



Factors Influence the Use of Mobile Phone While Driving Among Malaysian Young Drivers

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ABSTRACT

Road traffic accidents are among the ten most common causes of death globally, and in most cases, driver behaviour is the cause of road accidents. In this era of technology, mobile phone is widely used in vehicles. Mobile phone companies create many services that are beneficial for drivers. Thus, the risk exposure of mobile phone use while driving is bound to increase. In particular, mobile phone use while driving has been recognised as one of the major forms that may distract drivers. This study aimed to study the factors that influence mobile phone use while driving among young Malaysian drivers. Aker's Social Learning Theory was used to explain the factors, including knowledge of traffic law, parents, and peers. The study was based on a self-administered questionnaire survey among 384 young Malaysian drivers aged 18-25 years in the central region who owned mobile phones and drove a car. The results found that traffic rules knowledge, parents, and peers have a significant relationship with mobile phone usage while driving. The findings suggested that road safety campaigns and advocacy could focus on young drivers and increase the knowledge about the consequences of using mobile phones while driving and developing a safe culture in the family and communities.

Keywords:

Road safety; driver behaviour; driving distraction; mobile phone; peers; social learning theory

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1. Introduction

According to the World Health Organization (WHO), road traffic accidents are among the ten most common causes of death worldwide. The human factor, which is the driving behaviour, is the leading cause [36]. Driving is a skill that needs the driver's full attention to safely control a vehicle and respond to the roads' incidents. Driving involves complex and constant coordination between body and mind. Distractions are called things or incidents that impede drivers from driving the vehicle safely. Distracted driving is considered a serious social issue. The National Highway Traffic Safety Administration (NHTSA) has described distracted driving as "something that takes driver-focused away from the task of driving safely" [31]. Thus, driver distraction is a major road safety problem and is typically one of the main causes of traffic accidents and has been recognised as a societal safety problem [11].

According to the National Highway Traffic Safety Administration (NHTSA), 3,142 people were killed in traffic crashes in 2019 caused by distracted drivers while driving. Moreover, there are approximate

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more than 23,000 people who died in a distracted driving accident from the year 2012-2019 (NHTSA, 2020). The NHTSA identified that mobile phone usage while driving has been recognised as one of the major forms of distracted driving behaviours and was the primary cause of road accidents and death [8].

In Malaysia, road accident is a significant cause of death and injury for young drivers. Data from the PDRM shows that total road death in 2019 were 6, 167 [15]. It was largely a consequence of road users' negligence and, in some cases, error. In relation to that statement, research found that 43% of Malaysian drivers use mobile phone while driving [36]

Nowadays, mobile devices are widely used in and out of vehicles and, with operators creating many services that are very beneficial and convenient for all road users [2]. Thus, the total time and risk exposure of the use of the mobile device while driving is bound to increase so significantly within few years [29]. Studies have found that drivers who actively engaged in mobile phone conversations, their driving performance is decreased, and distraction level is high [7]. Researchers have stated that it is dangerous to play a mobile phone while driving as it interferes with the ability, skills, slows reaction times of a driver, increases the chances of a collision, decreases awareness of what's going on the road around them and thus increases the risk of an accident [12].

Driving is an intricate and multitasking activity that entails the driver's continuous attention to driving and non-driving tasks. It involves manoeuvring the vehicle safely and being attentive to any occasion on the roads [7]. Most people believe that they were able to perform multitask while driving. Even though temporary distraction makes possible for a driver to drive safely, this matter will lead to less attention and more susceptible driver to road hazard [2]. Despite longstanding education and enforcement efforts, mobile phone distracted driving has persisted ongoing concern in the transport system worldwide, including Malaysia. Many factors could influence drivers' mobile phone usage while driving [19,26,28].

Therefore, this study aims to study the factors that influence mobile phone use while driving among young Malaysian drivers. This paper commences with a literature review focusing on Social Learning Theory and the variables. Then, the methodology of the research is described. Next, findings and discussion are presented. At the end of this paper, conclusions of the overall research were explained based on the objective presented.

