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Factors of the "Aggressive Driving" Behaviour amongst Malaysian Drivers

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Abstract*: This study explores factors that lead towards aggressive driving behaviour among Malaysian drivers and to determine the highest factor that contributes to these aggressive driving styles in Malaysia. Driving aggressively increases the chances of drivers becoming involved in a motor vehicle crash, and aggressive driving behavior occurs happens due to multiple factors. The Driving Anger Expression Inventory (DAX) is used to calculate the factors corresponding to their anger while driving. There are four factors that has been identified to define how people expressed their anger while driving by using DAX, they are Verbally Aggressive Expression (α=0.7332), Physically Aggressive Expression (α=0.8548), Using the Vehicle for Aggressive Expression (α=0.7267) and Adaptive/Constructive Expression (α=0.8711). At the end of this research, we found out that the Adaptive/Constructive Expression is the highest factor and most commonly used amongst drivers to adapt to these aggressive situations on the road. Followed by the factor Verbally Aggressive Expression and Using the Vehicle for Aggressive Expression. Then, the least often used factor in Malaysia is Physically Aggressive Expression. Therefore, some mitigation plans should be considered towards reducing accidents in Malaysia which is on a yearly rising trend.

***Index Terms*: Aggressive driving, Anger expression, Driving behavior, Malaysian Driver**

I. INTRODUCTION

Road safety is one of most important issues being discussed in Malaysia today, with an increasing number of people being injured and the rising death toll caused by accidents involving motor vehicle on our roads. The MIROS general statistics 1997-2016 analyzed that in 1997 there were 215,632 road crashes and from those incidences, 6,302 people lost their lives. In 2016, the statistics stated that accident cases grew to 521,466 road crashes and from those a further 7,152 people were killed [1]. The statistics has shown there exist an annual steady increase of road crashes in Malaysia and an unwanted yearly uptrend in fatalities due to these terrible mishaps. Road accidents would be caused by a variety of scenarios.

There have been many recorded accidents in Malaysia which was caused mainly due to human errors. For some cases, accidents occur due to driver's self- aggression during driving [2-4]. Driving aggressively increases the chances among Malaysian drivers of becoming engaged in an accident on the road. Therefore, the aggressive driving behaviour is an important problem since such action has been shown to be a major contributor to motor vehicle crashes and also causes fatal accidents on the road.

Year	Registered Vehicles	Population	Road Crashes	Road Deaths	Serious Injury	Slight Injury	Index per 10,000 Vehicles	Index per 100,000 Population	Indeks per billion VKT
1997	8,550,469.00	21,665,600.00	215,632.00	6,302.00	14,105.00	36,167.00	7.37	29.10	33.57
1998	9,141,357.00	22,179,500.00	211,037.00	5,740.00	12,068.00	37,896.00	6.28	25.80	28.75
1999	9,929,951.00	22,711,900.00	223,166.00	5,794.00	10,366.00	36,777.00	5.83	25.50	26.79
2000	10,598,804.00	23,263,600.00	250,429.00	6,035.00	9,790.00	34,375.00	5.69	26.00	26.25
2001	11,302,545.00	23,795,300.00	265,175.00	5,849.00	8,680.00	35,944.00	5.17	25.10	23.93
2002	12,068,144.00	24,526,500.00	279,711.00	5,891.00	8,425.00	35,236.00	4.90	25.30	22.71
2003	12,819,248.00	25,048,300.00	298,653.00	6,286.00	9,040.00	37,415.00	4.90	25.10	22.77
2004	13,828,889.00	25,580,000.00	326,815.00	6,228.00	9,218.00	38,645.00	4.52	24.30	21.10
2005	15,026,660.00	26,130,000.00	328,264.00	6,200.00	9,395.00	31,417.00	4.18	23.70	19.58
2006	15,790,732.00	26,640,000.00	341,252.00	6,287.00	9,253.00	19,885.00	3.98	23.60	18.69
2007	16,813,943.00	27,170,000.00	363,319.00	6,282.00	9,273.00	18,444.00	3.74	23.10	17.60
2008	17,971,907.00	27,730,000.00	373,071.00	6,527.00	8,868.00	16,879.00	3.63	23.50	17.65
2009	19,016,782.00	28,310,000.00	397,330.00	6,745.00	8,849.00	15,823.00	3.55	23.80	17.27
2010	20,188,565.00	28,910,000.00	414,421.00	6,872.00	7,781.00	13,616.00	3.40	23.80	16.21
2011	21,401,269.00	29,000,000.00	449,040.00	6,877.00	6,328.00	12,365.00	3.21	23.70	14.68
2012	22,702,221.00	29,300,000.00	462,423.00	6,917.00	5,868.00	11,654.00	3.05	23.60	13.35
2013	23,819,256.00	29,947,600.00	477,204.00	6,915.00	4,597.00	8,388.00	2.90	23.10	12.19
2014	25,101,192.00	30,300,000.00	476,196.00	6,674.00	4,432.00	8,598.00	2.66	22.00	10.64
2015	26,301,952	31,190,000	489,606	6,706	4,120	7,432	2.55	21.5	9.6
2016	27,613,120	31,660,000[e]	521466[a]	7152[a]	NA	NA	2.59	22.6	NA

