Attitude towards Safe Driving and Internet Addiction among Young Adult in Malaysia

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Abstract

The purpose of this study is to identify the correlation between the driver's attitude and internet addiction level by using Attitude towards Safe Driving Scale (ASDS-46) and Internet Addiction Test (IAT). The result showed that ASDS-46 and IAT have a high level of reliability of Cronbach's Alpha value 0.910 and 0.917 respectively. Domain 1, 2 and 4 (self-compliant, self-confidence and self-concern) show a negative correlation with the value of (P=.000 and -.225), (P=.019 and -.111) & (P=.044 and -.095) respectively. This study concludes that a driver who has a high internet addiction level has a risky behaviour to commit road traffic offences.

Keywords: ASDS-46; internet addiction; driver's attitude; quality of life

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1.0 Introduction

The internet is a worldwide system of a computer network where fulfils human needs. Along with the excessive connecting to the internet, someone can be addicted and it is a public health problem (Dieris-Hirche et al., 2017). Shaw and Black (2008) reported that internet addiction is a global phenomenon especially in developed countries of information and technology (IT) with the age range of 20 to 30. According to Chong Guan, Isa, Hashim, Pillai, & Harbajan Singh (2012), the internet addiction phenomenon in Malaysia rises drastically over the decade. Simultaneously, the percentage of Malaysia's road traffic accidents (RTA) also has been increased incredibly. The average of annual deaths of road fatalities in recent years is 6, 915 deaths while MIROS' research predicted that in the year of 2020, it will boost up to 10, 716 deaths (Nasa, 2014). Indirectly, it has a powerful effect on the quality of life of road users.

A study reported that Malaysia is ranked 19th in the list 25 of countries that have congested internet user (Marlin, 2008). Most of the mobile phone has an internet connection due to technology advance in order to communicate and socialize (Md Isa et., 2012). The internet access has become universal, acceptable and involves in everyday routine such as driving a car or walking (Błachnio, Przepiorka, Senol-Durak, Durak, & Sherstyuk, 2017). The phenomenon of mobile phone usage while driving in Malaysia is worsen over the years as the existence of messaging applications such as WhatsApp and social media (Augustin, 2017). Mobile phone usage while driving is a serious traffic offence (Md Isa et al., 2012). The situation has become awful when they are using it with internet access as they are more likely to attach more time and attention towards the mobile phone even when they are driving. This driving behavioural pattern will affect driving performance and contribute to road violate. The Minister of Transportation, Datuk Seri Liow Tiong Lai state that the road safety issues become more hazardous when the drivers use the internet access, take pictures and navigate while driving or riding ("*Penggunaan Telefon Bimbit Antara Punca Utama Kemalangan Jalan Raya*," 2016).

This issue exists due to the strong attachment between the drivers and their mobile phone that become distracted driving behaviour of using a mobile phone and lead to use social media while driving that will give the adverse effect of driving behaviour of young drivers (Weller, Shackleford, Dieckmann, & Slovic, 2013). The other current research also states the identical finding. The drivers who use mobile phone with internet access have a high potential to distract while driving (Gauld, Lewis, White, Fleiter, & Watson, 2017). Hence, these interferences while driving definitely would cause a decrease in driving performance and lead to RTA and mortality. RTA and injuries are a part of the important problem to the nation and quality of life will be diminished (Masuri, Dahlan, Danis, & Md Isa, 2017). According to Weinstein & Lejoyeux (2010), problematic internet addiction leads to functional impairment and marked distress.

However, the number of research and evidence regarding internet addiction and RTA is still limited and has a little attention meanwhile the addicted towards the internet also a part of the factor that contributes to the RTA. Arising of this issue, the gap in the knowledge regarding internet addiction and road traffic accident in Malaysia exists. Braitman and Braitman (2017) found that most research regarding distracted behaviour of driving only

focusing on the behaviour of mobile phone usage while driving despite there is another factor of distracting driving behaviour. Therefore, this study will screen out regarding the other distracting driving behaviour which is the internet addiction and attitude towards safe driving among young users in Malaysia.

2.0 Literature Review

2.1 Attitude towards safe driving

The statistic of the road traffic accident in Malaysia increase 2.8 % from 467,196 in 2014 to 489, 606 in 2015 (*Jabatan Perangkaan Malaysia*, 2016) and it keeps arising every year. The main cause that leads to RTA is driving behaviour. This issue is being addressed from all of the motorcyclists and drivers as well as the bus drivers. The commercial buses that have been recorded with high accident percentage and the causes of it have related with a human factor such as fatigue, risky driving and speeding where half of the accidents ensue at night in which the drivers used the mobile phone while driving (Oluwole, Abdul Rani, & Rohani, 2015).

