PSYCHOLOGICAL PREDICTORS OF THE THEORY OF SUSTAINED BEHAVIOUR IN EXAMINING MOBILE PHONE USERS WHILE DRIVING

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Abstract - Using a mobile phone while driving is a cause of concern worldwide, often due to distraction. The study adopted eight constructs from the theory of sustained behaviour (habit, consequence, experience, friends, caution, consult, patience and safety). It investigated 266 responses of drivers on their behavioral thoughts onusing the mobile phone while driving on these eight constructs. This study clustered two distraction factors from the above constructs. The two factor loadings were formed from an oblimin rotation, "Inattention" and "Haste" with principle components that explain 53.52 % of the total variance. The study found younger drivers responses hada higher rating of distraction behaviour, which could contribute to a risk on road users. Male drivers are close to habits of using the phone while driving rather than female drivers. Findings suggests 51% of the variance in the dependent variable of the multiple regression are explained by the independent variables indicating that using the eight constructs are an approach in the right direction. This promising finding will contribute to understanding how these behaviors were identified, which would be a valuable knowledge that can mitigate these distracting behaviors and eventually reduce road crashes.

Keywords - Texting, Theory of sustained behaviour, Inattention, Distraction, Road safety

I. INTRODUCTION

Using the mobilephone while driving is a concern and a source of distraction. Itcan increase the risk for drivers. The addiction of using the mobile phone in general can easily shift to the car while that same person is driving where he/she needs to call, message, in addition to following social media.

The concern of using mobile phones (call and texting), while driving is adding to burden of safety on the road and primarily contributing to crashes on the road. Many Studies have found that using a hands-free phone while driving is no different than using a hand-held phone as both are unsafe to use whilst driving. [1; 2]. Research by the National Highway Traffic Safety Administration [NHTSA] estimates that driver inattention in its various forms contributes to approximately 25 percent of police-reported crashes. [3cited in4]. In a recent enforcement campaign in the UK, more than 8,000 people were caught using a mobile while driving in a week [5].Further research in a survey by [6] found that more than a third of Australians have admitted using their mobile phones while driving, stressing that even those using hands-free kits are at serious risk of distraction, potentially putting their lives and others at risk.It is therefore the researcher's task to identify psychological components that prompt the behaviour of using the mobile phone while driving. Many studies have tried to identify the causes and the reasons. For instance,a study by [7] found that texting perceived to comprise safety by 84 % however it found that 70 % of them need to devote more attention to driving while texting. With regards togender,a study in Canada found young male drivers were more likely to text? than female drivers noting that age was not a concern [8].The danger of texting while driving was also examined by [9] adopting the extended theory of planned behaviour and found that intention predicted both sending and receiving text behaviours and not the perceived behavioral control. This paper examines the theory of sustained behaviour [10]. The study uses respondent answers based on eight constructs of the theory (habit, consequence, experience, friends, caution, consult, patience and safety).

II. THEORY OF SUSTAINED BEHAVIOUR

The theory of sustainable behaviour is based on the notion that intention is the source of action. This means that whichever psychological action is thought of by a person, that action source is an intention. Therefore, the theory does not ask respondents of their intention of a particular action but rather it assumes that each construct performed has an intention behind it. Therefore, the theory examines the various related psychological constructs assuming that intention exists in each one of them unlike the theory of planned behavior [11, 12, 13], where intention is tested on its own merit. Therefore, the theory does not start with asking respondent 'do you intend …….', like the theory of planned behaviour, but it would examine their thought on different psychological constructs rather than their intention. As intention is considered the resultant of all these constructs. Therefore, the theory of sustained behaviour would focus on constructs that are making the action and extracting deeper hidden thought that need to be known to the researcher. It will also evaluate if there is a phenomenon from certain construct (s) not others. It will report the overall

intention whether it is bad or good through all constructs. This will then be passed to the educator and the decision maker in removing such a phenomenon in using the phone while driving. Each construct has an action of its own. According the theory sustained behavior, there are 15psychological constructs within the theory that stems from Judiciousness. There are 8 constructs that are pertinent to this paper. Refer to Table -2inmethods for details.

III. DATA COLLECTION

Two hundred and sixty-six questionnaires were collected with full responses. They are two groups the young drivers (18-24) and the older driver (25-29).Gender is included, refer to Table -1.