1.1 Conceptualisation of Model and Hypothesis

A wide range of psychosocial theories (such as protection motivation theory, theory of planned behaviour) has been applied in road safety-related research. This study utilised Akers' social learning theory, a major, well-established, and widely tested explanation of criminal and deviant behaviour that emerged in the 1960s [4]. The theory consists of four dimensions, namely definition, different association, different reinforcement, and imitation. Definitions refer to an individual's values, attitudes, or justifications regarding the appropriateness of engaging in a (criminal) act (e.g., is it good or bad, right, or wrong, justified, or unjustified), recognising that many times conventional beliefs are weakly held [31]. Different associations comprise both direct and indirect associations with others who express certain norms and values (that may be related to crime and deviance) and engage in prosocial, antisocial, or neutral behaviours [4]. Family and friend are the most influencer in this regard as the relationship between each other are close. Differential reinforcement refers to balancing the actual or anticipated benefits and costs of committing a given act. Reinforce can be internal, external, tangible, or intangible, self, or other reinforcing. Finally, imitation implies that people engaging in behaviour after seeing others doing the same or similar behavior [31].

The social learning process for the young driver begins with the individual's values, attitudes, or justifications regarding the appropriateness of engaging in unsafe driving behaviour to which is related to the knowledge of traffic law and the different association with their parents and peers who are usually having the same race, age, and gender. For the young people, different association with peers will likely be of longer duration, greater intensity, and priority while with parents of greater frequency. The attitude and behaviours of their parents and peers are subsequently imitated by the young drivers who also develop their attitudes regarding risky driving, such as mobile phone usage while driving through observation and experience [24]. They are exposed to parents' attitude and behaviour, and when they grow up, they also exposed to peers', friends' and siblings' attitude and behavior [21]. Thus, the social environment of the young driver, such as parental and peer, are crucial in the context of the young driver engaging in both intentional and unintentional risky driving behavior [24]. If their parents or friends use a mobile phone while driving, the young drivers more likely to develop and maintain mobile phone usage while driving, especially if they did not get any punishment. Numerous studies have attempted to examine the factors consistent with the social learning paradigm in the realm of risky driving. However, the studies that explicitly tested social learning theory in mobile phone usage while driving are limited.

1.2 Knowledge of Traffic Law

Knowledge of traffic law and the way to operate a vehicle safely is necessary for every new driver. All new driver needed to undertake the driver teaching class with some behind the wheel learning and knowledge tests as a preliminary requirement to obtain a probationary license and learner permits [23]. However, driver awareness of distractions, willingness to engage in distracting activities and their ability to safely compensate for the effects of distraction did not test in actual practical driving. It seems necessary to involve more tests regarding specific distracting activity in driver education as prevention countermeasures so that the young novice driver can understand the risk imposed by distraction. Apart from the necessary acquaintance, mastering essential driving skills also important to ensure safe driving. It is undeniable that a high driving skill level could lead to better driving ability or even risky driving behaviour, including using a mobile phone while driving. Therefore, laws had been developed to guard young novice drivers against risky driving behaviour, including texting and calling while driving.

However, law enforcement for mobile phone distraction would not change the driver behaviour [27]. To clarify, people would not simply change based on laws or sanctions as driver behavior will influence their societal norms and lifestyle choice. Research has found that most road accidents are derived from lack of knowledge, negative attitudes, and risky practice of drivers towards traffic rules and regulations [22,32]. In line with this, other study indicated that increase drivers' knowledge on traffic law and altering their practices could help promote safe driving behaviour. In particular, knowledge of the law can effectively shape drivers' behaviour and fostering a road safety culture that results in continuous reduction in road traffic injuries [10]. Thus far, the studies presented evidence that there is a relationship between knowledge of law and driver behaviour.