The current research showed that the five top of the inappropriate driving behaviour of the driver express buses were passengers alight from the bus, not at the assigned terminal, harsh braking, tailgating, using a mobile phone and dangerous overtaking (Ahmad et al., 2017). The aberrant driving behaviour influenced by the other applications of a mobile phone as it is compulsory to use it nowadays regardless of it is a risky act of driving. The percentage of young adult to use a mobile phone while driving is 66.6% as they are required to be a multitasker in dealing with a life needs and lead to against the driving rules (Md Isa et al., 2012). According to Pöysti, Rajalin, & Summala (2005), low skill level and high safety motivation lead to the tendency of using a mobile phone while driving for those who drive for long distance, have more possibility of using mobile phone related hazards.

According to Murad (2014), the Malaysians drivers' poses aberrant attitude which was the primary contributor to the high rate of road fatality opposed with what had been claimed by netizen regarding the unsafe road conditions and vehicles were the factor of it. The drivers seem to neglect the road legislation. The aberrant driving behaviour is associated with the other devices or the human factor itself. A study shows that 91% of the drivers are using text messaging while driving, driving above the speed limit and drifting into different lanes while texting even though they are already knowing all the action is dangerous and illegal (Harrison, 2011).

The occupations of reading or surfing the Internet required more physical and cognitive ability and effort to perform this risky task. Reading or replying a message is required more attention and alertness compared to talking through the mobile phone which leads to road accident due to the drivers are more focusing toward mobile phone instead of what in front of them (Len, 2011).

2.2 Internet addiction

Internet addiction is a behaviour problem and gives effect to the mental health (Alavi, Maracy,

Jannatifard, & Eslami, 2011). The young adult approximately spends half a day on a mobile phone and surf the internet. Deputy Multimedia and Communications Minister, Datuk Jailani Johari state that within 12 hours, Malaysians occupied 3 hours 3 minutes were spent on the mobile phone, 5 hours 36 minutes on computers and 3 hours 27 minutes on social media with 98% of the internet users are active on social media (Kaur, 2015). Calling and texting while driving is common mistakes done by the drivers but now many drivers emerge with more dangerous things as they are connecting to the internet while driving that will cause road fatalities to themselves and other road users.

There are offences that involve the electronic devices use which are the drivers take their eyes off the road and hands off the steering to manipulate the mobile phone in order to enable them for dialling, texting and surfing the Web, subsequently they become engaged with the conversations and other applications in the mobile phone in which will impair the driving performances on the road (Insurance Information Institute, 2016). There are the variety of applications in the mobile phone including surf internet and communicate with others through social media such as Facebook that lead to addiction and becomes a culture that will cause road fatalities to the drivers, motorcyclists and even the other road users (Kamarudin, 2011).

In addition to the technology advance with the presence of internet, they use it to communicate and also socialize with others via WhatsApp, Facebook, Twitter and Instagram and also updating their current events on these social networking sites. The shoddier of this risky driving pattern, they are recording and uploading their selfies and current event while driving in order to prove that they are living a life. About 40% of driver ages between 18 to 29 take the pictures by using their mobile phone while 23% between age 18 to 23 years old use it to recording videos while they are on the road (Mendoza, 2015).

In addition to the technology advance with the presence of internet, they use it to communicate and also socialize with others via WhatsApp, Facebook, Twitter and Instagram and also updating their current events on these social networking sites. The shoddier of this risky driving pattern, they are recording and uploading their selfies and current event while driving in order to prove that they are living a life. These factors will lead to road crashes as the total visual and mental process of driving is already lost and this risky driving behaviour will snatch their own and other's life. According to Best (2014), after posting a selfie while driving and updating Facebook moments, a driver had died in the car crashed with a truck. Edelstein (2012) found that young drivers tend to divide their attention between the road and the web. The web accessing while driving is an aberrant driving behaviour and leads to an adverse outcome such as road traffic crashes (Cook & Jones, 2011).

Thus, the internet has been associated with the driving performances which contribute to the RTA. It occurs because of the attention withdrawal from the visual scene as driving is an occupation that requires the full participation of the coordination of eye, hand and foot and cognitive ability to manoeuvre the vehicles. According to Masuri, Dahlan, Danis, and Md Isa (2015), driving is an activity of daily living that requires active eye, hand and foot coordination. The usage of mobile phone while driving cause various kind of distractions such as visual, auditory, manual and cognitive (WHO, 2015).

2.3 Quality of life

Internet act as a connector to reach family members, friends and significant others. Communication and socialization activities occur in every second of their life (Md Isa et al., 2012). Social media is a medium for them to interact and socialize in order to fulfil everyday needs and improve the quality of life (QoL). The adverse effect of the RTA will take account towards the QoL of the road users as it is will provide negative result toward everyday life including physical health, psychological, social relationship and environment. Masuri, Dahlan, Danis, & Md Isa (2016) reported that the fatal or non-fatal injuries from the previous RTA will cause disability in physical and psychological aspect.

