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## MEASURES OF DISTRACTION AMONG MOTORCYCLISTS IN IJEBU-IGBO, SOUTHWESTERN NIGERIA

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### ABSTRACT

The study examined the factors of distraction among motorcycle riders in Ijebu-Igbo with the aim of nature of the observed loss of concentration. It was recorded that sightseeing constituted the highest observable N-RA with 57.3% of the observed riders being youth. Also, loss of concentration was recorded among 31.6% of the observed riders. Significant relationships between loss of concentration and some of the N-RAs were established, thus establishing the contributory role of these N-RAs to potential motorcycle crashes. The study suggested the need to create awareness on the danger of distracted riding. This can be done by educating the entire association of commercial motorcyclists on the need to be more coordinated while riding. More practical implication is the need for Nigerian Police and Federal Road Safety Corp to create special attention to riders of motorcycles who may be found engaging in some noticeable non-riding activity when riding is on-going.

**Keywords:** Distraction; motorcyclists; Ijebu-Igbo; loss of concentration, potential crashes

### 1. INTRODUCTION

Globally, motorcycle is gaining increasing popularity both as a means of commercial transport. However, road crashes, fatalities of the crashes and associated social-economic implications of motorcycle constitute a major concern both of government and academic researchers. Motorcycle-related crashes are a significant public health concern in Africa and other low- and middle-income countries (LMICs), where motorcycles often serve as the primary mode of transportation (Cholo et al., 2023). Motorcyclists have been identified as one group, among several others, vulnerable to severe trauma especially death, during crashes (Clabaux et al., 2012; da Silva, 2020). Riding a motorcycle, like driving a motor vehicle, is a complicated task because it requires the concurrent execution of various cognitive, physical, sensory and psychomotor skills (Groeger, 2000; D'Artibale, 2018). Both riding and driving are also influenced by

rider's/driver's ability to maintain balance between factors of constrain and decision making. Such factors may be both contextual—technological, social and environmental; and human—perception, arousal, learning, concentration, reflex speed, time estimation, auditory and visual functions.

Riding a motorcycle requires high concentration and permanent monitoring of several types of hazards (Haworth et al., 2005). Riding a motorcycle is also more complex than driving a car because it involves physical coordination, balance and skills (Alicioglu et al., 2008). Higher-order skills are typically required for safe riding in a shared environment especially in the events of making crucial riding decision. These higher-order skills are primarily dependent on cognitive and/or visual faculties of riders (Underwood, 2007; Groeger, 2000). In another vein, the highly unstable design of motorcycles provides little protection in the event of crash (Danielo et al., 2009). Hence, motorcyclists are often considered as having the highest risk for fatal and non-fatal injuries (Lin and Kraus, 2008; 2009). Factors which affect riders' performance include alcohol intoxication (Creaser et al., 2009), youthfulness, lack of protection and poor visibility (Hurt et al., 1981; Clabaux et al., 2012) as well as speed and weight of motorcycles (Eid and Abu-Zidan, 2007; Nzegwu et al., 2008).

Further, a number of studies have identified that severity of motorcycle injuries varies with age group (Baker et al., 1992; NHTSA, 2006), gender and economic status (Zambon and Hasselberg, 2006), riding time (Nakahara et al., 2005); riding speed (Savolainen and Mannering, 2007; Haque et al., 2010; ABS, 2013), drug or alcohol consumption (Compton and Berning, 2009; Lin and Kraus, 2009; Kasantikul et al., 2005), as well as use or non-use of protective gear and helmets (Liu et al., 2008).

Studies have grouped the factors that influence motorcycle accidents into pre-event, event and post-event factors as composed in the Haddon matrix (Williams, 1999; Garkaz, 2020; Yuliani, 2025). The Haddon Matrix is a useful tool for brainstorming a broad list of risk factors - and opportunities for intervention - for any injury issue. Missing from these arrays of factors of severity is motorcyclist distraction.