1.3 Parents

Parents play a crucial role in every stage of child's development. Most researchers agree that parental influence is the key variables that facilitate an individual to profile their action through imitation, differential association, differential reinforcement, and definition examiners [5,16,17,24]. Thus, researchers agreed that it stands to reason that most of the young people's perceptions about

driving are being moulded by their parents. The parents' driving style is a strong influence on the future driving of their child. Young driver is more likely to imitated in risky driving that modelled by parents. Preliminary work on the role of imitation in driving had a positive correlation between parents and their children driving style [30]. This view is supported by Scott Parker *et al.*, [23], who showed that the attitudes and behaviours of their parents have an enormous impact on a young driver.

Several studies have revealed that young drivers who have fewer offenses and crashes usually have parents involved in their lives, who have high expectations, nurture, monitor, and are not overly permissive [30]. Parents must ensure their child has enough knowledge, skill, and experience before driving independently. To enhance road safety, parents of young drivers can set a good example and assist in learning ways to be more involved in their child's driving and create a more realistic restriction on young novice drivers [6]. Yet, the degree and dynamics of this influence require further exploration. Hence, the following hypothesis is proposed:

1.4 Peers

Several studies have found that young people rely on their peers, especially their close friends, in developing attitudes and behaviours [24]. Young novice driver might engage in risky driving behaviour once they desire social appraisal from their peer towards their attitude and behaviour. Thus, peer influence has been found to have a significant effect on driving behaviour, and such behaviour is continually reinforced by the individual's peer group. Buckley and Chapman [14] argued that when young drivers drive with their peers, they are not only trying to navigate the vehicle, but they are also concerned with preserving and improving relationships that they consider to be critically significant. Young passengers speak to drivers more and facilitate greater risk-taking, and in the presence of peer passengers, drivers reported showing off [14].

Therefore, peer influence on mobile phone usage while driving may be driven by peer pressure, modelling, or perceived social norms, given the importance of social networks among young drivers [30]. A simulator study found that mobile phone usage while driving increase accident risk among young drivers, especially when the need for young drivers to actively interact with their peers, either texting or talking, even while driving [13]. That is, the mobile phone may be a way for young people to feel socially active in their immediate peer group and use their mobile phones when driving to satisfy their perceived need for social inclusion. Thus, to some degree, social acceptance of using a mobile device when driving will lead to the young driver's behaviour [35]. Therefore, it is important to study the relations between peers and young drivers on mobile phone usage while driving. Yet, the degree and dynamics of this influence require further exploration. Hence, the following hypothesis is proposed:

2. Study Objective

Hence, the following hypothesis is proposed:

H1: There is a significant relationship between knowledge of traffic law and mobile phone usage while driving.

H2: There is a significant relationship between parents and mobile phone usage while driving.

H3: There is a significant relationship between peers and mobile phone usage while driving.

3. Methodology

In order to address the research objective, this study was a quantitative design in nature with hypothesis testing. This hypothesis testing permits the researcher to test the relationship between knowledge of traffic law, parents and peers with the mobile phone usage while driving. In this research, a cross-sectional field study has been carried out. The setting of this study is a non-contrived setting where researchers have minimum influence on the study. The unit of analysis for this research was individual - young drivers. The sampling technique used in this study is area sampling. Researchers used an area sampling technique because only the Malaysian young drivers aged 18 until 25 years old have a driving license and live in the central region of Malaysia will be answering the questionnaire. Three hundred eighty-four (384) young Malaysian drivers completed the questionnaire. The data collection has been done in November 2019. Based on Krejcie and Morgan [18], a sample size of 384 were sufficient for the analysis.

In this study, the questionnaire was divided into three (3) sections with 37 items. Section A includes the demographic question about the respondent, for instance, gender, age, race, driving experience, frequency of mobile phone use while driving and accident involvement. Section B is about the dependent variable (i.e., mobile phone usage while driving). It was designed in a five-point Likert scale format and dichotomous scale. For example, dichotomous scale about have they involved in a mobile phone- related accident, and others item using a five-point Likert scale about the mobile phone usage while driving. Meanwhile, section C is about seeking respondents' opinions regarding the factors influencing them to use mobile phones while driving. Section C also designed in a five-point Likert about factors that influence the use of mobile phones while driving, which include knowledge of traffic law, parent, and peer influence.