Apart from that, the relationship with the other people will be affected due to low self-confidence and self-esteem to socialize because of the previous or current disability. The psychological consequence of RTA on casualties is post-traumatic stress disorder (PTSD) which will deteriorate the QoL. There is a strong relationship between QoL of the victims and PTSD after one year of the road accident where the financial resources are a part of the factor that has related with poor QoL (Khati et al., 2012). The QoL for the whiplash and mildly injured RTA victims were the declines in terms of mental, social and environment due to psychological and socioeconomic factors (Tournier, Hours, Charnay, Chossegros, & Tardy, 2016). Sitheravellu (2017) found that the majority of the road traffic victims are male sex with the age range between 15 to 44 years old where they are the breadwinners in their family which it leads to a tremendous financial problem. Thus, the quality of life status of the family or the victim itself declines.

3.0 Methodology

The analytical cross-sectional survey is used as a research design to identify the relationship between internet addiction and attitude towards safe driving among young adult users in Malaysia. A simple random sampling is going to be adopted for the study. This study was specifically focusing on the young adult user between 18 to 35 years old in Malaysia which had multi socio-demographic backgrounds.

The research tools are the Attitude towards Safe Driving Scale (ASDS-46) and Internet Addiction Test (IAT). The ASDS-46 from Masuri, Dahlan, Danis & Md Isa (2016) is designed to identify the attitude or human factors of a driver while driving. It consists of 2 sections. The first section is the demographic data and the second section is 46 questions regarding the driver's attitude during driving with 5 Likert scales which are strongly disagree, disagree, neutral, agree and strongly agree. Meanwhile, IAT is from Young and Nabuco de Abreu (2011) is developed to measures the presence and severity of Internet dependency among adults. These scales are by self-administering which require 5 to 10 minutes to complete 20 questions. It consists of 6 Likert scales which do not apply, rarely, occasionally, frequently, often and always. Each respondent needs to fill in a page of this questionnaire.

Both self-administering questionnaires were being conducted by distributed them to the young adult users at Peninsular Malaysia simultaneously the online survey (Google Docs) has been distributed to the public throughout Malaysia. For statistical analysis, Statistical Package for the Social Sciences (SPSS) version 21.0 has been used to undergo quantitative research.

4.0 Results

A total of 400 questionnaires and Internet-based data collection or online survey (Google Docs) were distributed, and only 308 respondents had returned the complete questionnaire and 141 had fulfilled the Google Docs. The total participants were 449 who voluntarily took part in this study. Most of the participation aged 18 to 23 years' old which represent 76.2% (n=342) which holding variety class of driving license. Table 1 shows the characteristic of participation in demographic data.

Table 1: Demographic data of respondents

Characteristic (N=449)	Frequency (percentage)
Gender	
Male	147 (32.7)
Female	302 (67.3)
Age range	
18 – 23	342 (76.2)
24 – 29	92 (20.5)
30 – 35	15 (3.3)
Area of living	
Urban	265 (59.0)
Rural	159 (35.4)
Others	25 (5.6)
Race	
Malay	380 (84.6)
Non-Malay	69 (15.4)
Religion	
Islam	385 (85.7)
Christian	13 (2.9)
Buddha	37 (8.2)
Hindu	9 (2.0)
Others	5 (1.1)
Occupational status	
Student	365 (81.3)
Worker	73 (16.3)
Others	11 (2.4)
Marital status	
Single	411 (91.5)
Married	34 (7.6)
Others	4 (0.9)
Educational level	
Foundation	11 (2.4)
Diploma	86 (19.2)
Degree	329 (73.3)
Master	5 (1.1)
PhD	1 (0.2)
Others	17 (3.8)
Driving license class	
B	14 (3.1)
B2	81 (18.0)
D	337 (75.1)

Others	5 (1.1)
No license	12 (2.7)
Lifetime mileage (km per year)	
<10,000	376 (83.7)
10,000 – 30,000	45 (10.0)
>30,000	15 (3.3)
Others	13 (2.9)
Driving purpose	
Study	149 (33.2)
Working	89 (19.8)
Recreational	56 (12.5)
Others	155 (34.5)
Types of vehicle	
Car	355 (79.1)
Motorcycle	88 (19.6)
Others	6 (1.3)
Involved in a traffic accident	
Yes	67 (14.9)
None	382 (85.1)
Witness in a traffic accident	
Yes	130 (29.0)
None	319 (71.0)
Types of personality	
Type A	70 (15.6)
Type B	46 (10.2)
Others	333 (74.2)

Table 2 shows the mean, minimum and maximum score for each domain categories. The mean score for all six domains of ASDS-46 as follows (45.29, 45.03, 21.29, 21.21, 12.23 and 13.51):

Table 1. ASDS-46 scores for each domain.