Just as distraction while driving has been described as activities that could divert a driver's attention away from driving, and which have tendencies to greatly increase the risk of driving error and crash involvement distracted driving (Young & Regan 2009), it can be inferred also that, distractions while riding are non-riding activities (N-RAs) that motorcyclists engaged themselves in while riding, which are critical for efficient, safe and sustainable riding performance. They are potential events which have higher capacity to degrade rider's performance in a shared environment (where different users converge) considering the design of motorcycle which does not give allowance for 'multi-tasking' as it is the case with motor vehicle. Although it may well be assumed that distracted riding is subsumed in the risk-taking behaviour, yet, it is one factor that requires special study as it is the case of distraction studies among car users (Caird et al., 2008; Drews et al., 2008; Horrey and Wickens, 2006). The objective of this study is to

examine the influence of distraction and loss of concentration among motorcyclists in a typical traditional urban area in Nigeria.

Motorcycling for commercial reason is an important livelihood activity in many traditional urban areas in Nigeria (Ogunsanya & Galtima, 1993) and by extension many developing countries (Iga, 1999). The services provided by motorcyclists are valued for their affordability, maneuverability in congestion, and ability to access underserved areas (Ehebrecht et al., 2018).

Despite the widespread use of motorcycles and the prevalence of mobile phone use among motorcyclists in many countries, the underlying factors of this particular behaviour remains surprisingly underexplored in scholarly journals. This type of study is an allusion to the call for wider social representations of motorcycle mobility in academic literatures, especially considering the increasing usage of motorcycle for commercial mobility purpose in the developing countries where the study area belongs.

## 2. STUDY METHODS

### 3. 2.1 STUDY AREA AND MOTORCYCLISTS' SCENARIO

The study area is Ijebu-Igbo, the administrative and commercial nerve of Ijebu North Local Government Area Ogun State, Southwestern Nigeria. The primary economic activity in this community is timber with sawmilling dominating the industrial activities in the community. It is the fourth biggest city in Ogun State. Like majority of cities and towns in Nigeria, road transport provides the major means of mobility for the entire population in the community. As is the case with most cities in Nigeria, road transport provides the major means of mobility for the entire population in the community. Walking, private cars, taxis, informal public commercial buses, private and commercial motorcycles are the means of mobility. Only a few ride bicycles though its use is becoming a growing fad (Olapoju, 2016). However, lack of common or traditional forms of public transport network and infrastructure such as mass public transportation has given some ascendancy to commercial motorcycle in the study area. Also, the presence of this 'bodiless motor vehicle' has been associated with its physical/operational (manoeuvrability), demand (preference by and accessibility to commuters), economic (source of employment to riders) characteristics. Added to the above are the issues of road characteristics, traffic congestion, poor public transport, decreasing safety associated with public transport, insufficient transport services which are all attributed to deficiency in various aspects of government's decision making, implementation, and monitoring.

Commercial motorcycle is now a valid means of mobility in the study area, as it is with virtually all urban roads in the country, with registered association(s) and wider recognition by the road safety agency and other law enforcement agencies across the country. Most of the previous studies on motorcycle usage as means of transportation in Nigeria centred on the emergence of commercial motorcycle and riders' characteristics (Ogunsanya & Galtima, 1993; Oyesiku, 2001; Gbadamosi, 2006; Kwaghgba, 2024), road safety knowledge of riders (Amoran et al., 2006), road crashes characteristics (Oluwadiya et al. 2009). Other studies include the study of the use of psychoactive substance by riders (Alti-Muazu & Aliyu, 2008), riders' injury types (Kopjar, 1999; Solagberu et al., 2006; Nzegwu et al. 2008) and risk perception among users of commercial motorcycles (Olawole et al., 2010; Ale, 2025). On one hand, all these studies

were mostly carried out in major cities of Nigeria, on the other hand, none of them considered N-RAs as having contributory role to motorcycle crashes.

## 2.2 DATA COLLECTION AND ANALYSIS

Eight (8) typically busy roads were purposively selected in the study area for this study. They are Oke Ife, Oke Alaafia, Japara, Idode, Idi-Scale, Four Roads, Oke Tako, Oke Jaga. At all these locations, convenient standpoints with clear visibility to easily capture phenomena of distraction were selected.

