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ABERRANT DRIVING AMONG YOUNG MALAYSIAN DRIVERS

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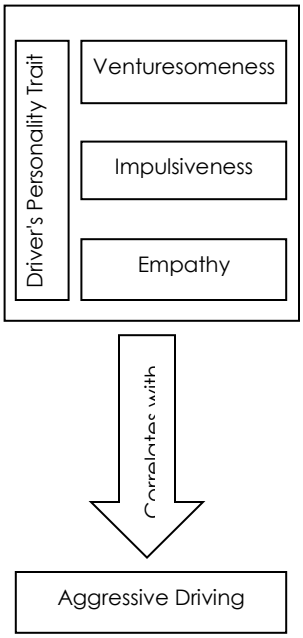
Graphical abstract



Abstract

This paper discusses the result of a quasi experimental study aimed to investigate the relationship between personality traits and aggressive (aberrant) driving among young Malaysian drivers. 127 students with mean age of 22 (68 males and 59 females) and valid class B2 driving license were recruited for the study. Before exposure to experimental intervention, the participants completed Eysenck's Impulsivity Inventory (aka IVE Questionnaire) which assessed personality traits (impulsiveness, venturesome and empathy), and AVIS Questionnaire, developed by Vienna Test System (VTS) which assessed aggressiveness while driving. In the experiment the participants were shown video scenarios of aggressive driving as a stimulus for aggressive driving evaluation. They were then asked to respond to questions related to provocations and aggressive behaviour from other drivers on to themselves and of other drivers being provoked by the same situation. The results revealed significant relationship between empathy and personality types ($p<0.05$) where subjects who score low on empathy and high on venturesome-ness tended to be more aggressive. Even though nearly all participants admitted that Malaysian drivers were aggressive on the road, only 15% of the participants agreed that they are aggressive drivers themselves. Based on this study's results, it is suggested that personality screening tests should be implemented by the relevant agencies as a preliminary measure to reduce the road rage phenomena and aggressive driving.

Keywords: Aggressive driving; impulsiveness; venturesome; empathy; Malaysian young drivers

Abstrak

Kertas ini membincangkan hasil kajian quasi-eksperimen yang dilakukan untuk menyelidik hubungan di antara trait personaliti dan pemanduan agresif (menyimpang dari kebiasaan) dikalangan pemandu muda Malaysia. Sebanyak 127 pelajar dengan umur purata 22 (68 lelaki dan 59 wanita), dan lesen memandu sah kelas B2 telah direkrut di dalam kajian ini. Sebelum didedahkan kepada intervensi eksperimental, para peserta telah menyiapkan Inventori Impulsiviti Eysenck (iaitu soal selidik IVE) yang menilai trait personaliti (gopoh, berani menangung risiko dan empati), serta soal selidik AVIS yang dibangunkan oleh Vienna Test System (VTS) untuk menilai keagresifan semasa memandu. Di dalam eksperimen ini, para peserta telah ditunjukkan video senario-senario pemanduan agresif sebagai stimulus untuk penilaian pemanduan agresif. Mereka kemudiannya diminta untuk memberi maklumbalas kepada soalan-soalan melibatkan provokasi dan kelakuan agresif oleh pemandu lain kepada mereka dan juga keadaan apabila pemandu lain diransang oleh situasi yang sama. Keputusan yang diperolehi menunjukkan hubungan yang signifikan di antara empati dan trait perseonaliti ($p<0.05$) di mana subjek-subjek yang memiliki skor empati yang rendah dan keberanian mengambil risiko yang tinggi lebih

bersifat agresif diatas jalan. Walaupun hampir kesemua peserta bersetuju bahawa pemandu-pemandu Malaysia adalah agresif diatas jalanraya, hanya 15% peserta menggangap diri mereka pemandu agresif. Berdasarkan kajian ini, adalah dicadangkan ujian saringan personaliti dilaksanakan oleh agensi-agensi berkaitan sebagai langkah awal mengurangkan fenomena keganasan jalanraya dan pemanduan agresif.

