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Do young Malaysian drivers involve in speeding behaviour: An investigation at selected accident hotspots in peninsular Malaysia

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ABSTRACT

The increasing number of young drivers involved in road accidents and fatalities is worrying. Among the common causal of traffic accidents in Malaysia, is believed to be caused by speeding behaviour. Therefore, efforts have been made to understand the characteristics of speeding have uncovered a range of contributory factors about driver's behaviour. This study investigates the tendency for young drivers to involve in speeding behaviour and what factors have influenced this behaviour. A structured survey questionnaire distributed to drivers age between 18 to 24 years old. The respondents were obtained based on convenient sampling at selected rest areas and lay-bys of accident hotspots in Peninsular Malaysia. The results reveal that involvement in an accident, length of driving experience, situational and road environment factors can influence young drivers to involve in speeding behaviour. The responses were given by respondents based on their revealed preferences, which this somehow does not represent their actual driver behaviour in the real scenario. Countermeasures have been proposed to mitigate the issue. Recommendation for future work includes conducting an in-depth interview with young drivers to obtain a more comprehensive understanding of the problem.

1. Introduction

The number of young drivers involved in a traffic accident has become pervasive. Young drivers had contributed a significant amount in road accident worldwide as reported in several studies. The figure increases substantially in developing countries like Malaysia where a survey carried out by Yen *et al*., [20] found that out of 178 cases that they observed in Malaysia, 56.4% of the cases involving those between 16 to 25 years old people. Similarly, Pang *et al*., [15] ascertained that the highest fatality cases were reported among 16-20 years old people with 57% contribution and later followed by other age groups.

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Various factors contribute to the increasing number of the road accident in Malaysia. Among the possible factors that could contribute to a traffic accident in Malaysia are rapid industrialization, where in the earlier time, Malaysia is renowned with tin-mining industry. Malaysia then experienced growth expansion in industrialization and this has forced the younger generation to migrate to the urban areas. The industrialization process has affected the development of other aspects including motorization [1]].

It is believed that the rapid motorization, rapid population growth, poor road maintenance and lack of enforcement as plausible factors that lead to road accidents in developing countries [18]. The impact from motorization development has also increased the vehicle ownership among Malaysian and this has contributed to the seriousness of issue. The number of private cars in Malaysia had increased years by years which this potential to bring about adverse effects on the society [8]. In return, Malaysia has produced a substantial number of new drivers every year [21]. Subsequently, this has also created problems in road traffic environments such as traffic congestion, speeding and mixing of vehicles especially motorcycles and cars [11]. On the same note, speeding behaviour has been recognized to be the notorious offence committed by young drivers worldwide [10].

Previous studies have highlighted that speeding has been involved pervasively by young Malaysian drivers [4,16]. However, these studies employ undergraduate students as their target respondents. This category of respondent could possibly show lower attitude-behaviour relationship as Kraus [9] indicated that lower correlation of attitude-behaviour relationship has been found among student samples compared to non-student samples. In contrast, the present study is conducted among young Malaysian drivers with a valid driving license, various demographics background and utilize the study locations as their route to destinations.

Thus, the present study investigates the tendency of young Malaysian drivers to be involved in speeding behaviour on selected accident hotspots in Peninsular Malaysia. Then, this study also interested to examine factors that can influence young Malaysian drivers to be involved in speeding behaviour.

2.1 Definition of Youth

Past researchers have used the term young drivers to represent people between 18 to 24 years old. The term of young drivers and youth have been used interchangeably by the researchers and United Nation as it refers to the same attribute. Thus, the National Youth Development Policy [12], defines youth as individual of the aged between 15 to 40 years old. However, the policy has specified that activities and youth development programs should comprise those between age 18 to 25 years old. Likewise, this definition could be referred to the young driver as they convey the same meaning. Young drivers considered as vulnerable people that are prone to involve in road accident and fatalities. It is because most of the people that are killed every day in traffic accidents around the world are those under the age of 30 [17.

2.2 Past Studies about Young Drivers Involved in Speeding Behaviour

Because of this, various traffic offences could be referred to the young driver, for instance, drunk-driving, non-use of the seatbelt, abrupt changing lanes, texting while driving and speeding. However, among these offences speeding considered as most often and seriously committed by young drivers. In most of the road accidents involving young drivers, high speed is one of the salient factor [10].