Sixty-four observers, eight (8 observers per group) were asked to observe 100 motorcyclists passing by the selected busy roads for any consecutive two hours between 0800 and 1600 Nigerian Local Standard Time (LST). The choice of time was based on the understanding that commercial motorcycle activities are allowed only in day time (about 0500-2200 LST). Also, because the study is purely an observation study, we believed this could be carried out at any time of the day when movement and actions were clearly visible. Each group was instructed to take record of the following under listed cases:

- (i) The age category of the rider; number of passengers carried;
- (ii) Rider's noticeable possession(s)—headwear; eye-glasses; wrist watch; head-phone/earphone;
- (iii) rider's activities—holding a mobile phone; rider's making/receiving calls; checking the phone other than making/receiving calls; checking wrist watch for time; adjusting headwear/cap/eye-glasses; sight-seeing; scouting for passenger; eating any kind of snacks; drinking any kind of liquid; looking down to check any part of the motorcycle; chatting with passenger; waving at other road user(s); adjusting motorcycle mirror.

In addition, each group was instructed to record whether or not any distraction took place during any observed N-RA by the motorcyclist, and safety challenge occasioned by the distraction caused by N-RAs of the rider. Such safety challenges included among others, too close to the vehicle/motorcycle ahead; wandering into another lane; sudden rise/fall in speed, almost colliding or eventual collision with other road user among others.

Frequency tables were used to depict the observed cases while cross-tabulation and Chi-Square analysis technique were used to explain the embedded inferences within the observed scenarios.

## 3: RESULTS ↓

### 3.1 FINDINGS AND DISCUSSION

#### 3.1.1 Characteristics of motorcyclists in Ijebu-Igbo

About 55.1% were youth while 44.9% were adult respectively. Although, the mode of study (observation) did not allow for precision in age determination, we used discretionary means (which may be subjective)

for determining whether the riders were adults or youth. Nevertheless, the result indicated that more youth were involved in motorcycle riding in the study area. Additional personal conversation with non-riding people in the study area revealed that most of the motorcyclists were commercial in purpose. The higher percentage of observed youth motorcyclists was a fall out of the rising level of unemployment in the country as well as the desire of the younger ones to make quick money from commercial motorcycle as means of transport. Frequencies of selected observed variables were shown in Tables 1. The first set of variables observed included whether or not riders were putting on any or combination of cap/helmet, wristwatch, pair of glasses, earpiece. The selection of these items was based on easy observability and the likelihood of those items to divide rider’s attention. The consideration given to these items was not because they could initiate distraction on their own but that the decision by rider(s) to interact with one or combination of these items while riding might cause inattention and eventual loss of concentration. The result of the analysis however showed that 32.8% were putting on headwear (which was basically cap or helmet), 9% were seen with wristwatch, 11.9% put on pair of eye-glasses or sunglasses, 1.5% put on an earpiece. 3.3% were seen with a wristwatch and headwear, 3.0% with wristwatch and glasses, 0.3% with wristwatch and earpiece, 9.4% with a headwear and glasses. 0.1% of the observed motorcyclists were putting on a pair of glasses and earpiece, 0.6% a headwear and earpiece, while 25.4% were not seen with any of these items. However, for mobile phone as a separate item, 3.6% of the total observed motorcyclists were holding their mobile phones. The separate attention given to mobile phone was to ascertain its significance to motorcycle riders’ distraction as it is among motor vehicle drivers. The low frequency of observation on holding of mobile phones may not be unconnected with the fact that motorcycle does not provide room for multi-tasking since it is expected of the rider to grab it with both hands.