Kata kunci: Pemanduan agresif; kegopohan; berani mengambil risiko; empati; pemandu muda Malaysia

1.0 INTRODUCTION

Injuries and accidents on the road contribute to a significant number of global deaths, incapacities, and associated trauma. Global Status Report on Road Safety [1] stated that 1.24 million deaths occurred worldwide in 2010 due to road injuries. Malaysia was ranked among 33 countries which had the highest road deaths at 23.8 deaths per 100,000 inhabitants and third in road fatalities per billion kilometres driven [2]. According to Royal Malaysia Police (PDRM) in 2013, about 19 persons die in road accidents across the country every day and the number of car accidents continued to rise by another 4,898 cases, or 9.4 percent, to 56,880 cases. In 2014, the Traffic Branch noted a 5.5 percent and 4.6 percent rise in car and motorcycle accidents respectively, compared to 2013 [3]. In total, there were 59,984 cases of car crashes and 5,899 cases of motorcycle crashes last year. According to statistics by the Malaysian Institute of Road Safety Research (MIROS) more than 80% of traffic accidents in Malaysia are caused by human error [4]. Previous studies have consistently found that 80-90% of traffic accidents are due to human factors or drivers behavior [5][6]. There is the fact that about ninety percent of our road accidents are related to bad driving behaviour such as driving recklessly, speeding, under the influence of alcohol, changing lanes without signalling, passing through red lights and the tendency to drive in an aggressive or risky manner [7], [9] along with demographic factors such as age and gender [11], [12]. When it comes to young drivers, risky and aggressive driving appears to be the dominant human factor that places them at risk[11]. Additional variables include the fact that they are inexperienced but tend to over-estimate their driving skills while underestimating danger [13], such as negligence, drunk, fatigue, impatience, risk-taking behavior, and aggressive or risky driving. Having looked at the prevalence of aggressive behaviors of drivers in Malaysia, it is important to understand the possible causes leading to such acts.

Many countries, including the United States, the United Kingdom, Canada and China, have acknowledged the problem of road rage and some have taken measures to help prevent dangerous driving and road rage incidents. The US National Highway Traffic Safety Administration declared that road rage had become the number one traffic problem [13].

There is no widely accepted definition of the concept of 'road rage' or agressvie driving. Agressive driving often manifested by verbal abuse or dangerous actions as reaction to a particular driver/road user. National Highway Traffic Safety Administration [9] defines aggressive driving as the event occurring when an individual commits a combination of moving traffic offenses to endanger other persons or property even it can lead to altercations, assaults and collisions causing injuries and even deaths. [12] defines as "loss of emotional control while driving, whereas [14] has define this in more extreme situation including driver or passenger attempts to kill, injure, or intimidate a pedestrian or another driver or passenger or to damage their vehicle in a traffic accident. The term "road rage" is now commonly used by researchers in traffic psychology, a branch of psychology that focuses on the behaviour of road users. However, many traffic psychologist argue that the definition of road rage should include all forms of aggressive driving or anti-social behaviour on the road. [15] lists 15 behaviours associated with road rage, which range from beeping the horn and gesticulating to threatening or physically assaulting another driver.

Previous studies found that most drivers have experienced some form of road rage, as victim or as perpetrator. For example British Crime Survey in the 1998, showed that 54% of drivers said they had been a victim of some form of road rage but only 3% said they had been threatened with violence and 9% said they had been forced to pull over [16]. [17] and [18] evidence that 66% of traffic deaths are caused by aggressive driving and 37% of aggressive driving incidents involve firearms. Half of the drivers who are victims of aggressive behavior on the road which includes but is not limited to horn honking, rude gestures or tailgating admit to responding with the aggressive behavior of other drivers. According to [19], aggressive driving include racing, tailgating, failing to observe signs and regulations, and seeking confrontations with other drivers. Among these offences mentioned speeding is one of the most prevalent aggressive driving behaviors, as half of the drivers admitted to have exceeded the highway and

neighborhood speed limits and engage in risky driving behaviors [19].