The survey was piloted, and minor amendments were made based on the feedback received from pilot participants (n=60) (i.e., language and the use of words). Then, the final version of the survey was then distributed. The researchers use the google form method to share links on social media platforms like WhatsApp and Facebook group to collect the data.

The Statistical Package for the Social Sciences (SPSS) Version 26.0 was used to analyse all of the results. The data were checked for entry accuracy and missing values before being analysed. As a result, the data was subjected to a visual examination. There was no missing value reported. A total of 384 questionnaires was used for further analysis (i.e., reliability analysis, descriptive analysis and regression analysis).

4. Results and Discussion

4.1 Respondents' Profile

Table 1 showed that out of 384 respondents, 49.7% or 191 were male, and 50.3% or 193 were female completed the survey. The largest age group of young people has been between 22 to 23 years old, which represent 42.7% on average, followed by 20-21 years old (32.8%), 18-19 years old (14.1%), and the smallest age group were between 24-25 years old (10.4%). In term of ethnicity, Chinese is the largest group (42.2%) while others ethnicity (1.3%) are the smallest. Majority of the respondents having driving experience in between 3 to 4 years, which represent 40.4%. The findings also showed that 18.0% of respondents use their mobile phone while driving most of the trips. Only 8.3% of respondents never use a mobile phone while driving. The respondents use their mobile phone to receive a call (41.7%) and make a call (24.5%) while driving. 70.8% of young drivers stated that they never involve in an accident. However, 27.4% of the respondents stated that they have involved in road accident related to mobile phone usage while driving.

Table 1
Respondents' profile

Items	n=384	%
Gender		
Male	191	49.7
Female	193	50.3
Age		
18-19 years	54	14.1
20-21 years	126	32.8
22-23 years	164	42.7
24-25 years	40	10.4
Ethnicity		
Malay	146	38.0
Chinese	162	42.2
Indian	71	18.5
Others	5	1.3
Driving experience		
< 1 year	41	10.7
1-2 years	135	35.2
3-4 years	155	40.4
5-6 years	53	13.8
Frequency mobile phone usage while driving		
Most trips	69	18.0
About half of the trips	130	33.9
Very few	153	39.8
Never	32	8.3
Functions of mobile phone that be used		
Send text message	110	15.6
Make a call	173	24.5
Browse internet	94	13.3
Received call	294	41.7
Others	34	4.8
Accident involvement		
Yes	112	29.2
No	272	70.8
Accident related to mobile phone usage		
0	279	72.7
1	82	21.4
2	23	6.0

Table 2
Reliability analysis

Variables	Number of items	Cronbach's Alpha	Remarks
Mobile phone usage while driving (MpB)	6	0.729	Acceptable
Knowledge of traffic law (Knowledge)	7	0.787	Acceptable
Parents	7	0.765	Acceptable
Peers	8	0.810	Acceptable

4.2 Reliability Test

Table 2 showed the results of the reliability analysis on the pilot test carried out. The reliability of the variables is evaluated from Cronbach's values. The Cronbach's alpha value for mobile phone usage while driving is 0.729, while the Cronbach's of knowledge of traffic law is 0.787. Next, the Cronbach's value of parents is 0.765, and the Cronbach's for the peers is 0.810. As all the Cronbach's values are greater than 0.7, it implied that the questionnaire constructed for this study is reliable and acceptable.

4.3 Correlation Analysis

Correlation analysis has been done to establish the possible connections between variables and study the relationship between variables (Table 3).