**Table 1: Observed personal belongings of target motorcyclists**

Observed Variables 1	Frequency	Percentage
Rider’s possession of:		
Any headwear	262	32.8
A wristwatch	72	9.0
A pair of eye-glasses/sun-glasses	95	11.9
An earpiece	12	1.5
A wristwatch and cap/helmet	26	3.3
A wristwatch and pair of glasses	24	3.0
A wristwatch and earpiece	2	0.3
A wristwatch, cap and pair of glasses	15	1.9
A wristwatch, cap and earpiece	4	0.5
A wristwatch, cap, glasses and earpiece	4	0.5
A cap and glasses	75	9.4
A pair of glasses and earpiece	1	0.1
A cap and earpiece	5	0.6
None	203	25.4
<b>Total</b>	<b>800</b>	<b>100.0</b>
Rider’s holding mobile phone:		
Yes	29	3.6

No	771	96.4
<b>Total</b>	<b>800</b>	<b>100.0</b>

The second set of variables observed has to do with whether or not the motorcyclist was carrying passenger and the number of passengers carried. It was recorded that 63.1% of the total observed riders were carrying at least a passenger. About 40% carried one passenger, 18.2% two passengers, while 3% and 1.9% carried three and more than three passengers respectively (Table 2). This result further established previous findings both in Nigeria and in other countries of the world that motorcycle is becoming an increasingly popular means of transport (Haworth, 2012; Olawole, *et al.* 2010; Johnston *et al.*, 2008).

**Table 2:** Frequency of observed variables

Observed Variables (Rider’s carrying passenger)	Frequency	Percentage (%)
<b>Rider carrying passenger:</b>		
Yes	505	63.1
No	295	36.9
<b>Total</b>	<b>800</b>	<b>100</b>
<b>Number of passengers carried:</b>		
1	320	40
2	146	18.2
3	24	3
More than 3	15	1.9

The third set of variables observed included some selected easily observable non-riding activities (N-RAs) the riders were found engaged in during the period of observation (Tables 3 and 4). Though the involvement of riders in such activities may be transitory and nonthreatening, the essence was to capture those activities and their likely influence on riders’ ability to maintain concentration where observed. There were eleven of these variables. These included riders’ chatting with passenger, eating any kind of snacks, drinking any kind of liquid, sightseeing, scouting for passenger, checking the side of motorcycle, adjusting headwear, adjusting eyeglasses, making or receiving call, waving at other road users and adjusting any of the side mirrors. Findings revealed that 23.6% were seeing chatting with passengers out of which 42.3% and 57.7% were adults and youths respectively. Of the 2.8% of riders eating any kind of snacks, 13.6% and 86.4% were adults and youth, while 53.3 % and 46.7 % of 1.9% who were observed drinking any kind of liquid were adults and youths respectively. However, 44.3% of those found sightseeing were 42.7% adults and 57.3% youth respectively, while the 19% scouting for passengers were 46.7% adults and 53% youths. Among the 6.9% who were seen bent sideways to check the sides of their motorcycles for no obvious reasons to observing recorders, 49.1% were adults while 50.9% were youths.

Others included adjusting headwear 5.8% out of which 41.3% and 58.7% were adults and youth respectively; adjusting glasses 3.1% out of which 48% were adults and 52% were youth; making/receiving call 2.4% of which 57.9% and 42.1% were adults and youths respectively. For those found waving at other road users (8.1%) and adjusting mirror (4.4%), 49.2% and 50.8% and 40.0% and 60.0% were adults and youth respectively.

**Table 3:** Frequency of observed variables

<b>Observed Variable 3 (Rider's N-RAs)</b>	<b>Yes %Frequency</b>		<b>No %Frequency</b>	
	Chatting with passenger	189	23.6	611
Eating any kind of snacks	22	2.8	778	97.3
Drinking any kind of liquid	15	1.9	785	98.1
Sightseeing	354	44.3	446	55.8
Scouting for passenger	152	19.0	648	81.0
Checking the side of motorcycle	55	6.9	745	93.1
Adjusting headwear	46	5.8	754	94.3
Adjusting glasses	25	3.1	775	96.9
Making/receiving call	19	2.4	781	97.6
Waving at other road users	65	8.1	735	91.9
Adjusting side mirror(s)	35	4.4	765	95.6