As in with young drivers around the world, Malaysia is also not immune to the ravages of aggressive and irresponsible driving from its young driving populace. In Malaysia the menace of aggressive driving receives attention from various related parties and has been among a priority issue. For example, *Mat Rempit* or illegal motorbike racing has been a prime matter in recent years. Moreover, despite popular with friendliness of its population majority of Malaysian behave differently on the road as they immediately becoming bad drivers such as hot tempered, negligent and showing bad attitudes such as disregard red light and traffic sign when on wheel [9],[10], [17], [19].

One reason for this phenomena could be associated the increased number of drivers and vehicles registered. Statistics from the [20] indicates that the number of registered drivers increased progressively from 9,928,238 in 2005 to 13,303,843 in the 2012. According to [21] the increasing number of drivers' population suggests that the possible number of aggressive drivers also increased and hinted that an increase in the number of vehicles on the road can cause an increase in the likelihood of aggressive driving behavior. These figures make more sense if combined with the understanding of the youth's mind. With increased number of drivers, better roads and machines, another factor of equal [41], if not more importance, is the human error proneness among young drivers.

Source of aggressive while driving has been identified as either direct or indirect factors [22]. For example direct factors may include acts or challenges of other drivers prompting aggression which can directly lead to aggressive driving in retaliation. Similarly, environmental and personal factors can be indirect factors [22], [23]. For example, bad weather, bad road conditions, traffic congestion and stress can lead to aggressive while driving. Road rage, like any other form of anger, usually results from stress. Stress is triggered by "stressors" or events that disturb equilibrium and demand an adaptive response [24]. Stress causes physical changes in the body that induce the "fight-or-flight" (or sympathetico-adrenal) response. Our biochemistry changes to increase strength, reduce blood supply to our extremities and increase our aggressive potential [12]. Since "flight" is not an option for someone driving a car, the "fight" response predominates. A number of researchers have argued that driving, especially in congested conditions, is exceptionally stressful, so that even people who do not normally get angry can lose control.

Environmental factors such as driving distance per day and traffic jams and psychological factors such as displaced aggressiveness and attribution of blame can contribute to "road rage" behavior. Personal factor and individual differences may cause a driver to act dangerously while driving a vehicle [25]. Personal factors, including various demographic factors such as age, gender, driving experience, involvement in a road accident, and the number of summons received, and personality factors are also a potential cause which contributes towards aggressive driving. However, in the discussion of causal factors in aggressive driving, the scales are largely tilted towards the personality of the driver for no amount of environmental stressors and road conditions can amount to the burden of responsibility which personality of the driver alone bears.

With regard to agressive driving, cognitive appraisal theory explain how people reacted to stressful events depends on their circumstances and situation [24]. For instance, slow-moving traffic will be much more stressful if someone needs to catch a plane or a train than if there are no particular consequences to being late. People who have had a stressful day are more likely to feel stressed by events when driving home. In addition, some people are more prone to arousal than others. Personality is one of the most important causal factors in determining individual's driving style and has therefore been the interest of traffic psychologists to examine the relationship between personality and the issues pertaining to drivers on the road. In the Type A/B classification, for example, Type A personalities are "excessively competitive, aggressive, impatient, time urgent, and hostile" [24]. Another way of measuring personality is to rate people on a scale for different personality traits, such as the Zuckerman-Kuhlman personality test that lists five traits including impulsive sensation-seeking and aggression-hostility. Using this test, [28] found that risky behaviour including reckless driving was associated with high scores on sensation-seeking and that risk takers also scored highly on aggression-hostility.

