



Driving Distractions Perceptions among Young Drivers in an Urban Area of Shah Alam

Noor Azreena Kamaluddin ¹, Nur Sabrina Mohamad Shuhaimi ¹, Wardati Hashim ¹, Siti Zaharah Ishak ²

¹ School of Civil Engineering, College of Engineering, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

² Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

azreena@uitm.edu.my, nursabrina5886@gmail.com, wardati@uitm.edu.my, sitiza406@uitm.edu.my
Tel: +6012 3484847

Abstract

Distracted driving is one of the contributing factors to traffic accidents. This study aimed to identify the causes of driving distractions, evaluate the effects of distractions, and propose recommendations for managing driving distractions among young drivers. Questionnaires were analyzed using the SPSS by applying descriptive statistics and odds ratios. Results suggested mobile phone usage, reaching for objects, and alcohol and drug intoxication are the most common causes of driving distractions among young drivers. There is a statistically insignificant effect of any type of distractions on the driving performance of young drivers with regards to traffic violations and road traffic accident involvement.

Keywords: Distraction; Young Drivers; Safety; Distracted Driving

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1.0 Introduction

Driving is an activity that requires the utmost concentration to be able to observe the road and the surroundings. Driving activity should not be disturbed by other things in or outside the vehicle. Distracted driving is defined as any form of activity that draws the attention of someone away from driving. Three major types of driving distractions are visual distraction, manual distraction, and cognitive distraction (National Highway Traffic Safety Administration, 2010). A visual distraction is when the vision of the driver is directed towards something else that may be inside or outside the vehicle, neglecting their eyes to be on the road (Ito et al., 2001). Manual distraction occurs when a driver has one or both hands off the steering wheel, which could decrease the ability of the driver to steer and control the movement of the vehicle accurately (Australasian et al., 2007). On the other hand, cognitive distraction happens when a driver is not focused on driving and has their mind wandering about other things (Galéra et al., 2012).

According to World Health Organization (2011), most of the official traffic accident reports in many countries did not systematically record the distracting activities performed by the drivers before any road traffic accident occurrence; hence the estimate of crash risk with regards to distracted driving is challenging. A previous study in Malaysia had shown high tendencies of mobile phone usage while driving among educated young adults in Klang Valley which is approximately 67% of them have made and/or answered calls and texted while driving on the road (Isa et al., 2012). In addition, young drivers have a higher risk of road traffic accidents (Gazder & Assi, 2022; Llerena et al., 2015) due to their lack of experience in driving and strong tendency to handle a mobile phone while driving (Llerena et al., 2015).

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Discovering the causes of driving distractions among young drivers would benefit the authorities to take further action and strengthen the existing laws and regulations. Therefore, this study was initiated to identify the causes of driving distractions of young drivers according to each type of distraction which is visual, manual, and cognitive distractions. The effects of the distractions were evaluated, and recommendations for managing them were obtained using structured questionnaires.

2.0 Literature Review - Distractions

The forms of distractions can be either insignificant or could potentially pose a threat to the driver itself and the people surrounding them. The distractions vary from talking or texting on the phone, reaching for objects inside the vehicle, eating or drinking, handling children, and controlling the navigation system while driving. Being distracted by a billboard advertisement is an example of a visual distraction as it can divert a driver's attention due to its attractiveness, especially at night-time. Installing digital billboards at the roadside that is often congested could decrease the driver's control of the vehicle (Sheykhfard & Haghghi, 2020). Mobile phone usage (Gazder & Assi, 2022; Robbins & Fotios, 2022) and conversing with a passenger(s) (Robbins and Fotios, 2022) are the most prevailing driving distraction that leads to traffic accidents. Smoking is one of the manual distractions which can cause road traffic accidents. Smoking could decline driving performance that may ensue since the driver is obligated to ignite the cigarette, light it up, and hold it with one hand as they drive (Alonso et al., 2017). Cognitive distractions such as daydreaming and being lost in their thoughts while driving are considered dangerous, and it does not allow much for the driver to process information from the road and surrounding environment (Galéra et al., 2012). An individual's driving performance can be affected as it diverts the attention of a driver and gives them a probability of focusing on something other than driving.

In addition, in-vehicle secondary tasks can potentially impair the visual attention of the drivers on the road, their speed and lane position controls, and their decision-making capabilities. Controlling the vehicle and maintaining the act of safe driving while being distracted by other tasks is strenuous, even for experienced drivers (Seo et al., 2017). The distractions influence the existing workload of the drivers (Zangi et al., 2022), speed (Gazder & Assi, 2022), and lane position control while driving. Young drivers being less responsive to hazards while distracted could also negatively affect their driving performance.