ASDS-46 Domain	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**
Mean	45.29	45.03	21.29	21.21	12.23	13.51
Median	46.00	45.00	21.00	21.00	12.00	13.00
Mode	39.00	48.00	18.00	25.00	12.00	13.00
Std. Deviation	10.27	6.47	3.91	3.10	2.95	2.69
Minimum	13.00	24.00	6.00	5.00	4.00	4.00
Maximum	65.00	60.00	30.00	25.00	20.00	20.00

Sum	20330.00	20217.00	9560.00	9520.00	5491.00	6067.00

Table 3 below represents the frequency and percentage of risk level obtained from the respondents. The highest and the lowest risk level between each domain had been bold in the table. The D5 (driving style) has the highest percentage of high risk while D1 (self-compliant) has the biggest number of respondents which has low risk towards road traffic accident compared with other domains.

Table 3. Frequency and percentage of risk level in ASDS-46 for each domain.

ASDS-46 Domain	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**
High risk	221 (49.2)	234 (52.1)	228 (50.8)	227 (50.6)	**247 (55.0)**	243 (54.1)
Low risk	**228 (50.8)**	215 (47.9)	221 (49.2)	222 (49.4)	202 (45.0)	206 (45.9)

Table 4 shows that the majority group of the respondents falls within the mild internet addiction level which is 182 (41%). The normal and moderate internet addiction levels are 141 (31%) and 117 (26%) respectively. However, the minority of internet addiction level is severe which is 9 (2%).

Table 4. Frequency and percentage of IAT.

Level	**Scoring Range**	**Frequency (n)**	**Percentage (%)**
Normal	0 – 30	141	31.4
Mild	**31 – 49**	**182**	**40.5**
Moderate	50 – 79	117	26.1
Severe	80 – 100	9	2.0

Table 5 presents the correlation table for the six domains of the ASDS-46 and IAT level that have been done by using the Pearson Correlation Coefficient (*r*). The table was calculated to test the null hypothesis (H_o) of no association between two variables. In order to determine the direction of these relationships are by the sign of the r-value (+ or -). The evaluation showed that the correlation ranges from -0.095 to -0.225 which indicates that there was a negative correlation between these two variables. Therefore, the result indicates if one variable increase or have a high score, the other variable will decrease or low score. In particular, the degree of relationship, it can be identifying by using Sig or probability (*p*) value of .05 or less, the Ho is failed to reject because there is the statistically significant relationship between these pairs of domains of ASDS-46 and IAT level. The significant correlations were

labelled in bold.

According to Table 5, there were 3 domains that significantly correlated with each other. The correlations occur at the D1 (self-compliant), D2 (self-confidence) and D4 (self-concern). Interestingly, the other three domains did not correlate with IAT level as there are no significant correlations between D3, D5 and D6 with IAT level (r = -.064, p = .179), (r = .0.073, p = .121) and (r = -.014, p = .763). However, the r values range between 0 until 0.3, thus these 3 correlations had low correlation.

Table 5. Correlation table between the six domains of ASDS-46 and IAT.

ASDS-46 Domain	D1	D2	D3	D4	D5	D6
IAT level	-0.225**	-0.111*	-0.064	-0.095*	0.073	-0.014
Sig (2 tailed)	**.000**	**.019**	.179	**.044**	.121	.763

*significant at α<0.05 **significant at α<0.01

5.0 Discussion

In demographic data, majority of the respondents 67.3% (n=302) are female, 76.2% (n=342) with age range 18 to 23 years' old, and 59.0% (n=265) live in the urban of living area. Most of the 85.7% (n=385) are Muslim, 84.6% (n=380) are Malay and 81.3% (n=365) are still studying in bachelor's degree which 73.3% (n=329) that lead to the biggest group of them are still single 91.5% (n=411). According to Pontes, Szabo, & Griffiths (2015), the single person spends more time online per week on the internet compared to those who are in a relationship. The third quarter of the respondents 75.1% (n=337) are using D class driving license to drive a car 79.1% (n=355) for variety purpose 34.5% (n=155). The highest number of RTA offences committed by the respondents are speeding 48.1% (n=232) followed by against the red light 47.7% (n=214) and also using a mobile phone while driving 40.1% (n=180). Most of the respondent claims that they are never involved in the accident 85.1% (n=382), never witness in traffic accident 71.0% (n=319) and also 74.2% (n=333) unsure of having what types of personality.

The risk level of ASDS-46 has the highest frequency for the low risk is domain 1 while the highest frequency for the high risk is domain 5. Based on findings, for domain 1, the respondents had a low risk of road traffic offences which is 50.8% (n=228). The D1 consist of 13 questions of the reverse score which represent the self-complaint (opportunity and space) of the respondent. It indicated that the driver has no or less intention to infringing the road regulations. This result shows that the respondent uses the possible opportunity and space to avoid commit any road traffic accident offence and have a safe driving. The D5 (driving style) has the highest percentage of high risk towards RTA. This result indicates that respondent who has a problem in changing their unsafe driving style will have a high risk in RTA offences and bad attitude towards safe driving. According to Masuri, Dahlan, Danis, & Md Isa (2017), human behaviour provides the effect of the road traffic accident.