**Table 4:** Rider's age group and form of distraction

<b>Form of distraction</b>	<b>Adult</b>	<b>%Frequency</b>	<b>Youth</b>	<b>%Frequency</b>	<b>Total</b>
Chatting with passenger	80	42.3	109	57.7	189
Eating any kind of snack	3	13.6	19	86.4	22
Drinking any kind of liquid	8	53.3	7	46.7	15
Sightseeing	151	42.7	203	57.3	354
Scouting for passenger	71	46.7	81	53.3	152
Checking the side of motorcycle	27	49.1	28	50.9	55
Adjusting cap	19	41.3	27	58.7	46
Adjusting eye glasses	12	48.0	13	52.0	25
Making/receiving call	11	57.9	8	42.1	19
Waving at other road users	32	49.2	33	50.8	65
Adjusting mirror	14	40.0	21	60.0	35

The highest frequency recorded for sightseeing is attributable to the non-concealing nature of motorcycle which makes it easier for riders to want to look around at any conspicuous physical object of distraction. This is contrary to the experience of motor vehicle drivers who are wrapped up and cocooned in a ‘multi-tasking environment’ and ‘sonic envelope’ (Bull, 2004) and are increasingly detached from sensory engagement with the environments through which they are travelling. Also, the frequency recorded for scouting for passenger was next in rank to sightseeing because of the coordinating patterns of the commercial motorcyclists in the study area. Apart from few locations where the riders parked to converge and to wait for passengers, most often, riders were found wandering around in search of passenger since the configuration of motorcycle is such that does not require any critical parking structure for converging. More so, maneuverability attribute of motorcycle allows for easy wandering in search of passengers.

Analysis of the observed loss of concentration during any N-RAs showed that 31.6% of the total observed riders lost concentration. About 30.1% of those who lost concentration were adults while 32.9% were youths. The lower frequency recorded for adult riders may not be unconnected with the fact that riding experience may influence how well a rider can effectively divide their attention between the requirement to maintain a balance and their ability to engage in higher-order tasks. This is in line with Liu *et al.*, (2009) study that revealed impairments in the hazard perception ability of novice compared to experienced riders. However, observed loss of concentration occurred in forms of wandering into another lane (6%), sudden reduction in speed (11.6%), sudden rise in speed (3.5%), almost colliding with ongoing vehicle or motorcycle (5.1%), almost colliding with pedestrian (2.1%), wandering into another lane and reduction in speed (1.3%), wandering into another lane and rise in speed (0.1%). Other forms of loss of concentration included wandering and colliding with ongoing vehicle or motorcycle (0.6%), wandering and colliding with pedestrian (0.8%), rise in speed and colliding with pedestrian (0.5%) and rise in speed and colliding with ongoing vehicle or motorcycle (0.1%) (Table 5). Though from the above, no incidence of crash was recorded, it was evident that the forms of loss of concentration recorded had tendencies to cause rear-end and side-side crashes (Clarke et al., 2004), especially where sudden rise in speed and/or wandering resulted.

**Table 5:** Frequency of observed loss of concentration

<b>Observed Variable 4</b>		
<i>(Any loss of concentration and form it took)</i>	<b>Frequency</b>	<b>%Frequency</b>
Loss of concentration during N-RAs :		
Yes ----Adult { 108(30.1)}, Youth { 145(32.9)}	253	31.6
No	547	68.4
<b>Total</b>	<b>800</b>	<b>100.0</b>

<u>Form of loss of concentration:</u>		
Wandering to another lane	48	6.0
Sudden reduction in speed	93	11.6
Sudden rise in speed	28	3.5
Almost colliding with on-going vehicle/motorcycle	41	5.1
Almost colliding with pedestrian	17	2.1
Wandering + reduction in speed	10	1.3
Wandering + rise in speed	1	0.1
Wandering + colliding with on-going vehicle/motorcycle	5	0.6
Wandering + colliding with pedestrian	6	0.8
Rise in speed + colliding with pedestrian	4	0.5
Rise in speed + colliding with on-going vehicle/motorcycle	1	0.1

Further analysis with the use of Chi-Square to illustrate the relationship between N-RAs and riders' loss of concentration there was a significant relationship between chatting with passenger and loss of concentration; sightseeing and loss of concentration; scouting and loss of concentration; bending and loss of concentration; making /receiving call and loss of concentration; waving at someone and loss of concentration; adjusting mirror loss of concentration (Table 6).