3.0 Methods

The primary data was obtained through a self-administered online questionnaire (Google form). The questionnaires were distributed to the studied population via social media platforms such as Facebook and WhatsApp for two months (May-June 2021). The questionnaire consisted of five sections and was developed using multiple-choice answers, 'Yes/No/I do not know' answers, and the Likert scale to allow the respondents to express their level of agreement with the given statements. The Statistical Package for the Social Sciences (SPSS) version 26 was used to analyze the data using descriptive statistics and odds ratios.

The targeted respondents for this study were young drivers aged between 18 to 34 years old in Shah Alam, Selangor, Malaysia. The age range of 18 to 34 years old was selected as the allowed age to hold a driver's license in Malaysia is from 18 years old. The selected location was chosen as Shah Alam has recorded the highest number of deaths from road traffic accidents among other cities in Malaysia (Kamarudin et al., 2018).

4.0 Results and Discussion

The total number of respondents who participated in this study is 184. Most of the respondents are female (i.e., 133, approximately 73%). The highest number of respondents who have answered the questionnaire is in the age range of 20 to 24 years old (i.e., 119 respondents with 65%), followed by respondents in the age range of 25 to 29 years old (22%) and 30 to 34 years old (8%). The lowest percentage is for those aged 19 years and below (5%). Most of the respondents are students (73%), and a large percentage (61%) of all respondents owned income less than RM1000.00 per month (i.e., approximately 236USD). The most preferred mode of transportation traveled by respondents is by car (85%).

4.1 Awareness of driving distractions

The awareness of driving distractions was evaluated concerning the three types of driving distractions (i.e., visual, manual, and cognitive). The self-experience of the respondents and perception of all three types of distractions are obtained. The respondents have to clarify whether they agreed or disagreed that young drivers are more likely to be distracted and get involved in road traffic accidents.

Respondents were asked whether they agreed or disagreed that young drivers have a higher risk of road traffic accident involvement. Most of the respondents (77%) agreed with the statement, while 17% of them did not agree. It can be observed that the respondents are aware that young drivers do possess a higher risk of getting involved in road traffic accidents compared to those who are experienced. This result is aligned with the fact that young drivers have shown the highest rates of road traffic accidents in the past, with previous data showing that the road traffic accident rate would decrease when the age of the drivers is increasing (Huang & Winston, 2011). The Department of Statistics, Malaysia (2020) also reported that traffic accidents are the leading cause of death among young adults aged 15 to 40. Next, respondents were also asked whether they agreed with the statement that young drivers are more prone to being distracted on the road or not. Most of the respondents (77%) agreed with the statement. Based on the finding, it can be observed that most of the respondents are aware that young drivers are susceptible to being distracted while driving. According to Gershon et al.

(2019), young drivers are more likely to experience distracted driving since they are more prone to be engaged in secondary tasks while driving on the road.

Results found that 76%, 64%, and 64% of respondents have experienced visual, manual, and cognitive distractions while driving. Regarding the type of distractions, 93% of the respondents agreed that visual distractions cause road traffic accidents among young drivers. Approximately 88% of the respondents agreed that manual distractions could lead to road traffic accidents, while 89% of the respondents agreed that experiencing cognitive distractions while driving can cause road traffic accidents.

4.2 Causes of driving distractions

The following sub-sections will discuss the results and causes of driving distractions among young drivers (i.e., visual, manual, and cognitive), the effects of distractions on driving performance, and recommendations to manage the distractions.

4.2.1 Visual distraction

Table 1 shows the causes of visual distractions experienced by young drivers in Shah Alam. Five causes of visual distractions were given to be answered and ranked by the respondents. The highest rank for the cause of visual distraction was "Looking at the mobile phone while driving" with a mean of 4.22. This finding is coherent with Gazder and Assi (2022) and Robbins and Fotios (2022) and supported by Oviedo-Trespacios et al. (2017), where it was reported that among other mobile phone-related distractions, looking at the mobile phone for more than 2 seconds while driving is the most performed task while on the road. The second-highest rank for causes of visual distractions was "Reading text messages while driving" with a mean of 4.19. Drivers who perform secondary tasks such as reading text messages while driving has shown 10% more driving errors than normal driving behavior (Liang et al., 2015) and are imposed a higher mental workload (Zangi et al., 2022). Furthermore, drivers tend to read longer text messages when there are no high driving demands (Liang et al., 2015).