Several personality types have come to the front in the previous researches which include impulsiveness, venturesome-ness, empathy, sensation-seeking, boredom proneness, narcissism, driving anger, risk-taking, conscientiousness, neuroticism, and others [26]–[29]. A number of previous studies have proposed to identify the influence of aggressive driver's personality traits on driving [21]–[30] .Drivers who are less aggressive while driving may potentially indirectly contribute to aggressive driving [21]. Research has shown that aggressiveness on the road increases with the attributions of blame onto others [33]. In other words aggressive drivers are more likely to hold an external locus of control. In general, drivers on the road judge themselves less as being the cause of aggressive driving. Most views on aggressive driving are attributed to the fault or negligence of the other drivers. However, the drivers thought that most other drivers exhibit aggressive driving behavior.

In addition, socio-demographic factors such as gender and driving experience as well as records of accidents and traffic offenses can also be related to differences in personality and driving styles on the road. Numerous studies such as [8], [11] have shown that socio-demographic factors are important in understanding the link between these factors and aggressive driving. [24]noted that several previous

studies have found that almost all individuals with *road rage* behavior are males (96.6%) and young (average age = 33 years). Young men are more likely to act aggressively on the road compared to women [12], [21], [29], [34]–[36]. Younger drivers tend to drive more aggressively [38], [12].

Therefore, the current study aimed to investigate the relationship between personality traits and aggressive driving among young drivers, and to study the role of personality as predictive factor in the frequency of aggressive driving behaviour. Furthermore, evaluation on their own and other drivers' aggressive driving behaviour were also studied.

2.0 METHODOLOGY

2.1 Instruments

Impulsiveness Questionnaire (IVE)

To measure personality traits Impulsiveness Questionnaire [40] was used which measure the following traits i.e. impulsiveness, venturesome-ness and empathy. This questionnaire was constructed to measure impulsiveness (equivalent items of psychoticism [P]), venturesome-ness (type of impulsiveness more to extraversion [E]), and empathy (which comes from a special scale that has its own reliability) [40]. After few reviewing process the questionnaire, a version with 54 items [40] was formed and called I_7. [40] has taken into account the aspect of impulsiveness as abnormal or pathological risk-taking behavior while the venturesome-ness component refers to "... true risk-taking" [40] in line with Extroversion. In other words, an individual who is impulsive is seen as showing "... a complete lack of looking ahead" about the consequences of his/her actions. Venturesome individuals also exhibit risk taking behavior, but with fully understanding that there is a risk in their behavior. The original questionnaire was in English. It was translated into Malay language and was used in this study. I_7 components got high reliability scores in the studies ($r>0.6$).

Aggressive Driving Questionnaire

To cater to Malaysian participants the Aggressive Driving Behavior (AVIS) in Vienna Test System software (VTS) [42] was adapted and validated to formulate Aggressive Driving Questionnaire. It consists of 29 items which measure the frequency (1=never; 7=always) of aggressive driving behavior among the participants. It has two subscales which measure the frequency of aggressive driving behavior adopted by a participant (23 items) and also the frequency of their driving behaviors that can contribute to aggressive driving of the other drivers (6 items). AVIS includes 130 items and is used to assess the level and frequency of aggressive behavior in traffic. The first round measures the frequency of aggressive driving behavior in normal condition while the second round is designed to measure differences in the level and frequency of aggressive driving in stressful conditions. It shows a high internal consistency, $r = 0.96$ for normal conditions and $r = 0.97$ for stressful conditions. The alpha coefficients indicated by the Aggressive Driving Questionnaire in current study, $r = 0.87$ that is considered high.

2.2 Design and Procedure

Self-administered questionnaire and a response card selection technique were used to measure aggressive driving and participants' judgments on aggressive driving. Each response card came with a number and rating scale. The participants were asked to choose one card to response for each statement/question. In this study, quasi experimental design with one-shot case study was used. According to [43] the following criteria were met: (a) there is no control group, (b) a treatment is provided as a stimulus, (c) only one point of time for data collecting after the treatment was given, and (d) subjects were not randomly distributed in experimental conditions. Participants were evaluated through questions after watching the video that contains aggressive scenario for drivers.