Table 3
Correlation analysis

		MpB	Kn	Pt	Pr
MpB	<i>Pearson Correlation</i>	1	0.525**	0.351**	0.361**
	<i>Sig(2-tailed)</i>				
Knowledge	<i>Pearson correlation</i>	0.525**	1	0.196**	0.119**
	<i>Sig(2-tailed)</i>				
Parents	<i>Pearson correlation</i>	0.351**	0.196**	1	0.417**
	<i>Sig(2-tailed)</i>				
Peers	<i>Pearson correlation</i>	0.316**	0.119**	0.417**	1
	<i>Sig(2-tailed)</i>				

Based on the correlation analysis, knowledge of traffic law (Knowledge), parents and peers have a significant relationship with mobile phone usage while driving (MpB). (Knowledge "r" = 0.525, Parents "r" = 0.351, Peers "r" = 0.316, all $p = 0.00 < 0.05$). The coefficient "r" represents the power and influence of the relationship between variables. Knowledge of traffic law has a moderate influence with the dependent variable, whereas parents and peers have a low correlation with mobile phone usage while driving. It shows that the knowledge of traffic law impacts young drivers whether they want to use mobile phones or not while driving.

4.4 Hypotheses Testing

Multiple regression analysis was performed to test the following hypotheses:

H1: There is a significant relationship between knowledge of traffic law and mobile phone usage while driving.

H2: There is a significant relationship between parents and mobile phone usage while driving.

H3: There is a significant relationship between peers and mobile phone usage while driving.

Table 4

Multiple linear regression analysis: Model summary^b

Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.606 ^a	0.368	0.363	0.511

a. Predictors: (Constant), Knowledge of traffic law, Cost, Parents, Peers

b. Dependent variable: Mobile phone usage while driving.

Table 5

Multiple linear regression analysis: Anova^a.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	57.773	3	19.258	73.667	0.000 ^b
	Residual	99.338	380	0.261		
	Total	157.111	383			

a. Dependent variable: Mobile phone usage while driving

b. Predictors: (Constant), knowledge of traffic law, Parents, Peers

Table 6

Multiple linear regression analysis: Coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig.
		Beta	Std. error	Beta		
1	(Constant)	0.348	0.247		1.411	0.159
	Knowledge	0.561	0.050	0.467	11.225	0.000
	Parents	0.171	0.043	0.182	4.003	0.000
	Peers	0.182	0.044	0.185	4.112	0.000

a. Dependent variable: Mobile phone usage while driving

As depicted in Table 4 and Table 5, the multiple regression model with all three predictor variables produced $R^2 = 0.368$, $F(3, 380) = 73.667$, $p < .001$. The R-squared of 0.368 implies that three predictor variables explain about 36.8% of the variance in mobile phone usage while driving. All predictor variables: Knowledge of traffic law ($\beta = 0.467$, $p < 0.05$), parents ($\beta = 0.182$, $p < 0.05$) and peers ($\beta = 0.185$, $p < 0.05$) were found to be positively significant with mobile phone usage while driving among young drivers. Thus, H1, H2 and H3 were accepted. Each of the predictor variables is significantly related to the dependent variable. Thus, it can be concluded that mobile phone usage while driving significant influenced by knowledge of traffic law, parents, and peers.

Table 7

Hypotheses Testing Summary

	Hypotheses	Result
H1	There is a relationship between knowledge of traffic law and mobile phone usage while driving.	Accepted
H2	There is a relationship between parent and mobile phone usage while driving.	Accepted
H3	There is a relationship between peer and mobile phone usage while driving	Accepted

4.4 Discussion

The current research has been conducted to study the factors that influence mobile phone use while driving among young Malaysian drivers. Based on the results, all three independence variables added statistically significantly to the prediction, $p < 0.05$. In particular, the results indicated a significant and positive correlation among all the variables understudies and significantly predicted the mobile phone usage while driving among young drivers. The strongest one is knowledge of traffic law which significantly influence the mobile phone usage while driving $\beta = 0.467$ ($p < 0.01$) follow by

Peers $\beta = 0.185$ ($p < 0.01$) and Parents $\beta = 0.182$ ($p < 0.01$). This finding was in line with previous studies [25,27,30].