Results suggested that young drivers should avoid using their mobile phones to look at and read text messages while driving, even for a short time to maintain their driving performance. This also applies to the GPS navigation system used since the system illustrates visual outputs that result in a higher number of eye glances while driving. The navigation setup should be ready before they start the drive.

Table 1: Ranking of visual distractions

Visual distractions	Mean	Std. Deviation	Ranking
Looking at the mobile phone while driving	4.22	0.990	1
Reading text messages while driving	4.19	1.072	2
Glancing at a GPS navigation system	3.79	0.972	3
Turning to look at a passenger in a vehicle	3.45	1.044	4
Looking at attractive billboard advertisements	3.35	1.014	5

4.2.2 Manual distraction

Table 2 shows the causes of manual distractions among young drivers in Shah Alam. Six causes of manual distractions were given to be answered and ranked by the respondents. From the result obtained, it can be found that "Texting on the mobile phone" is ranked the highest among other causes with a mean of 4.29. The same finding was found in a previous study conducted by Drews et al. (2009) that 86% of road traffic accidents occurred while the drivers were sending text messages while operating the vehicle. It is an activity requiring the drivers to switch tasks and perform them for long periods, which impairs driving performance. This is followed by "Reaching for objects in the vehicle" with a mean of 4.03. This result is similar to the findings by Klauer et al. (2014). They deduced that reaching for objects other than the mobile phone in the vehicle is among the highest performed secondary task among novice drivers that could pose a risk of road traffic accidents.

It can be deduced that young drivers should reduce mobile phone usage while driving, reach for objects, and adjust vehicle systems since it would deter their focus on driving.

Table 2: Ranking of manual distractions

Manual distractions	Mean	Std. Deviation	Ranking
Texting on the mobile phone	4.29	1.055	1
Reaching for objects in the vehicle	4.03	0.899	2
Calling on the mobile phone	3.95	1.049	3
Adjusting the vehicle system	3.59	0.948	4
Eating or drinking	3.43	0.944	5
Smoking	3.17	1.122	6

4.2.3 Cognitive distraction

Six causes of cognitive distractions based on the literature review were laid out to be answered and ranked by the respondents from their experience (Table 3). Based on the findings, the highest-ranked cause of cognitive distraction is "Drowsiness: which can lead to

microsleep” with a mean of 4.42. This result is in line with a previous study that revealed young drivers with acute sleepiness while driving are more likely to be involved in road traffic accidents (Bener et al., 2017)—followed by “Intoxicated by alcohol or drugs” with a mean of 4.32. A drunk driver is incapable of safe driving, and the risk of being involved in road traffic accidents is higher than normal drivers (Zhao et al., 2014). In addition, a driver’s ability to maintain lane positions while driving could be deteriorated by alcohol consumption (Rezaee-Zavareh et al., 2017).

It can be gathered that distractions such as drowsiness, intoxication by alcohol or drugs, and daydreaming are detrimental to a driver’s driving performance due to cognitive loads.

Table 3: Ranking of cognitive distractions

Cognitive distractions	Mean	Std. Deviation	Ranking
Drowsiness: which can lead to microsleep	4.42	0.926	1
Intoxicated by alcohol or drugs	4.32	1.228	2
Daydreaming	4.03	0.969	3
Feeling angry while driving	3.88	1.009	4
Talking to a passenger in the vehicle	3.11	1.088	5
Listening to music	2.76	1.100	6

4.3 Effects of distractions on the driving performance of young drivers

In this section, information about traffic violation history and experience with road traffic accidents due to being distracted was attained. Table 4 shows the result for the overall traffic violation history committed by the respondents. It is found that approximately 54% of the respondents have committed traffic violations in the last 24 months due to driving distractions. This may be due to young drivers’ inclination to drive in a risky manner or behavior compared to those older and experienced. This could support a previous finding that young drivers tend to deliberately drive in a dangerous way, increasing the crash risk (Scott-Parker & Oviedo-Trespalacios, 2017). In addition, distracted drivers have lower control of their vehicle speeds, are incapable of maintaining lane positions, and are more prone to reckless driving (Regan & Hallett, 2011).

Table 4: Traffic violation history due to being distracted

Traffic violation history	Frequency	Percent
Had a history	98	53.3
Does not have a history	82	44.6
Neither	4	2.2

Table 5 shows the data of the respondents who have experienced any minor or major road traffic accidents in the last 24 months due to being distracted. Most of them have not experienced any minor or major road traffic accidents during the previous 24 months. This percentage should not be overlooked, although it is not the dominant result. Recent research found that one of the most frequent factors contributing to road traffic accidents is driver inattention caused by distractions while on the road (Bucsuházy et al., 2020).