Meanwhile, the highest frequency of internet addiction level of the young adult is mild. It reveals that the respondents are able to control their internet usage even though they may surf the web regularly. It is not a disorder for the youth to spend most of their time online because it is a pleasant and amusing activity although some of them have the possibility to develop addictive behaviour (Wallace, 2014).

The correlations for the six domains of the ASDS-46 and IAT level occur at the D1 (self-compliant), D2 (self-confidence) and D4 (self-concern). For D1, it proves that the respondents who have addicted towards the internet will use possible opportunity and space to violate road rules and safety. It is due to the personality of type A as Nabi (2005) found that this type of person has been suspected to be associated with risky driving behaviour and lead to RTA. The reckless driving styles are dominant by the male gender of the young drivers and show high levels of extroversion and thrill-seeking (Taubman - Ben-Ari & Yehiel, 2012). The personality of type A behaviour has an impact on driving (Šucha & Seitl, 2011). For D2, it marks that the respondents who have high internet addiction level, also have a high level of self-confidence to execute RTA offences. This is because they are confident in commit RTA as they have high confidence in terms of the level of driving experience and have greater mileage. According to Scott-Parker, Watson, King, and Hyde (2011), the drivers who had their own cars have greater mileage and riskier driving because Wong, Chung, & Huang (2010) found that they are extraordinarily confident and comfortable with unsafe driving. Meanwhile, for D4, the respondent who has an internet addiction has high hope and self-centred or morbid concern for oneself to ignore the road traffic legislation. They hope that the road traffic accident does not occur and not worried if they do not follow the road and safety rules. This is because of the driving experience of the drivers to be as a predictor for the driving safety as they have skills- oriented driving and high ability in manoeuvre the car, even though they are having high exposure toward road violation (Lajunen & Summala, 1995).

There are no correlations between three domains of ASDS-46 which are D3, D5, and D6 with the internet addiction level. It expressed that the respondent who has an attitude of self-ben

efit (guilty), driving style (barrier) and self-preparedness (confidence and preparedness) are not associated with the internet addiction. It points out that internet addiction is not a factor for them to commit road traffic offences.

6.0 Conclusion

This study concludes that the association between internet addiction and risk level of attitude towards safe driving among young adults in Malaysia is an alarming issue and act as an indicator to all the road traffic offences which can lead to road fatalities. The findings presented in this study may be served for further investigation and exploration of the internet uses in a secure way of safe driving.

This result indicates that a driver who has an internet addiction tends to have these attitudes of self-compliant, self-confidence and self-concern in himself to commit road traffic offences. He confidently uses the opportunity and space and willing to take the risk while driving to commit road traffic offences without worry. According to Wohleber & Matthews

(2016), overconfidence driver takes more chance and commit more traffic effors. A driver who has personality factors of eager to take risk, aggressiveness and egocentrism gravitate with the high risk of crashing (Bates, Davey, Watson, King, & Armstrong, 2014). (Rolison, Regev, Moutari, & Feeney (2018) found that the young drivers who involve in the collisions be likely due to lack of experience and driving skill as well as being prone to have the risk-taking attitude. A driver who has high self-concern have a propensity to ignore the risk of an accident while they are on the road. Deery (1999) explained that in the risky situation, the young drivers tend to underrate the possibility of an accident while driving.

Based on the findings in this research study, it can be used to increase awareness, attention and create an intervention or solution from the government, authorities, communities, clinicians, social workers, professional health workers and rehabilitation team to collaborate in managing this social issue. The driver or all road user should have self-aware of this problem and realize the importance of having safe driving. Moreover, all the driver should have 100% total focus on driving and avoid committing any road traffic accident offences. The psychologist and occupational therapist can collaborate in order to develop an effective intervention to develop an attitude towards safe driving and promote good quality of life. Furthermore, internet usage is a part of the interest or leisure component for a person as it is also a part of the occupational therapy area of domains. From these findings, might be appropriate for the occupational therapist to use this data information to develop intervention not only for normal people but also for disabled people who have driving ability to have safe driving for driving rehabilitation.

The software may be created which will terminate the internet usage on the mobile phone as soon as the vehicle move. An application in the mobile phone with internet access can block the function of the mobile phone because it detects the vehicle moves at a certain speed as it can minimize the risk of distracted driving (Creaser, Edwards, Morris, & Donath, 2015). The authorities should take proactive action, develop and enforce the law of using a mobile phone while driving will be fined with a large amount of payment or the vehicle will be confiscated and the driver will be prisoned. The possibility of using a mobile phone while driving increase when the traffic speed decreases yet this risky behaviour is less common when the fine is increased (Márquez, Cantillo, & Arellana, 2015).