Fig. 1 MIROS General Statistics 1997-2016 [1]

The National Highway Traffic Safety Administration (NHTSA) describes that aggressive driving as an action of an automobile doing harm to others on the road. The unsafe behaviour while driving includes driving exceeding the allowed limits and being too fast, failing to signal and also harmful lane changing.

Road accidents are increasing annually due to various causes. One of the major issue that leads to road crashes can be attributed to be initially caused from drivers' own aggression during driving.

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Nowadays, aggressive driving is a road traffic crime and also a hazardous issue on our nation's roadways. The study of National Highway Traffic Safety Administration (NHTSA) declared that the exact amount of crashes on motor vehicles caused by aggressive drivers is unknown, but NHTSA has previously approximate that about 66 percent of all traffic mortalities per year are caused by aggressive driving conducts, for example passing on the right, running red lights and tailgating. According to the Rocky Mountain Insurance Information Association (RMIIA), an automobile-related injury happens every 14 seconds in the U.S. The Insurance Information Institute reports that aggressive driving behaviours were contributing in 51.9% of fatal crashes in 2012 [4]. The study and report clearly expresses that more than 50 percent of annual traffic fatalities were caused by these aggressive driving behaviours. Driving aggressively increases the chances among Malaysian drivers of becoming involved in accidents on the road. Aggressive driving behaviour happens due to many factors. According to the previous researcher [5-6], there are four factors that relates to how drivers express their anger during driving by using a Driving Aggressive Expression Inventory (DAX). In this research, the problem statement is to classify the highest factor that contributes the most in aggressive driving behavior by using the Driving Aggressive Expression Inventory (DAX) applied unto the Malaysian drivers. Then, the data from this study can be utilized by other parties to organize structured plans to help reduce accidents among motor vehicle users in Malaysia. The objectives of this study are to obtain information and to collect data about aggressive driving behaviours among Malaysian drivers in relation to the increasing trend of accidents on Malaysian roads, most probably caused by human error. For some cases, accidents occur due to a driver's self- aggression during driving. This study was performed amongst the Malaysian drivers in order to understand the extent of aggressiveness in driving behaviour. The scope of this study focuses on Malaysian drivers' of ages between 17 years old and above that holds a valid driving license, as the allowable age to have a driver's license starts at that minimum age. The limitations of this survey study is that the focus is only upon car drivers from Malaysia, driving on Malaysian roads, with valid Malaysian driving license only. This study noticed significant relations that happens during rage behavior while driving and collision related situations, for example not having proper control of their automobile, low attention spans, being too speedy, following other vehicle too closely, and moving violations [7]. People delivering their expression of anger during driving was calculated by using the Driving Anger Expression Inventory also known as DAX which consists of 49 items [8]. In this DAX the respondents were asked about the frequency of expressing their anger during driving on 4 points Likert scale that were measured from (1=almost never until 4=almost always). There are four ways of anger expression while driving that produces score in the DAX. The ways people are expressing their anger are Verbally Aggressive Expression, Physically Aggressive Expression, Using the Vehicle for Aggressive Expression and Adaptive/Constructive Expression which are measurements of driving anger expression in the Driving Anger Expression Inventory (DAX), it was developed by Deffenbacher [7] and the DAX was then subjected to further items reduction to gain a shorter possible measure [8]. The DAX consisting of 25-items is an improvised version with a reworked set of questionnaire. The Verbally Aggressive Expression scale consist of 12 items and generally the item measures people expressing their anger while driving via verbal aggressive behaviour such as yelling and glares to another driver. Then, second is Physically Aggressive Expression scale contain 11 items and the item generally calculates the expression of anger while driving consisting of physical aggressive behaviour, like giving another driver the finger but not to the extent of using their motor vehicle as a mechanism of aggression and dissatisfaction [9]. Third, the 11 items using the Vehicle for Aggressive Expression scale commonly measures the aggressive behaviour involved by using the vehicle to deliver their frustration and to express displeasure at another driver such as flashing lights at another driver. Lastly, the 15 items of Adaptive/Constructive Expression scale generally measure the reaction of people which utilizes various positive ways to cope with the anger expression behaviour while driving and using these strategies for safe driving such as relaxing emotions to calm down [8].