Table 5: Experience with road traffic accidents due to being distracted

Experience	Frequency	Percent
Had experience	58	31.5
No experience	123	66.8
Neither	3	1.6

Table 6 shows the odds ratio of young drivers’ traffic violations and road traffic accident involvement for the past 24 months due to being distracted. There is a statistically insignificant relationship between traffic violations and road traffic accidents for both genders. Nevertheless, it was found that male who violated road traffic regulation is approximately four times more likely to be involved in road traffic accidents than those who are not. In comparison, female who violated road traffic regulation is about two times more likely to be involved in road traffic accidents. It was also found that 93% of males who violated road traffic regulations and were involved in road traffic accidents self-rated themselves as possessing good and excellent driving skills. For the same scenario, 64% of the females self-rated themselves have good and excellent driving skills.

Table 6: The relationship between traffic violations and road traffic accidents

			Road traffic accident		Odds-ratio (95% CI)	Chi-square, <i>p</i> -value
			Yes (%)	No (%)		
Male	Traffic Violation	No*	3 (17.6)	15 (44.1)	1	3.48, <i>p</i> =0.06
		Yes	14 (82.4)	19 (55.9)	3.68 (0.89 – 15.23)	
Female	Traffic Violation	No*	15 (37.5)	48 (55.2)	1	3.41, <i>p</i> =0.06
		Yes	25 (62.5)	39 (44.8)	2.05 (0.95 – 4.42)	

* Reference category

4.4 Recommendations for managing driving distractions

Seven recommendations were provided in the questionnaire (Table 7). Surprisingly, the analysis indicated that the highest ranking is “Stricter law enforcement on drunk driving” with a mean of 4.73. This is in line with Grant (2016), who concluded that implementing more significant penalties for youth and adult drivers who drive under the influence of alcohol could assist in lowering the number of road traffic accidents due to drunk driving. “Banning the use of mobile phones while driving” is an unpopular recommendation as it lies among the bottom two. These contradict the findings of the cause of the drivers' distractions which is mobile phone use, as shown in Tables 1 and 2. This indicates that although they know handling a mobile phone while driving is dangerous and distracting, they seem to think that a ban on mobile phones is unnecessary or unimportant.

Table 7: Ranking of recommendations to reduce driving distractions

Recommendation	Mean	Std. Deviation	Ranking
Stricter law enforcement on drunk driving	4.73	0.584	1
Avoid driving while sleepy or exhausted	4.64	0.593	2
Education in driving schools on driving distractions	4.40	0.709	3
Operate the GPS navigation system beforehand	4.40	0.790	4
Emphasis on the mental health of the driver	4.34	0.815	5
Banning the use of mobile phones while driving	3.89	1.004	6
Limiting the number of passengers in a vehicle	2.60	1.206	7

5.0 Conclusion

In conclusion, looking at the mobile phone, texting on the mobile phone, and drowsiness are the most prevalent cause of visual, manual, and cognitive distractions. Critically, mobile phone usage while driving would result in higher risks of road traffic accidents since it contains visual and manual distractions, depending on the degree of its operation. However, there is no statistically significant effect of any type of distractions on the driving performance of young drivers regardless of gender with regards to traffic violations and road traffic accident involvement. Nevertheless, young drivers must be focused on the road environment or prepare themselves mentally before going for a drive. In addition, young drivers with fewer years of experience in driving should prevent themselves from engaging in tasks that would divert their attention away from the road due to their inexperience. In addition, there should be more education concerning driving distractions in driving schools. To conclude the last objective based on the findings of the first objective, banning the use of mobile phones while driving should be taken into consideration, or the introduction of a driving mode in which certain functions of the mobile phone will be auto disabled, for example, denied access for social media account and auto-turned off of incoming notification messages. Promoting awareness and education campaigns centered around driving distractions are among the good recommendations. This initiative can be implemented through platforms such as social media or television advertisements that are widely assessed.

Future studies on similar topics can consider focusing on the distractions faced by motorcyclists and how to manage them, especially considering the rise of food delivery services during the Covid-19 pandemic. A comparison study between the distractions faced by both novice and experienced drivers would also be beneficial. Besides, future studies can be conducted to determine the distractions faced in real-time, which was not possible to be shown in this study due to the Covid-19 pandemic.

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