Fully understanding in particular of the factor of road traffic offence and consequences towards the road user enable to design appropriate intervention and strategies such as educational and enforcement campaigns to minimize the road traffic offences and develop better road safety pattern in future. According to Benson, McLaughlin, and Giles (2015), the future campaigns and interventions that focus on the moral aspect of behaviour should be held for all ages of drivers to reduce risky driving behaviour. Hence, this global issue able to be addressed and promote a good quality of life.

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References

Ahmad, M. S., Zulkipli, Z. H., Ameer Batcha, W., Paiman, N. F., Mohd Faudzi, S. A., Othman, I., & Osman, M. R. (2017). An Observational Study on Speeding among Malaysian Express Bus Drivers. *Journal of the Society of Automotive Engineers Malaysia*, *1*(2), 94-102. Retrieved from http://journal.saemalaysia.org.my/issue/jsaem-1-2-ahmad/

Alavi, S. S., Maracy, M. R., Jannatifard, F., & Eslami, M. (2011). The effect of psychiatric symptoms on internet addiction disorder in Isfahan's University students. Journal of Research in Medical Sciences, 16(6), 793-800. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214398/

Augustin, R. (2017, January 2). Over 46,000 fined for using mobile phones while driving. *Free Malaysia Today* [Kuala Lumpur]. Retrieved from http://www.freemalaysiatoday.com/category/nation/2017/01/02/over-46000-fined-for-using-mobile-phones-while-driving/

Bates, L. J., Davey, J., Watson, B., King, M. J., & Armstrong, K. (2014). Factors Contributing to Crashes among Young Drivers. *Sultan Qaboos University Medical Journal*, *14*(3), e297–e305.

Benson, T., McLaughlin, M., & Giles, M. (2015). The factors underlying the decision to text while driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, *35*, 85-100. doi:10.1016/j.trf.2015.10.013

Best, J. (2014, April 28). Driver dies after taking selfie behind the wheel before crashing into a truck. Mirror News Online. Retrieved from http://www.mirror.co.uk/news/world-news/driver-dies-after-taking-selfie-3469774

Błachnio, A., Przepiorka, A., Senol-Durak, E., Durak, M., & Sherstyuk, L. (2017). The role of personality traits in Facebook and Internet addictions: A study on Polish, Turkish, and Ukrainian samples. *Computers in Human Behavior*, *68*, 269-275. doi:10.1016/j.chb.2016.11.037

Braitman, K. A., & Braitman, A. L. (2017). Patterns of distracted driving behaviours among young adult drivers: Exploring relationships with personality variables. *Transportation Research Part F: Traffic Psychology and Behaviour*, *46*, 169-176. doi:10.1016/j.trf.2017.01.015

Chong Guan, N., Isa, S. M., Hashim, A. H., Pillai, S. K., & Harbajan Singh, M. K. (2012). Validity of the Malay Version of the Internet Addiction Test. *Asia Pacific Journal of Public Health*, *27*(2), NP2210-NP2219. doi:10.1177/1010539512447808

Cook, J. L., & Jones, R. M. (2011). Texting and Accessing the Web While Driving: Traffic Citations and Crashes

Among Young Adult Drivers. *Traffic Injury Prevention*, *12*(6), 545-549. doi:10.1080/15389588.2011.620999

Creaser, J. I., Edwards, C. J., Morris, N. L., & Donath, M. (2015). Are cellular phone blocking applications effective for novice teen drivers? *Journal of Safety Research*, *54*, 75.e29-78. doi:10.1016/j.jsr.2015.06.014

Deery, H. A. (1999). Hazard and Risk Perception among Young Novice Drivers. *Journal of Safety Research*, *30*(4), 225-236. doi:10.1016/s0022-4375(99)00018-3

Dieris-Hirche, J., Bottel, L., Bielefeld, M., Steinbüchel, T., Kehyayan, A., Dieris, B., & Te Wildt, B. (2017). Media use and Internet addiction in adult depression: A case-control study. Computers in Human Behavior, 68, 96-103. doi:10.1016/j.chb.2016.11.016

Edelstein, S. (2012, November 21). Study says Internet use while driving is on the rise | Digital Trends. Retrieved from http://www.digitaltrends.com/cars/study-says-nearly-50-percent-of-drivers-under-age-30-use-the-internet-while-driving/

Gauld, C. S., Lewis, I., White, K. M., Fleiter, J. J., & Watson, B. (2017). Smartphone use while driving: What factors predict young drivers' intentions to initiate, read, and respond to social interactive technology? *Computers in Human Behavior*, *76*, 174-183. doi:10.1016/j.chb.2017.07.023