II. METHODOLOGY

This research had performed a survey study via questionnaire data collection method with the objective to identify the highest factor that contributes to aggressive driving amongst Malaysian drivers by using the Driving Anger Expression Inventory.

Participants

This study was carried out in Malaysia amongst 250 respondents', being Malaysian drivers from various background and their ages must be from 17 years old and above selected randomly. In order to be eligible to participate in this survey, the participants must hold a valid Malaysian driving licenses. The results were recorded to solve the problem statement of this study.

Procedure

The researcher had distributed a set of questionnaire which consists of 2 parts. Part A is a qualitative survey which consists of 7 questions about the demographic background and part B is quantitative survey that consists of 49 questions about the aggressive driving using the Driving Anger Expression Inventory (DAX).

Measures

The questionnaire for part A is a qualitative survey and part B was adopted from a study recently in their study topic being The Driving Anger Expression Inventory: a measure of how people express their anger on the road [4].
The main factors of aggressive driving in this research are as follows:

- Verbally Aggressive Expression
- Physically Aggressive Expression

- Using the Vehicle for Aggressive Expression
- Adaptive/Constructive Expression

Prior to this survey study, a pilot study was performed involving 29 subjects amongst the Malaysian drivers. The average time for them to complete this questionnaire was about 7 minutes. The internal consistency and reliability of the questionnaire using DAX was assessed using the Cronbach's Alpha scale. The result for the DAX was more than 0.7 which means that all items in the DAX had good internal consistency based on the scale MATH.

Data Analysis Procedure

The data and information collected from the respondents in this survey must be recorded towards achieving the result for this study. For this research, software Minitab version 17.0 was used to calculate the collected data.

From the information obtained in the survey it was then possible to analyse the factors that contributes to the aggressive driving and to also identify which factors do contribute the most in the aggressive driving behaviour among the four factors derived from the Driving Anger Expression Inventory (DAX) amongst the Malaysian drivers.

First step for data analysis used in this research is by using the Cronbach's Alpha for the questionnaire to determine reliability and also the internal consistency of the question and to perform data analysis and later to interpret the data that was consolidated.

Then, Analysis of variance (ANOVA) tests is used to identify whether there exist any statistically significant differences between the means and different factor levels, also to determine any of those means are statistically significantly different from each other. For this research, ANOVA test is used to identify whether there are any significant differences between the four earlier identified factors of aggressive expression by using the revised DAX but applied in Malaysia.

Finally, the Post-hoc test is to analyse result from the experimental data. This test is an integral part of ANOVA. The ANOVA results do not determine which particular differences between means are significant then post-hoc tests is used to explore differences between multiple group means while controlling the experiment-wise error rate.

III. RESULTS AND DISCUSSION

The data collected from this research was then calculated using the Minitab software version 17.0 to get the highest factor that contributes to the aggressive driving amongst Malaysian drivers. Total respondents that had participated in this survey numbers 254 respondents.

For demographic part, descriptive data was analysed to determine the respondents' background that contributed to this survey. Then, from the revised DAX the data collected was analysed, Cronbach's alpha was used to clarify the internal consistency of the four major factors, finally using the ANOVA to identify the differences between factors, hence the post-hoc run to determine the highest factor leads to the aggressive driving.

Demographic Background

The demographic background part consists of 7 questions that we had included within the general information concerning age, gender, marital status, highest level of education, employment status, types of car and also the race-group of the respondent.