**Table 6:** Relationship between N-RAs and rider's loss of concentration

N-RAs and Loss of Concentration	Chi-Square ( $\chi^2$ )
Chatting with passenger *	$\chi^2(1) = 5.60$
Sightseeing *	$\chi^2(1) = 32.16$
Scouting *	$\chi^2(1) = 14.92$
Bending *	$\chi^2(1) = 16.91$
Making/receiving call *	$\chi^2(1) = 12.1$
Waving *	$\chi^2(1) = 54.15$
Adjusting mirror *	$\chi^2(1) = 8.69$
Eating any kind of snack	$\chi^2(1) = 2.00$
Adjusting headwear	$\chi^2(1) = 0.02$
Adjusting eye-glasses	$\chi^2(1) = 0.8$

Astericked N-RAs variables are significant at  $p \leq 0.05$

The high significant relationships recorded between waving at someone and loss of concentration, sightseeing and loss of concentration, bending and loss of concentration, scouting for passenger and loss of concentration, making/receiving calls and loss of concentration, and adjusting mirror and loss of concentration was as a result of the fact that all these N-RAs required the motorcycle rider to either look

away, ride with one hand or engage in the two in the course of executing the N-RAs. For instance, sightseeing, scouting for passenger, bending to check the side of motorcycle and waving at someone required that eyes were moved away from initial fixation on motorcycle track. Whereas, making/receiving calls and adjusting mirror required the movement of hand; waving at someone requires both eye and hand movement at the same time. All these activities have a degrading influence on riders' ability to maintain their balance, and a consequent impairment of overall bike stability. It can be deduced from the observed relationship between N-RAs and loss of concentration that risk of crash will likely be high because riding requires permanent monitoring of several hazards (Haworth et al., 2005). Specifically, body sway results when some of these activities take place. This is because of the inherently unstable nature of motorcycle, thus making them more susceptible to crash and other related road hazard. Though body sway has been associated with alcohol effect on central nervous system, when a rider bends to examine any mechanical discomfort in the motorcycle while riding, rider's upper body will be tilted towards the direction the rider sways. Also, some of these activities create what Carpenter (2001) "inattentive blindness," a term used where distraction overcomes the brain's ability to recognize an object in direct sight

#### **4. POLICY IMPLICATIONS AND CHALLENGES OF THE STUDY**

The significance of this study in the study area is in its ability to provide information on some nature of non-riding activities that riders deliberately or inadvertently engaged in while riding is on-going. Some of these activities are deleterious to safety of both the riders and other road users especially in localities such as the study area where roads are traditionally narrow and accommodate different mix of movements. The challenge of potential hazard associated with distracting activities can be reduced by creating awareness on the danger of distracting riding. This can be done by educating the entire association of commercial motorcyclists on the need to be more coordinated while riding. More practical implication is the need for Nigerian Police and Federal Road Safety Corp to create special attention to riders of motorcycles who may be found engaging in some noticeable non-riding activity when riding is on-going. This is especially needful to ensure safety in a locality where commercial motorcycle is a dominant mode of public mobility.

However, this study was limited in its capacity to provide information on sustained engagement in the non-riding activities (N-RAs) as well as in observing new engagement by riders who were not found with such activities when recording took place. However, further research may be needed to substantiate the contribution of the observed N-DAs to recorded crashes and fatalities among motorcyclists in the study area.

#### **5. CONCLUSION**

This study has examined the factors of distraction among motorcycle riders in Ijebu-Igbo with the aim of ascertaining N-RAs with highest observable distraction and loss of concentration to motorcycle riders. The study also sought out those N-RAs that motorcycle riders engaged in while riding and whether their engagement in such activities constituted any loss of concentration. In addition, the study found out the nature of the observed loss of concentration. It was recorded that sightseeing constituted the highest observable N-RA with 57.3% of the observed riders being youth. Also, loss of concentration was recorded among 31.6% of the observed riders. Significant relationships between loss of concentration and some of the N-DAs were established, thus establishing the contributory role of these N-RAs to potential motorcycle crashes.

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#### **Ethics approval and consent to participate**

The author(s) declare that it is not applicable.

#### **Consent for publication**

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### Competing interests

The author(s) declare that they have no competing interests.

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