Age group	Male	Female	Total
18-24	85	86	171
25-29	56	39	95
Total	141	125	266

Table:1. Gender and age groups of respondents

Young age group were from universities and technical colleges. The older age group are mainly drivers who are students and non-students around campuses, cafeterias, shopping center and bus ports.

IV. METHOD

The study is using eight constructs from the theory of sustainable behaviour. Therefore, there are 8 questionnaire that were design in one direction (distracting behaviour) to examine driver's safety opinions in using mobile phone while driving on the road as shown in Table-2.Respondents were also asked about frequency of using the phone (texting, reading& listening) and if so, how often.

The study used Likert scale (never to always). Two demographic variables were collated for the study gender and age groups. refer to Table -1 for details.
The study divided the respondents to users and non-users of the mobile phone while driving. Those who indicated that have 'never or some time' texted while driving were considered "texting non-users". Others who admitted to 'sometimes, very often and always'texting while driving, were considered "texting users".

Data was analyzed to target users of mobile phone while driving. That aim to examine reduction of the eight constrains and their loadings. This would also include their relationship with age and gender as factors and essentially to examine the model predictability and impact of age and gender on that model.

	Questionnaire	construct
1	I can use my mobile phone while driving comfortably if I slowdown	Habit
2	I sometimes don't foreseeconsequences of using my mobile phone whilst driving	Consequence
3	I believe I amexperienced in using my mobile phone while driving	Experience
4	I am careful when using my mobile phone while driving	Cautious
5	I need not consult others opinion about using my mobile phone while driving	Consulting
6	I generally respond instantly to a message from my mobile phone while driving	Patience
7	Using my mobile phone while driving is a common practice amongst my friends	Friends
8	I feel safe using my mobile phone while driving	Safety

Table:2. Eight questionnaires (constructs) related to the theory of sustained behaviour.

V. RESULTS

Analysis found that 43% of respondents were users. Table -3, shows respondents use and no-use of mobile phone while driving. Male users reached 46% of 141 male respondents, whereas female users were 39% of 125 female respondents.

Age group	Male	Female
18-24	47((38) *	36(50)
25-29	18(38)	13(26)

* ( ) = number of non-use for that age group

Table :3. Number of respondent's use of mobile phone while driving

The initial analysis shows descriptive statistics of the sustainable behaviour theory's constructs of texting while driving is shown below in Table-4.

Construct	Score mean	Std. Deviation
Consulting	3.16	0.93
Friends	3.05	0.91
Cautions	2.97	1.09
Habit	2.80	1.29
Experience	2.67	1.08
Consequence	2.60	1.06
Patience	2.55	0.95
Safety	2.55	0.94

Table:4. Mean and Standard Deviation of respondents on the eight constructs

Further, the highest recorded percentage of respondents' score in relation to all constructs was consulting which is "I need not consult others opinion about using my mobile phone while driving" mean of 3.16 = 54 %.

Data was tested initially for reliability (internal consistency) and it was found that Cronbach (reliability alpha =0.79).No items needed to be deleted to improve the above value.

A multiple linear regression was performed to predict respondent's thoughts on using mobile phone while driving based on the eight constructs from the theory of sustained behaviour. Preliminary analysis was executed to ensure no violation on the assumption of normality and linearity and collinearity. Significant regression equation was found F (8,257) = 32.83, $P <$ 0.001 with an R^2 = .51. that is 51% of the variance in the dependent variable are explained by the independent variables. The model reveals that four coefficients of the eight constructs were found to have significant impact namely, safety, friends, cautiousness? and habit. Safety as a construct being "I feel safe using my mobile phone while driving" predicted significantly (β = 0.20, p<.001). Friend as a construct which is "Using my mobile phone while driving is a common practice amongst my friends "predicted significantly (β = - 0.13, p<.05). Where cautious is a construct being " I am careful when using my mobile phone while driving" also predicted significantly (β = - 0.18, p<.005).Lastly, habit which was "I can use my mobile while driving comfortably if I slowdown" predicted significantly (β = - 0.12, p<.05).

The study further examined the impact of the demographics on the model, a hierarchal multiple regression was performed where all constructs were entered in the 1st step followed by gender and age as the2nd and the 3rd steps respectively. Gender and age did not show any significant improvement to the model.