Speeding behaviour is over representative among young drivers due to various factors such as motivational factors and driving skills. However, referring from previous studies, motivational factors have profoundly influenced young male drivers to drive beyond the speed limit even though some improvements in driving skills have been conducted [5]. Young male drivers also practise lower compliance level towards traffic laws compared to female and older drivers [19]. Frequently, young drivers like to travel with passengers that are the similar age with them. So, logically that would be the reason for why young drivers are more frequently involved in car crashes [1]. Thus, contributed three to four times of accidents than any other older or experienced drivers [3].

Besides that, young drivers tend to portray disrespect attitude towards the speed limit [2]. They often neglect the posted speed limit that is available, which this consequently caused them to involve in speeding behaviour. Moreover, they perceive driving situations as less risky, thus they drive recklessly. This showed that young driver is more inclined towards risk-taking and this suggests that young driver tend to overestimate their driving abilities [14]. Another reason for young drivers' involvement in speeding behaviour is because they want to keep up with the traffic flow [6].

3. Methodology

In this research, the researchers used a quantitative research design where a survey questionnaire has been distributed to the respondents. At early stage, this survey instrument was piloted among ten respondents from a different background. The pilot study was conducted before initial data collection to assess the respondents' ability in understanding the questionnaire. The survey instrument consists of three sections which Section A covers the vehicle use characteristics and trip characteristics. Section B covers on the statement related to speeding behaviour and section C is related to demographic background. This study employs 4-point responses Likert Scales ranged from (1) Strongly Disagree, (2) Disagree, (3) Agree and (4) Strongly Agree. This survey is conducted based on a face-to-face interview.

The survey was conducted based on convenience sampling among young Malaysian drivers at rest areas of six Expressways and lay-bys of four Federal roads. Convenience sampling has been employed for the ecological data as the study is collected along the roads, trails or utility corridors. Thus, it is not representative of the population. Besides that, convenience sampling has been utilized as subjects are convenient and more readily accessible to the researcher [7]. Thus, researcher can save time as the subjects can be found at the study locations. The study locations were selected based on the accident hotspots locations provided by Royal Malaysia Police and Malaysia Institute of Road Safety Research (MIROS).

At the final stage, there were 100 of respondents comprised of young drivers involved in this survey. The suitability age for the respondents is between 18 to 24 years old as indicated by National Development Policy. The respondents were selected based on few criteria like having a valid driving license, own personal car and hold a minimum of three-month driving experience.

4. Results and Discussion

4.1 Descriptive statistics for vehicle use characteristics and driver's background

In the descriptive statistics for section A cover on the vehicle type, vehicle use type, trip purpose, travel distance and travel time. Majority of the young driver is driving a car (94.0%) compared to another vehicle type; small lorry (4.0%) and large lorry (2.0%). It also reflected in the use of the vehicle which 91.0% for private purposes and 9.0% for commercial purposes. Next

question is involving the trip purpose. Majority of young drivers (42.0%) are driving for leisure or vacation, followed by work trip (29.0%) and home trip (18.0). In view of travel distance, a majority of them travel more than 91km with 68.0%, while more than one third, 38.0% of them travel for more than 120 minutes or 2 hours. It can be understood that majority of young drivers drive cars for private use like vacation and holiday with some of them for work purposes. It also signifies that they are traveling for extended distance and extensive amount of time.

Table 1
Descriptive Statistics for Vehicle Use Characteristics and Driver Background

Section A (Vehicle Use Characteristics)		
Type of vehicle	**Frequency (N)**	**Percentage (%)**
Car	94	94.0
Small lorry	4	4.0
Large lorry	2	2.0
Use type	**Frequency(N)**	**Percentage (%)**
Private	91	91.0
Commercial	9	9.0
Trip Purpose	**Frequency (N)**	**Percentage (%)**
Work trip	29	29.0
Leisure / Vacation	42	42.0
Education	2	2.0
Home trip	18	18.0
Shopping	1	1.0
Others	8	8.0
Travel distance (km)	**Frequency (N)**	**Percentage (%)**
Less than 9	1	1.0
10-29	11	11.0
30-49	10	10.0
50-90	10	10.0
More than 91	68	68.0
Travel time (minutes)	**Frequency (N)**	**Percentage (%)**
Less than 30	9	9.0
30-60	11	11.0
60-120	12	12.0
120-240	30	30.0
More than 240	38	38.0
Section B (Driver Background)		
Speeding violation record	**Frequency(N)**	**Percentage (%)**
Never	72	72.0
1 - 4 times	27	27.0
5 - 10 times	1	1.0
Involvement in accident	**Frequency(N)**	**Percentage (%)**
Never	66	66.0
1 - 4 times	34	34.0
Driving experience	**Frequency (N)**	**Percentage (%)**
Less than 1 year	4	4.0
1-3 years	52	52.0
4-10 years	43	43.0
10 years above	1	1.0

