reported higher driving anger behavior than those with low extraversion.
2. Drivers who score high on job stress significantly reported high driving anger behavior than those with low job stress.
3. Commercial drivers reported higher driving anger behavior than the non-commercial drivers.
4. Commercial drivers with high job stress reported high driving anger behavior than non-commercial drivers.
5. Driving experience and education jointly and independently influenced driving behavior of drivers.

### **Recommendations**

This study contributes significantly to the understanding of the personality variables concerning driving anger behavior. As such, it allows a deeper comprehension about the personality factors that originate the commitment of driving accidents. Thus, we complement previous research that did not account for personality dimensions (Barros & Loureiro{1997} Manstead, A.S. (1993)).

Despite the limitations found in this study, interesting results were obtained concerning personality aspects and risky driving factors. One main conclusion leads us to understand that extraversion trait of personality predict negatively driving errors of commission, distraction and driving errors of omission.

Job stress is positively associated with distraction and driving errors of omission risky driving factors. These results found theoretical support, especially when associating positive job stress and high extraversion with driving behavior (Aristides I.Ferreira, Luis F. Martínez and M. Adelina Guisande, 2009) Also, drivers experience and education negatively predicted driving anger behavior.

Based on these result it is recommended that there should be educational training programmes and psychotherapy for both professional and non-professional drivers.

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