2.3 Sample

Sample consisted of 127 (male = 68, female = 59) participants who were from the National University of Malaysia who participated voluntarily. Participants aged between 18 and 26 years (mean age=21.67 years, SD=1.44). Most drivers had 4 years of driving experience. 48.0% of them had been involved in road accidents and 26.0% of the subjects had received a summons. In this study, 40 participants (31.5%) were identified as having impulsive trait, 39 participants (30.7%) had venturesome trait, and 48 participants (37.8%) exhibited empathy trait. Overall, 63.8% of participants drove aggressively (driving aggression level Medium and High), while 36.2% of the participants exhibited decreased practice aggressive driving (driving aggression level Low).

2.4 Analyses

The data were analysed through SPSS (20.0) using descriptive analysis includes measures of central tendency, mean, mode and median, measures of dispersion of standard deviation, measures of frequency, percentage, minimum, and maximum values. Inferential statistics were used to make reasonable generalizations on young Malaysian drivers. Different hypotheses were tested according to data normality with Shapiro-Wilk test. According to the nature of data parametric and non-parametric tests were employed such as Spearman correlation, Chi-square test, and the Mann-Whitney U test.

3.0 RESULT

The results have been tabulated according to hypotheses that exhibited in following tables:

Table 1 Socio demographic of subjects

Demographic Information	N	Percentage (%)	Mean	SD
Age	127	100.0	21.67	1.44
Gender				
Male	68	53.5		
Female	59	46.5		
Driving Experience (year)	127	100.0	3.91	1.58
Driving Distance Per Day (Km)	127	100.0	18.43	29.40
Road Accident Involvement			0.69	0.86
None	66	52.0		
Once	39	30.7		
Twice	18	14.2		
3 times	3	2.4		
4 times	1	0.8		
Number of Traffic Summonses Received			0.57	2.05
None	94	74.0		
One and above (1-20 times)	33	26.0		

SD=Standard Deviation

Table 2 Level of aggresssion

Level of Driving Aggression	Frequency	Percentage (%)
Low	46	36.2
Moderate	34	26.8
High	47	37.0

Table 3 Correlations between Aggressive behavior with other variables

Variables	1	2	3	4	5
Imp	1	0.179*	-0.002	0.036	0.046
Vent		1	-0.240**	0.458**	0.169
Emp			1	-0.678**	-0.228**
Frequency of Aggressive Driving Behavior				1	0. 1**
Frequency of Causal Aggressive Driving Behavior					1

Table 4 Summary of regression analysis

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	21254.219	3	7084.740	50.635	0.000
Residual	17209.750	123	139.917		
Total	38463.969	126			

Table 5 Summary of regression analysis

Predictive Factors	B	B	T	Sig.	95.0% Confidence Interval for B	
					Lower Bound	Upper Bound
Constant	87.955		8.586	0.000	67.678	108.233
Imp	-0.164	-0.022	-0.360	0.719	-1.067	0.739
Vent	2.897	0.317	5.022	0.000	1.755	4.039
Emp	-4.228	-0.602	-9.680	0.000	-5.092	-3.363

Table 6 Summary of Chi-Square

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.911	4	0.000
Likelihood Ratio	46.780	4	0.000
Linear-by-Linear Association	14.942	1	0.000
N of Valid Cases	127		

Overall score in impulsiveness (*Imp*), venturesomeness (*Vent*), and empathy (*Emp*) for each subject was calculated. Then subjects divided into three groups representing each personality trait, 40(31.5%) subjects were classified as having the *Imp* trait, 39 (30.7%) subjects had the *Vent* trait, and 48 (37.8%) subjects had *Emp*.

The score of aggressive driving remained minimum at 28 and a maximum of 101, with the mean value of 61.98 (SD = 17.47) indicating the frequency of aggressive driving behaviour is likely to be high. The frequency of behaviour that causing other drivers to get angry was 18.42 (SD = 4.45) proved likely to be low. The frequency of aggressive driving behaviour was divided into three groups; Low, Moderate, and High according to the percentiles (See Table 2).