In the section B covers on driver background. It consists of speeding violation record, involvement in accident and driving experience. The results reveal that majority of the young drivers never have speeding violation record (72.0%), while those who have speeding violation record from one to four times and five to ten times accumulated to 28.0%. Similarly, the majority of young drivers never been involved in an accident (66.0%), while those who have involved in an accident between one to four times accumulated to 34.0%. It is expected that majority of young drivers hold insufficient driving experience length between one to three years with 52.0%. However, those who have more than four years of experience reported to 43.0%. It indicated that most of them have limited number of driving experiences between one to three years. Although a majority of them had never received the speeding fine, quite a few were reported to be involved in an accident at a young age.

4.2 Pearson correlation between speed violation record, involvement in accident, travel distance, travel time, length of experience and self-reported speed

Referring to Table 2 the relationship between speed violation record with self-reported speed, it can be reported that the correlation coefficient, r = .08 shows a very weak and positive relationship between speed violation record and self-reported speed. This correlation is not significant as the p-value is at .46 which p > .01. It can be understood from this correlation result that, there is no association exists between speed violation record with self-reported speed. This also means that drivers who have speed violation record cannot be associated with their speeding behaviour.

Table 2
Relationship between speed violation record and self- reported speed among young

		Speed violation record	Self-reported speed (km/h)
Self-reported speed (km/h)	Pearson Correlation	.075	1
	Sig. (2-tailed)	.458	
	N	100	100
Speed violation record	Pearson Correlation	1	.075
	Sig. (2-tailed)		.458
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3
Relationship between involvement in accident and self-reported speed

		Self-reported speed (km/h)	Involvement in accident
Self-reported speed (km/h)	Pearson Correlation	1	.302**
	Sig. (2-tailed)		.002
	N	100	100
Involvement in accident	Pearson Correlation	.302**	1
	Sig. (2-tailed)	.002	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

While Table 3 refers to the relationship between involvement in an accident with self-reported speed. It can be reported that the correlation coefficient, r =.30 shows very weak and positive correlation. This correlation is significant as the p-value is at .00 in which the p < .01. It can be

stated from this correlation result that, there is an association exists between involvement in an accident with self-reported speed. This explains that drivers who have been involved in accident can be associated with their speeding behaviour.

Table 4
Relationship between travel distance and time with self-reported speed among young drivers

		Travel distance	Travel time	Self-reported speed (km/h)
Travel distance	Pearson Correlation	1	.859**	.150
	Sig. (2-tailed)		.000	.135
	N	100	100	100
Travel time	Pearson Correlation	.859**	1	.084
	Sig. (2-tailed)	.000		.408
	N	100	100	100
	Pearson Correlation	.150	.084	1
	Sig. (2-tailed)	.135	.408	
Self-reported speed (km/h)	N	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 denotes the relationship between travel distance and time with self-reported speed. It can be reported that the correlation coefficient between travel distance with self-reported speed, r =.15 shows very weak and positive correlation. This correlation is not significant as the p-value is at .14 in which the p > .01. It can be stated from this correlation result that, there is no association exists between travel distances with self-reported speed. This means drivers who travel for the long journey cannot be associated with their speeding behaviour.

Meanwhile, the relationship between travel time with self- reported speed shows the correlation coefficient, r =.08, which this refers to very weak correlation. This correlation is not significant as the p-value is at .41 in which the p > .01. Therefore, there is no association exists between travel time with self-reported speed. This means drivers who travel for the long hours cannot be associated with their speeding behaviour.

The result for correlation coefficient between travel distance and time, r =.86 shows strong and positive correlation. This correlation is also significant as the p-value is at .00 in which the p < .01. It can be stated from this correlation result that, there is an association exists between travel distance with travel time. This explains that drivers who travel for longer distance also denotes for longer journey time.

Table 5
Relationship between length of driving experience with self-reported speed among young drivers

		Length of driving experience	Self-reported speed (km/h)
Self-reported speed (km/h)	Pearson Correlation	.336**	1
	Sig. (2-tailed)	.001	
	N	100	100
Length of driving experience	Pearson Correlation	1	.336**
	Sig. (2-tailed)		.001
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5 denotes the relationship between the length of driving experience with self-reported speed. It can be reported that the correlation coefficient between the length of driving experience

with self-reported speed, r =.34 shows weak and positive correlation. This correlation is significant as the p-value is at .00 in which the p < .01. It can be stated from this correlation result that, there is association exists between the length of driving experience with self-reported speed. This means drivers who have an extended length of driving experience can be associated with their speeding behaviour.