Table. 1 Respondent Demographic

	Respondents (N=254)		
	Variable	Frequency	Percentage (%)
1	**Age**		
	17 – 25 years old	138	54.3
	26 – 35 years old	77	30.3
	36 – 45 years old	14	5.5
	46 – 55 years old	18	7.1
	≥ 56 years old	7	2.8
2	**Gender**		
	Male	115	45.3
	Female	139	54.7
3	**Marital status**		
	Single	178	70.0
	Married	70	27.6
	Others	6	2.4
4	**Highest level of education**		
	Secondary school	22	8.7
	Foundation / Matriculation	43	16.9
	Diploma or the equivalent	63	24.8
	Bachelor's Degree	115	45.3
	Master	8	3.1
	PhD	3	1.2
5	**Employment status**		
	Student	128	50.4
	Self-employed	19	7.5
	Employed	94	37.0
	Unemployed	9	3.5
	Retired	4	1.6
6	**Type of car**		
	Compact	117	46.1
	Sedan	74	29.1
	SUV / MPV	34	13.4
	Luxury	8	3.1
	Others	21	8.3
7	**Race**		
	Malay	221	87.1
	Chinese	9	3.5
	Indian	11	4.3
	Others	13	5.1

From this study, there were 254 respondents that were randomly selected amongst the thousands of licensed Malaysian drivers. Majority of the respondents that participated were female (54.7%). Most of them were aged between 17-25 years old (54.3%). Besides that, more than half of the respondents in this study were single (70.0%). The majority of the respondents had Bachelor's Degree (45.3%) as their highest level of education. Most of them were students (50.4%). Furthermore, majority of respondents drove compact cars (46.1%). Largest number of respondents by race group that had participated in this survey were Malay (87.1%). The descriptive data analysis was shown in the Table 1 above.

Revised Driving Anger Expression Inventory (DAX)

The researcher had distributed a set of questionnaire which consists of 2 parts. Part A is a qualitative survey which consists of 7 questions about the demographic background and part B is quantitative survey that consists of 49 questions about the aggressive driving using the Driving Anger Expression Inventory (DAX) [13-14].

From this survey, the result is obtained after the questionnaire had been collected and interpreted. This result is very important in helping us to achieve the objective which is to classify the highest factor that contributes the most in aggressive driving by using the revised Driving Aggressive Expression Inventory (DAX) amongst the Malaysian drivers.

For this part, there are four ways of anger expression while driving that produces score in the revised DAX. The four factors of anger expression are measured using the 25-itmes while driving among Malaysian drivers using the revised Driving Anger Expression Inventory (DAX) are:

- Verbally Aggressive Expression
- Physically Aggressive Expression
- Using the Vehicle for Aggressive Expression
- Adaptive/Constructive Expression

There are three steps used to prepare the accurate results for this research. First step we identify the Cronbach's alpha for all factors to calculate the internal consistency of the items and factors. Second, we use the ANOVA to perform the ranking of highest factor of aggressive driving in Malaysia. Lastly, to further this study with the post-hoc test to identify which group are different.

Factors of Revised DAX

Table. 2 Means and standard deviations revised DAX

	Item	Mean	StDev
	Verbally Aggressive Expression (α=0.7332)		
Item 3	I make negative comments about the other driver.	2.091	0.762
Item 17	I swear at the other driver under my breath.	2.020	0.855
Item 14	I swear at the other driver aloud.	1.772	0.836
Item 20	I yell at the other driver.	1.598	0.837
Item 2	I call the other driver names aloud.	1.551	0.787
	Physically Aggressive Expression (α=0.8548)		
Item 9	I try to scare the other driver.	1.417	0.699
Item 6	I roll down the window to help communicate my anger.	1.327	0.647
Item 21	I try to get out of the car and have a physical fight with the other driver.	1.276	0.625
Item 5	I try to get out of the car and tell the other driver off.	1.268	0.615
Item 8	I bump the other driver's bumper with mine.	1.224	0.610
	Using the Vehicle for Aggressive Expression (α=0.7267)		
Item 13	I drive a lot faster than I was.	2.201	0.787
Item 4	I follow right behind the other driver for a long time.	1.827	0.786
Item 7	I speed up to frustrate the other driver.	1.776	0.791
Item 1	I drive right up on the other driver's bumper.	1.543	0.644
Item 10	I do to other drivers what they did to me.	1.539	0.773
	Adaptive/Constructive Expression (α=0.8711)		
Item 11	I pay even closer attention to being a safe driver.	2.961	0.893
Item 25	I pay even closer attention to other's driving to avoid accidents	2.949	0.954
Item 12	I try to think of positive solutions to deal with the situation.	2.874	0.834
Item 19	I tell myself it's not worth getting involved in.	2.764	0.911
Item 18	I try to think of positive things to do.	2.752	0.833
Item 22	I just try to accept that there are bad drivers on the road.	2.697	0.879
Item 24	I tell myself to ignore it.	2.657	0.860
Item 23	I just try and accept that there are frustrating situations while driving.	2.626	0.870
Item 15	I tell myself its not worth getting all mad about.	2.472	0.923
Item 16	I decide not to stoop to their level.	2.382	0.941
	Total DAX (α=0.8370)	*51.563*	*9.076*