In terms of factor reduction, a principle component analysis was performed, it was found thatKMO was found to be 0.84 which is meritorious according to[14]and considered acceptable value to analyse data further. Two factors were loaded with an oblimin rotation with an Eigenvalue above 1.0 adopting a criterion of up to 0.45.The first loaded factor with five items (constructs) explained 41.28 % whereas the second factor with three items explained 12.64 % of the variance. The total variance explainedbecame 53.92 %. See details in Table-5.

The first loading factor can be framed under "Inattention", where drivers pretend to have aun realistic safeexperience and is false caution, unsafe habit and effect of friends driving habits when using the phone while driving all could contribute to inattention in using the phone while driving. The 2ndfactor, loading, wouldbe framed under "Haste". This is as a lack of patience and not consulting others of the issue of using the phone while driving and including that false and temporary hope of safety could hasten the action of the driver and drive in an unsafely manner by using the phone while driving.

Construct	Factor one	Factor two
Experience	0.823	
Cautious	0.747	
Habit	0.629	
Consequence	0.621	
Friend	0.515	
Patience		0.836
Consulting		0.779
Safety		0.473

Table:5. Two factors loading of the constructs (items)

Using ANOVA for the two loaded factors 'haste and inattention' with the effect of age and gender as fixed factors. 'Inattention' differ significantly with age F (1,262) = 13.27, p< .001. Scores did not change significantly with gender. See Figure 1.Indicting that younger group responses show more inattention predictors in using the phone while driving.

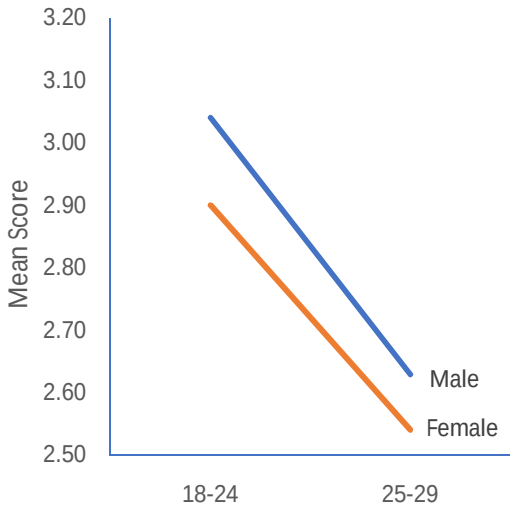


Figure – 1. "inattention" relationship of two age group and their gender

Haste also found to differ significantly in terms of age, F (1,262) = 4.00, p < .05 with respondent scores in terms of 'Haste'. Details in Figure -2. indicate that younger group responses show more haste predictors in using the phone while driving. Younger drivers particularly males show higher responses rates in term of haste compared to older drivers. This means they may have less patience in delaying any responses through the phone be it texting or receiving a text reply and reading it and have higher false feeling of safety while using the phone while driving. It can be noticed that in both loaded factors, young

group scores were higher than older group, indicating unsafe responses in terms of sustainable behaviors.

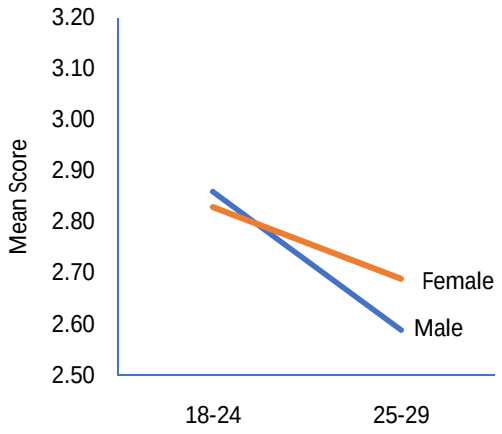


Figure – 2. "Haste" relationship of two age group and their gender

MANOVA analysis revealed that five constructs with significant differences between young and old drivers were found as shown in Table 6., indicating that younger drivers show that it is common practice amongst their friends in using their mobile phone while driving and that they are cautious in using their mobile phone demonstrating that there is an "unsafe habit" amongst them. Futher displayingthat they feel safe using their mobile phone whiledriving compared to the older group.I believe I am experience in using my mobile phone while driving indicating another habitual practice amongst young drivers for ease of using e.g. texting, talking and reading.