Table 6
Factors that influence young drivers to speed behaviour

Statement	Frequency (*N*) *Agree and Strongly Agree*	Percentage (%)
(a) When other road users initiate the speeding behaviour	25	25.0
(b) My friend encourages me to speed	15	15.0
(c) When I need to meet deadlines	45	45.0
(d) When the speed limit is low	20	20.0
(e) Want to reach the intended destination quickly	45	45.0
(f) Speeding on wide lane at Expressways and multiple lanes at Federal Roads	53	53.0
(g) Technology has assisted me to speed as it can inform the police presence (e.g.: Waze)	25	25.0
(h) Speeding feed my ego by giving sense of power and control	10	10.0
(i) Feel excitement and thrill while speeding	25	25.0
(j) Like the feeling of speeding	26	26.0
(k) Feel relaxed when speeding	18	18.0
(l) Speeding due to slow drivers	29	29.0
(m) Speeding when there is no enforcement	35	35.0
(n) Speeding whenever drive alone	32	32.0
(o) When hearing particular type of music	16	16.0

Referring to Table 6, it can be seen there are various factors related to speeding behaviour. It can be reported that several factors that have influenced young drivers to involve in speeding behaviour; (c) when I need to meet deadlines (45.0%), (e) want to reach the intended destination quickly (45.0%), (f) Speeding on wide lane at Expressways and multiple lane at Federal roads (53.0%). These factors can be considered as influential factors in speeding behaviour, and it can be categorized to situational factors for (c) and (e) statements, while (f) can be classified to road environment factor.

The remaining factors somehow do not significantly influence young drivers to involve in speeding behaviour. However, several statements like in (m) speeding when there is no enforcement (35.0%) and (n) speeding whenever drive alone (32.0%) do contribute some significant percentages.

The other factors like social do not influence the young drivers in speeding behaviour. The statements that represent social factor are: (a) speeding when other road users initiate the speeding behaviour contributes to 25% and (b) my friend encourages me to speed contributes to 15%. Similarly, the emotional factor does not influence young drivers to speed. This can be seen in the statement: (h) speeding gives me sense of power and control accounts to 10%, (i) feeling of excitement and thrill while speeding with 25%, (j) liking the feeling of speeding with 26%, (k) relaxation when speeding with 18% and (l) speeding due to slow driver accumulate to 29%. Besides that, young drivers do not perceive the speed limit, the influence of music and technological assistance like Waze may affect them to speed. Only a few of them agree with these statements: (d) When the speed limit is low accumulates to 20%, (g) Waze has assisted in speeding as it informs the police presence accumulates to 25% and (o) speeding when hearing particular kind of music with 16%.

5. Conclusion

It can be concluded that only several factors influence young drivers to involve in speeding behaviour. Results from Pearson correlation presents that involvement in an accident, length of driving experience, situational and road environment can be associated with young driver speeding behaviour. This suggests that other factors like speed violation record, travel distance, travel time, social, emotion and perceptual factors cannot be associated to young driver speeding behaviour. Several countermeasures need to be proposed to improve the issue of young driver speeding behaviour. The first countermeasure is by introducing road safety education to young people. Road safety education can be taught theoretically as well as practically as a way of instilling good driving behaviour among driver. There are also quite a few countries that have initiated the teaching of road safety education in their school syllabus including Australia. This can be also implemented in Malaysian school curriculum and expectantly by introducing this education; drivers can practise good behaviour on the roads.

Besides that, the government can conduct road safety campaign, specifically targeting the speeding behaviour among young male drivers. Taken example from Queensland government where they have conducted an ad campaign called 'Better Slow Down' targeting young male drivers aged 17 to 24 years' old who are over-represented in fatal speeding crashes in Queensland [13]. Then, government, authorities and enforcement agencies must continue the current countermeasure that they conducted such as demerit points under KEJARA (Keselamatan Jalan Raya) system with attention given to young drivers. From time to time, evaluation and assessment should also be conducted to assess the effectiveness and success of this system. It is important to cut down the number of speeders as well as traffic offenders towards minimizing the road traffic accidents and fatalities. It is one of the important criteria to measure the stability of a country and towards achieving the status of the developed country in 2020. Some recommendations for future study is by conducting an in-depth interview with young drivers to understand their actual explanations and to consider motorcycle in the future.

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