Table 2 above shows the Cronbach's Alpha value, means and standard deviations of the 25-items and factors revised Driving Anger Expression Inventory (DAX). Responses to the 25 items were subjected to the revised DAX in four factors forms of anger expression while driving in Malaysia.

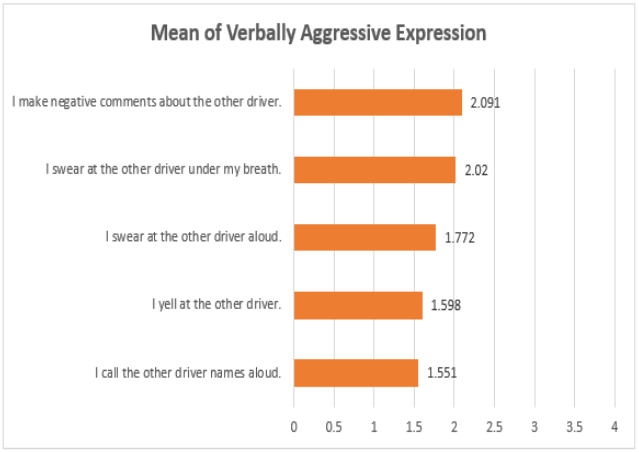

Fig. 2 Mean of Verbally Aggressive Expression

Based on the figure 2 above, the highest mean scored in this factor is 2.091 out of 4.0. The item in this factor with the highest mean is drivers expressing their anger to show their aggressive driving behaviors by just making negative comments to the other road users. The lowest item scored in this factor is 1.551 with the item being the drivers call the other road user names aloud. The 5-items factor was subjected to Verbally Aggressive Expression because, these items involves the drivers showcasing or displaying their anger behaviour or being aggressive by using verbal deeds; such as yelling and giving negative comments about the other drivers while driving. From this research, the Cronbach's alpha for Verbally Aggressive Expression is 0.7332 which is acceptable for this factor because it more than 0.7 according to Cronbach's alpha scale.

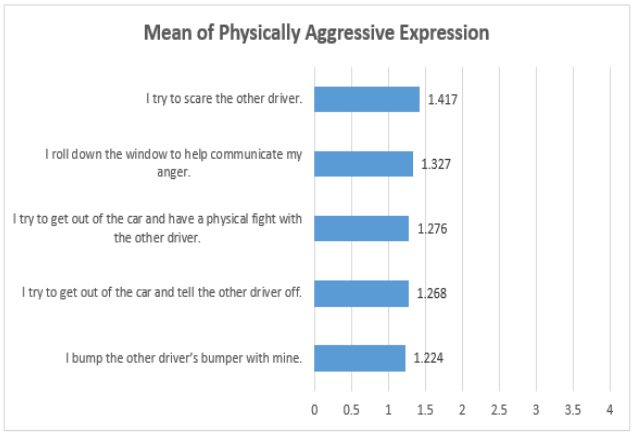

Fig. 3 Mean of Physically Aggressive Expression

In the figure 3above, the highest mean scored in this factor is 1.417 out of 4.0. This factor is related to the item is that the driver uses physical ways to express their anger while driving, such as the driver trying to scare the other road user.

The lowest item in this factor is the driver trying to bump the other road user's bumper with the item scoring at 1.224. Physically Aggressive Expression has 5-items in the revised DAX scored the Cronbach's alpha 0.8548 which shows it having good internal consistency by using the Cronbach's alpha scale.