The findings revealed that knowledge of traffic law impacts drivers either they want to use a mobile phone or not while driving to avoid any distraction. This result also supported by previous studies, which found that education is the key to helps the public and especially the young drivers to understand that this behaviour will place them at risk for automobile accidents. c

Concerning the second independent variable, the current study indicated parents are a significant predictor of mobile phone usage while driving among young Malaysian drivers. As mentioned in the literature review, young drivers are more likely to imitate in risky driving behaviour modelled by parents because they are being driven around by their parents since they were a kid. They were observing their parents driving behaviour even mimic when they grow up. This current finding confirms the association between parental influence and mobile phone usage while driving among young drivers. The results were in line with the findings of the previous studies [20]. However, it is interesting to note that young novice drivers were likely involved in fewer risky driving behaviour when their parents review their driving performance via weekly retrospective feedback and immediately correct their mistake [24]. Hence, it could conceivably be hypothesised that the stronger the parental influence, the higher the mobile phone usage while driving.

The final independent variable is peers. The current result also indicated that peers could influence mobile phone usage while driving among young Malaysian drivers. This finding in line with Scott-Parker *et al.*, [25] which showed the young people rely on their peers, especially their close friends, in developing attitudes and behaviours. The findings further support the idea of behaviour change theories that demonstrate that young drivers' driving style can, directly and indirectly, influence their peers or friends through their beliefs (i.e., social norms and peer pressure) [6]. The result also agrees with the findings of Walsh *et al.*, [34], maintaining regular communication with peers with the mobile phone can enhance the feelings of belongingness among young drivers and social norms, thus, influence risky driving behaviours. Therefore, it can be assumed that the stronger the peers' influence related to mobile phone usage, the higher the usage of mobile phone while driving.

Although the study's strengths are well recognised, since it is based on self-reported data, it can contain many possible sources of bias, which should be noted as a limitation. Despite using a mobile phone while driving is illegal and very dangerous, most young drivers still use mobile phones while driving. Therefore, it is important to bear in mind the possible bias in these responses. A possible explanation might be through the concept of "Self-optimism bias". According to Bracha and Brown [9], a person with a belief in their own ability to exceed the actual capacity is known as self-optimism bias. This concept will lead to accidents as the drivers believe that other drivers have a higher risk to involve in a road accident than him.

Second, as this study only collects the sample in Malaysia's central region, future researchers are recommended to target a wider geographical area in Malaysia. It is because the results taken from other states and parts of Malaysia may show different outcomes. Also, as this research has only investigated young drivers, the result obtained still cannot represent most perceptions and intentions of drivers in Malaysia. Therefore, it is recommended that future research investigate the usage of a mobile phone whilst driving for all ages. Qualitative studies such as face-to-face interviews are a better option to understand in-depth mobile phone usage while driving.

Moreover, although this study focuses on the factors that influence the usage of mobile phones while driving, it is viewed as only one example of the wider driver distraction problems. Thus, future research may focus on other activities that cause distracted driving. Although the available evidence suggests that knowledge of traffic law, parents, and peers significantly influences mobile phone use while driving, more research is needed to investigate other related factors.

5. Conclusions

In conclusion, this research is intended to study the factors that influence mobile phone use while driving among young Malaysian drivers. The findings indicate that knowledge of traffic laws, parents, and peers are associated with mobile phone use while driving among young Malaysian drivers. Thus, it is proposed that public campaign and advocacy should be focused on enhancing knowledge of traffic law and the risk of mobile phone usage while driving by leverage the social media. It is because social media is a popular platform among young people. This activity may increase the awareness about the risk of using a mobile phone while driving. Road site advocacy also could be done together with road safety-related agencies. The public campaign and advocacy should be targeted to the high-risk road user and, in this case, young drivers. Understanding the factors that influence young drivers' behaviour (i.e., mobile phone usage while driving) will guide road safety-related authorities to identify better strategies that could encourage young drivers to put aside mobile phone while driving. Additionally, enforcement by police traffic should be continued. This activity will show the seriousness of the traffic law to be complied by all road users and to develop road safety culture. While this study only focused on three factors; knowledge of traffic law, parents and peers, other factors may also influence young drivers driving behaviour. Thus, more studies are needed to address such gaps.

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