Normality tests were carried out to calculate the frequency of self-aggressive driving and aggressive driving provoking behaviours in other drivers; variance was calculated on the bases of personality traits such as impulsiveness (*Imp*), venturesomeness (*Vent*), and empathy (*Emp*). Shapiro-Wilk test was used to measure the normality of the data because the sample size (127 subjects) in this study is less than 2000 people. Both the dependent variables had a normal distribution of data. Pearson correlation was used to test the correlation between personality and aggressive driving (See Table 3). There was a significant positive relationship between venturesomeness and the frequency of aggressive driving behaviour ($r = 0.46$, $p<0.01$). The correlation also depicts a significant negative relationship between empathy and frequency of aggressive driving behaviour ($r = -0.68$, $p<0.01$).

Based on Table 4, multiple linear regression analysis showed *Imp*, *Vent*, and *Emp* are the significant predictors of aggressive driving behaviour [$F (3,123) =50.635$, $p<0.01$, $R^2=0.553$]. This finding suggested that the subject's personality traits can significantly predict the frequency of aggressive driving behaviour (See Table 4). The Beta Standardized Coefficients for each predictive factors were, *Imp* ($\beta=-0.022$, $p> 0.05$); *Vent* ($\beta=0.317$, $p<0.01$) and *Emp* ($\beta=0.602$, $p<0.01$). *Emp* and *Vent* had contributed to its significance in predicting the frequency of aggressive driving behaviour (See Table 5).

There are significant differences found between *Imp*, *Vent* and *Emp* with the level of driving aggression (χ^2 Pearson = 41.911, $p<0.01$). These relationships also showed a significant strength (Phi=0.574, $p<0.01$; Cramer's V=0.406, $p<0.01$) [See Table 6]. Spearman correlation was employed for correlation analysis between the frequencies of aggressive driving behaviour with the frequency of causing other drivers' aggressive driving behaviour. The results show that there was a significant positive relationship between them ($r=0.49$, $p<0.01$). The results also indicated that there was a significant positive relationship between the number of accidents' involvement with the frequency of aggressive driving behaviour ($r=0:38$, $p<0.01$). The results of the Mann-Whitney U test showed that there were significant differences between gender and frequency of aggressive driving behaviour ($U=1275.50$, $p<0.01$).

4.0 DISCUSSION

Venturesomeness has been found positively and significantly correlated with the frequency of aggressive behavior on the road. This is in line with finding of [30] the tendency to take risks may contribute to certain driving practices unsafe speeding, overtaking long lines during traffic jams, exceeding the speed limit, and so on, indicated the risk of road accidents implicitly, but the benefits (time saving) obtained from such actions may be far more important and valuable to the driver, especially for those who are impatient or in a hurry to get to the destination. This finding also was supported by numerous previous studies [8], [11], [23], [28]–[32], [44][50] which found that personality was related to aggressive and risky driving behaviors. The possibility that drivers tended to willing to take risks was they had "rationalized" their venturesomeness or denied their driving mistakes [28]. It might be due to their belief of inflated to drive efficiency, or the illusion that they will not be mishap [30]. Therefore, despite clear about the effects and consequences of bad might happen, a venturesome driver has a tendency to take risks.

Another interesting finding from this study was low empathy scores were found to be more prone to aggressive behavior while driving and caused the aggression of other drivers. Low empathy trait was found to correlate significantly with both high frequency of aggressive driving behavior and high frequency of causing others' aggressive driving behavior, also acted as a significant predictor to the frequency of aggressive driving behavior. The findings contradict the findings of [28] as they found drivers who did more driving mistakes had higher empathy. But in line with some previous studies, dangerous drivers were found to be less empathy or less considerate towards others in a study of the brain reactivity that dealt with the nature of empathy, using functional Magnetic Resonance Imaging [44], [45].

Unexpected results from this study were impulsiveness trait that did not correlate with the frequency of aggressive driving behavior and no significant correlation with the frequency of behaviors that contribute to aggressive driving of other drivers.