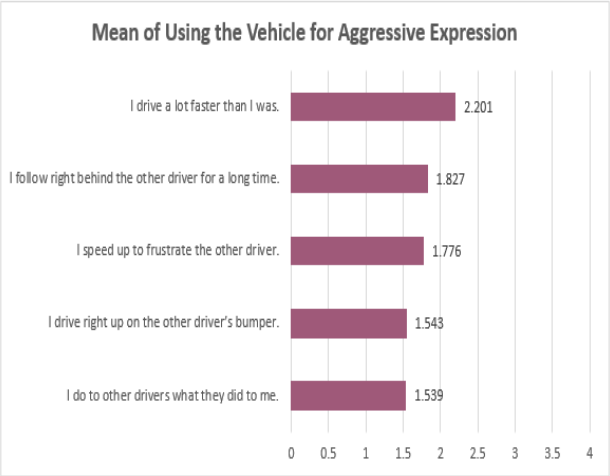

Fig. 4 Mean of Using the Vehicle for Aggressive Expression

The figure 4 above stated that, highest mean scored in this factor is 2.201 out of 4.0. The example of item in the DAX is the driver uses speed to overtake or harass another driver, as a way to express anger to the other driver while driving. The lowest item scored in this factor is the drivers do the same what the other road users did to them with the item scoring is 1.539. Based on the Cronbach's alpha scale the factor using the Vehicle for Aggressive Expression with the 5-itmes has an acceptable internal consistency because the result is 0.7267 which is more than 0.7 according to the provided scale.

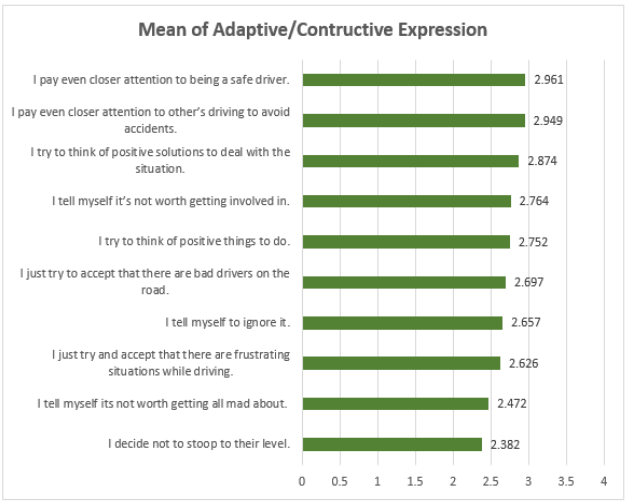

Fig. 5 Mean of Adaptive/Constructive Expression

As mentioned in the figure 5 above, the highest mean scored in this factor is 2.961 out of 4.0. The driver decides to focus more on the driving and trying to adapt to the situation on the road. Such as the item in the revised DAX, is when the driver tries to pay attention to the driving and to drive safely. The driver decides not to stoop to the other road user's level of mentality, is the lowest item scored in this factor with amount of 2.382 out of 4.0. The result of factor for the factor Adaptive/Constructive Expression with the 10-items of expressing anger while driving is 0.8711 that has a good internal consistency. This factor involves problem solving while driving and strategies to cope with their anger expression on the road.

ANOVA of revised DAX

Analysis of variance (ANOVA) tests is used to identify whether any statistically significant differences between the means have and different factor level also to determine any of those means are statistically significantly different from each other.

For this research, ANOVA test is used to clarify whether have any significant differences between the four have factors of aggressive expression by using the revised DAX in Malaysia.

H_0 = All aggressive expression factors in revised DAX are equal

H_1 = At least one aggressive expression factors in revised DAX is different

Table. 3 Analysis of Variance (ANOVA) revised DAX

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	3	264.8	88.2765	286.21	0.000
Error	1012	312.1	0.3084		
Total	1015	577.0			

From the calculated data, the result from ANOVA in the table 3 shows that the P-Value amount is 0.00 and default α used in this survey is 0.05. So, we reject H0 because P-value 0.00 is less than 0.05. Therefore, this result shows there are significant differences between the factors of aggressive expression among Malaysian drivers' that leads to aggressive driving by using the revised DAX.