Harrison, M. A. (2011). College students' prevalence and perceptions of text messaging while driving. *Accident Analysis & Prevention*, *43*(4), 1516-1520. doi:10.1016/j.aap.2011.03.003

Insurance Information Institute. (2016, June). Distracted Driving | III. Retrieved from http://www.iii.org/issue-update/distracted-driving

Jabatan Perangkaan Malaysia. (2016, December 15). Buletin Perangkaan Sosial. Retrieved from https://www.dosm.gov.my/v1/index.php?r=column/pdfPrev&id=N0tRL2RBK2l5djFyUnlNR2FKWCtuUT09

Kamarudin, K. (2011). *Memandu Sambil Berbual Di Telefon Tiada Jauh Beza Ketika Mabuk*. Retrieved from Kementerian Perdagangan dalam Negeri, Koperasi dan Kepenggunaan website: http://kpdnkk.bernama.com/newsBm.php?id=580823

Kaur, M. (2015, December 9). Malaysians spend 12 hours daily on phone and online. *New Straits Times* [Kuala Lumpur]. Retrieved from https://www.nst.com.my/news/2015/12/116437/malaysians-spend-12-hours-daily-phone-and-online

Khati, I., Hours, M., Charnay, P., Chossegros, L., Tardy, H., Nhac-Vu, H., … Laumon, B. (2013). Quality of life one year after a road accident. *Journal of Trauma and Acute Care Surgery*, *74*(1), 301-311. doi:10.1097/ta.0b013e318270d967

Lajunen, T., & Summala, H. (1995). Driving experience, personality, and skill and safety-motive dimensions in drivers' self-assessments. *Personality and Individual Differences*, *19*(3), 307-318. doi:10.1016/0191-8869(95)00068-h

Len, Y. K. (2011). *Haramkan Penggunaan Telefon Bimbit Ketika Memandu*. Retrieved from Pusat Penyelidikan dan Sumber Pengguna website: http://www.konsumerkini.net.my/v1/index.php/berita-terkini/polisi-awam/608-haramkan-penggunaan-telefon-bimbit-ketika-memandu

Marlin. (2008). *Penggunaan Internet Dalam Pencarian Maklumat di Kalangan Pelajar-Pelajar Indonesia di Universiti Malaya* (Master's thesis, Universiti Malaya, Kuala Lumpur, Malaysia). Retrieved from http://repository.um.edu.my/237/1/Penggunaan%20internet%20dalam%20pencarian%20maklumat.pdf

Masuri, M. G., Dahlan, A., Danis, A., & Md Isa, K. A. (2015). Public Participation in Shaping Better Road Users in

Malaysia. *Procedia - Social and Behavioral Sciences*, *168*, 341-348. doi: 10.1016/j.sbspro.2014.10.239

Masuri, M. G., Dahlan, A., Danis, A., & Md Isa, K. A. (2016). Attitude towards Safe Driving Scale (ASDS) As a Future Predictor in Determining a Young Adult Quality of Life: Part I. *Procedia - Social and Behavioral Sciences*, *234*, 390-397. doi:10.1016/j.sbspro.2016.10.256

Masuri, M. G., Dahlan, A., Danis, A., & Md Isa, K. A. (2017). Attitude towards Safe Driving Scale (ASDS-46) as a Future Predictor in Determining a Young Adult Quality of Life: Part II. *Environment-Behaviour Proceedings Journal*, *2*(5), 363. doi:10.21834/e-bpj.v2i5.705

Md Isa, K. A., Masuri, M. G., Abd Aziz, N. A., Isa, N. N., Hazali, N., Tahir, M. P., … Fansuri, H. (2012). Mobile Phone Usage Behaviour while Driving among Educated Young Adults in the Urban University. *Procedia - Social and Behavioral Sciences*, *36*, 414-420. doi:10.1016/j.sbspro.2012.03.045

Mendoza, M. (2015, December 8). Report: 1 in 5 drivers admit to snapping selfies, taking photos while driving. San Antonio Express News. Retrieved from http://www.mysanantonio.com/lifestyle/trends-style/article/One-in-five-drivers-ares-snapping-selfies-and-6683182.php

Murad, D. (2014, February 22). Malaysia has 17th most dangerous roads in the world, according to Michigan university research. *The Star* [Petaling Jaya]. Retrieved from http://www.thestar.com.my/news/nation/2014/02/22/nations-with-deadliest-roads-malaysia-17th/

Márquez, L., Cantillo, V., & Arellana, J. (2015). Mobile phone use while driving: A hybrid modeling approach. *Accident Analysis & Prevention*, *78*, 73-80. doi:10.1016/j.aap.2015.02.016

Nabi, H. (2005). Type A Behavior Pattern, Risky Driving Behaviors, and Serious Road Traffic Accidents: A Prospective Study of the GAZEL Cohort. *American Journal of Epidemiology*, *161*(9), 864-870. doi:10.1093/aje/kwi110