Traditionally, current study depicts male drivers showed higher frequency of aggressive driving behavior than female drivers. It was consistent with most previous studies [11], [22], [30], [35]–[38]. The reason being men had a higher tendency than women to express anger and women tended to divert the anger (whispered to self or complained to the passenger and less expressed anger [7] [41].

This study also exhibit involvement in road accident was significantly correlated with high frequency of aggressive driving behavior. This is in line with the finding of [33] where aggressive expression were

significantly related to crash involvement on two types of aggressive expression such as challenge other drivers to race in close proximity (Personal Physical Aggressive Expression) and cursing another driver who almost caused a crash (Verbal Aggressive Expression).

The results also showed that there were significant differences between the frequency of being reprimanded and the level of driving aggressiveness. 93.7% of the subjects stated that their driving style was reprimanded by family members or friends. The subjects who were never been reprimanded, mostly contributed to low level of driving aggression. This finding can be explained from two perspectives. The presence of passengers who criticize the aggressive driving style driver produces two possibilities, first the frequency of aggressive driving behavior lead to an increase in the frequency of passenger's reprimand so that the driver can recognize harmful outcomes. Secondly, the presence of passengers and their comments might cause the frequency of aggressive driving behavior. Furthermore, it was found that 96.9% of subjects admitted that they were angry with such a provocative aggressive driving scenes shown in the video. 79.6% of the subjects were angry or very angry while evaluating others' aggressive driving behavior. 99.2% of the subjects admitted that they had been bullied on the road or become victims of aggressive driving. 94.5% subjects had not only been victims, but had witnessed or sat next to an aggressive driver.

In this experiment we found that there were three most frequent scenarios rated by subjects that lead to anger; scenarios of speeding, did not to give way to other motorists during traffic jams, and stopped in the middle of the road suddenly to drop off passengers. In terms of reaction towards these scenarios, the findings showed that 74.8% of the subjects were likely to react (fight), while 46.5% will not fight back against the rude attitude of the other drivers.

In response to their feeling towards safety, 71.7% of the subjects did not feel safe if the other drivers kept speeding, cutting off and weaving through traffic, but only 32.3% feel insecure if the subject was driving aggressively. Interestingly, all subjects agreed that aggressive driving was the cause of an accident. Nearly all subjects also agree that most drivers in Malaysia are aggressive drivers. However, when asked themselves whether they are under category of aggressive driver, only 15.0% of them admitted. Majority of subjects believe that such behaviors are attributing toward other drivers, not them. This finding was at odds with the reality that 93.7% of the subjects admitted their driving styles ever reprimanded by a family member or friend as a signal that they were executing aggressive driving.

5.0 CONCLUSION

In conclusion, the study found that venturesomeness and empathy emerged as a strong factor in predicting the behaviour of aggressive driving. Drivers whom tend to take risks and are less empathetic more often show an aggressive driving behaviour. Aggressive driving behaviour is also closely related to driving behaviour that can lead to aggressive driving of other drivers. A high number of involvements in a traffic accident were significantly correlated with the high frequency of aggressive driving behaviour. Men show a higher frequency of aggressive driving behaviour than women. All subjects tend to agree that aggressive driving is a cause of road accidents in Malaysia and all subjects agree that Malaysian drivers are generally aggressive, but when asked whether he/she is part of them they refused to admit. Overall, majority of drivers attribute the cause of aggressive driving to someone else. This study demonstrated only 15.0% of the subjects who admit themselves as an aggressive driver. The focus of future researches was suggested to be put on the role of empathy trait in aggressive driving. Drivers' evaluation on aggressive driving was proposed to be included in the process of driving license renewal so that it could be reviewed from time to time. It is also proposed that future research works to measure the above traits and attributes should utilize modern technology, such as driving simulators [47] which could be conveniently used to measure the traits and attributes within a safe environment in real-time due to its relatively low cost [48] and easy availability nowadays.

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