Construct	Mean Score		*F (1,264)*
	Young	Older	*Wilks'Lambda = 0.90*** Partial Eta Square* = .10
Friend	3.22	2.75	18.04***
Cautious	3.16	2.64	14.46***
Safety	2.70	2.26	14.08***
Experience	2.85	2.36	13.09***
Consequence	2.73	2.36	7.75*

*p<.05 **p<.01 ***p<.001

Table:6 Two factors loading of the constructs (items)

Similarly, significant differences were found between male and female groups of drivers as shown in Table 7. Male drivers use mobile phone while driving comfortably if they slowdown compared to female drivers and they sometimes don't foresee consequences of using my mobile phone whilst driving. This not foreseeing of consequences may be part of the habit particularly that male drivers also indicated that it is common practice amongst their friends in using their mobile phones while driving. It is important to notethat the common constructs regardless of age and gender are "consequence" and "friends". It is concluded that both of these two constructs are common amongst young male drivers. Since it is common for them to use their mobile phone while driving. It is paramount in the theory of sustainable behaviour to have a special consideration into the contribution of responses into "Consequences" as a construct.

Construct	Mean Score		*F (1,264)*
	Male	Female	*Wilks'Lambda = 0.87**Partial Eta Square* = .13
Habit	3.04	2.54	9.97*
Friend	2.92	3.20	6.43*
Consequence	2.74	2.43	5.87*

*p<.05 **p<.001

Table:7. Two factors loading of the constructs (items)

Habit which is 'I can use my mobile phone while driving comfortably if I slowdown' was the only construct that respondents differ in terms of gender only, (1,262) = 11.73, p < .01, see Figure.5.

DISCUSSION

The purpose of this paper was to examine the eight psychological constructs of the theory of sustainable behaviour relating to using the phone while driving. Further, it examined what are the bad intentions behind using the phone while driving. The responses of drivers using the cluster of these construct were analyzed to reveal their intentions. It was found that 43% of respondents were users of phone while driving. Table -3, shows respondents use and no-use of mobile phone while driving. Male users reached 46% of 141 male respondents, whereas female users were 39% of 125 female respondents.

Further, the highest recorded percentage of respondents' score in relation to all constructs was consulting which is "I need not consult others opinion about using my mobile phone while driving" with a mean of 3.16 = 54 %.

Results showed that the cluster of the constructs used in the study produced a significant regression R^2 = .51, where 51% of the variance in the dependent variable are explained by the independent variables.

The study found male drivers are more likely as a htext as a habit rather than female drivers. Younger group responses show higher usage of the phone whilst driving, with older female scoring lowest of all. This indicates that the older females are showing resistance to the habit of slowing down on the road for the purpose of using the phone for texting or reading.

The pivotal finding of this study was framing the two factor loadings into "Inattention" and "Haste" where each has its own cluster of components."Inattention", where drivers pretend to have an unrealistic safe experience and is false caution, unsafe habit and the effect of friends driving habits when using the phone while driving all that could contribute to inattention in using the phone while driving. The 2nd factor loading would be framed under "Haste". As lack of patience and not consulting others of the issue of using the phone while driving and including that false and temporary hope of safety could hasten the action of the driver and drive in unsafely manner in using the phone while driving. Inattention components explained 41.28 % which is quite large compared to haste that explained 12.64%. that is why inattention is always a focus of research. Ain-depthAustralian study covered crashes from 2000 to 2011 indicated that most observed serious injury crashes due to inattention and distractions are preventable [15].However more recent study in the US about road crashes for the period 2007-2015, found that despite the operational shift from talking/listening to operating/looking in using the mobile, rear-end crashes for teen drivers are increasing due to inattention and distraction [16].

According to [17] when it comes to texting, there is some impact of education on perception of safety but not on action. This means that there needs to be more ways to influence the behaviour of using the phone while driving.

This paper aimed to reveal psychological constructs (predictors) that can be examined and studied to reduce the contributing effect of inattention of drivers using the phone while driving. These include unrealistic experience in using the phone while driving including the level of false caution. Moreover, the study aimed to foresee into consequence in terms of the risk such behaviour is imposing on the drivers and on others and lastly the influence of friends that can increase such unstained behaviour.

CONCLUSION

The approach of this paper is to introduce constructs of the theory of sustainable behaviour. There is further analysis outside the scope of this paper. It will focus on relations between constructs and eventually recommend an approach to prevent or reduce inattention. The paper hopes to guide senior managers and decision makers about road safety, and provides some advice on ways to best implement it in a new jurisdiction.

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