Nasa, A. (2014, July 9). Malaysia ranked 20th in road deaths. *New Straits Times* [Kuala Lumpur]. Retrieved from https://www.nst.com.my/news/2015/09/malaysia-ranked-20th-road-deaths

Oluwole, A. M., Abdul Rani, M. R., & Rohani, J. M. (2015). Commercial Bus Accident Analysis through Accident Database. *Journal of Transport System Engineering*, *2*(1), 07-14. Retrieved from www.jtse.utm.my/index.php/jtse/article/download/33/24

Penggunaan telefon bimbit antara punca utama kemalangan jalan raya. (2016, June 25). *Astro Awani* [Bentong]. Retrieved from http://www.astroawani.com/berita-malaysia/penggunaan-telefon-bimbit-antara-punca-utama-kemalangan-jalan-raya-109199

Pontes, H. M., Szabo, A., & Griffiths, M. D. (2015). The impact of Internet-based specific activities on the perceptions of Internet addiction, quality of life, and excessive usage: A cross-sectional study. *Addictive Behaviors Reports*, *1*, 19-25. doi:10.1016/j.abrep.2015.03.002

Pöysti, L., Rajalin, S., & Summala, H. (2005). Factors influencing the use of cellular (mobile) phone during driving and hazards while using it. *Accident Analysis & Prevention*, *37*(1), 47-51. doi:10.1016/j.aap.2004.06.003

Rolison, J. J., Regev, S., Moutari, S., & Feeney, A. (2018). What are the factors that contribute to road accidents? An assessment of law enforcement views, ordinary drivers' opinions, and road accident records. *Accident Analysis & Prevention*, *115*, 11-24. doi:10.1016/j.aap.2018.02.025

Scott-Parker, B., Watson, B., King, M. J., & Hyde, M. K. (2011). Mileage, Car Ownership, Experience of Punishment Avoidance, and the Risky Driving of Young Drivers. *Traffic Injury Prevention*, *12*(6), 559-567. doi:10.1080/15389588.2011.621000

Shaw, M., & Black, D. W. (2008). Internet Addiction. *CNS Drugs*, *22*(5), 353-365. doi:10.2165/00023210-200822050-00001

Sitheravellu, C. S. (2017, January 1). Safety campaigns failing. *New Straights Times*[Seremban]. Retrieved from https://www.nst.com.my/news/2017/01/201031/safety-campaigns-failing

Šucha, M., & Seitl, M. (2011). The Role of Personality Qualities in Driving. *Transactions on Transport Sciences*, *4*(4), 225-232. doi:10.2478/v10158-011-0019-3

Taubman - Ben-Ari, O., & Yehiel, D. (2012). Driving styles and their associations with personality and motivation. *Accident Analysis & Prevention*, *45*, 416-422. doi:10.1016/j.aap.2011.08.007

Tournier, C., Hours, M., Charnay, P., Chossegros, L., & Tardy, H. (2016). Five years after the accident, whiplash casualties still have poorer quality of life in the physical domain than other mildly injured casualties: analysis of the ESPARR cohort. *BMC Public Health*, *16*(1). doi:10.1186/s12889-015-2647-8

Wallace, P. (2014). Internet addiction disorder and youth: There are growing concerns about compulsive online activity and that this could impede students' performance and social lives. *EMBO reports*, *15*(1), 12-6. doi:10.1002/embr.201338222

Weinstein, A., & Lejoyeux, M. (2010). Internet Addiction or Excessive Internet Use. *The American Journal of Drug and Alcohol Abuse*, *36*(5), 277-283. doi:10.3109/00952990.2010.491880

Weller, J. A., Shackleford, C., Dieckmann, N., & Slovic, P. (2013). Possession attachment predicts cell phone use while driving. *Health Psychology*, *32*(4), 379-387. doi:10.1037/a0029265

Wohleber, R. W., & Matthews, G. (2016). Multiple facets of overconfidence: Implications for driving safety. *Transportation Research Part F: Traffic Psychology and Behaviour*, *43*, 265-278. doi:10.1016/j.trf.2016.09.011

Wong, J., Chung, Y., & Huang, S. (2010). Determinants behind young motorcyclists' risky riding behavior. *Accident Analysis & Prevention*, *42*(1), 275-281. doi:10.1016/j.aap.2009.08.004

World Health Organization. (2015). WHO | Global status report on road safety 2015. Retrieved from World Health Organization website: http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/

Young, K. S., & Nabuco de Abreu, C. (2011). Internet Addiction: A Handbook and Guide to Evaluation and Treatment. Retrieved from http://www.ssu.ac.ir/cms/fileadmin/user_upload/Moavenatha/MBehdashti/ravan/pdf/faaliyatha/pptfiles/INTERNET_ADDICTION.pdf