One-way ANOVA only shows that there exist differences between factors but does not show which factors are different. Then, we need to further this research by performing post-hoc test to find out the rank of aggressive expression factors among the drivers that leads to aggressive driving in Malaysia by using the revised DAX. The post-hoc type used in this study is the Fisher's Least Significant Difference (LSD).

Post-Hoc Test: Fisher's Least Significant Difference (LSD)

Post-hoc test used to analyse result from the experimental data. This test is an integral part of ANOVA. The ANOVA results do not determine which particular differences between means are significant, then the post-hoc tests is used to explore differences between multiple group means.

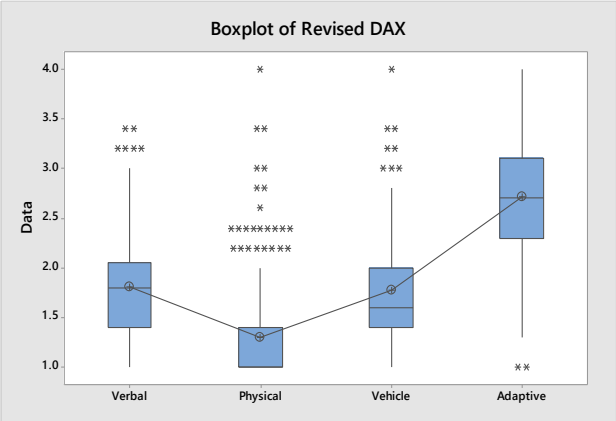

Fig. 6 Box plot of revised DAX

Box plot assess from the post-hoc test Fisher's Least Significant Difference (LSD) is used to determine the rank of the factors and also to classify the highest factor of aggressive expression among the drivers that lead to aggressive driving in Malaysia calculated by using the revised DAX.

From the calculated data in post-hoc the result shows that the highest factor scores in revised DAX among drivers in Malaysia is Adaptive/Constructive Expression was the most commonly reported type of expression. The score for this factor of aggressive expression is 2.700 out of 4.0. This result has shown that Malaysian drivers are more focus and try to adapt to the situation by controlling their anger expression on the road. They would also reduce their anger by ignoring the anger problems on the road rather than to get involved in conflict with the other driver.

Second factor contributes to the aggressive driving in Malaysia among the driver on the road is Verbally Aggressive Expression. 1.800 is the result for the second factor often use in Malaysia therefore this factor expresses that an angry driver might make negatives comment to other driver and might also yell at another user in order to express their anger behaviour. Even though it looks like a small case but if the other driver is unhappy and also indulges in his anger, he may as well reciprocate with his own anger expression to the first driver.

The third factor is using the Vehicle for Aggressive Expression to deliver their anger on the motorway amongst Malaysian drivers and which is also a common factor used in Malaysia, because the median score is 1.600 with the highest item mean scoring at 2.201. On the road, the explicit aggressive acts also include acts such as flashing their head-lights, it may not seem to increase the risk of accidents, but if the other road users are having low frustration tolerance and low empathy, it may lead to an increase in road crashes.

Last factor identified using the revised DAX, is that drivers in Malaysia show their anger expression, through Physically Aggressive Expression. This factor was almost never used with an average 1.000 out of 4.000 and with the highest mean scoring item of 1.417 and the lowest mean scoring item at 1.224. People in the anger situation often engage in dangerous, risky, and also aggressive driving behaviours and they tend to care less about their safety during those situations, so they are putting themselves and other road users at risk of crash involvement.

Table. 4 Post-hoc Rank of Factors

Fisher Pairwise Comparisons

Grouping Information Using the Fisher LSD Method and 95% Confidence

Factor	N	Mean	Grouping
4	254	2.7134	A
1	254	1.8063	B
3	254	1.7772	B
2	254	1.3024	C

From the post-hoc rank of factors, result in the table 3.4 above shows two factors are in the same group, therefore we need to run the t-test to identify and to confirm whether the two factors are in the same the group.

Table. 5 T-test result of Post-hoc Rank of Factors

Fisher Individual Tests for Differences of Means

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
2 - 1	-0.5039	0.0493	(-0.6006, -0.4072)	-10.23	0.000
3 - 1	-0.0291	0.0493	(-0.1258, 0.0676)	-0.59	0.555
4 - 1	0.9071	0.0493	(0.8104, 1.0038)	18.41	0.000
3 - 2	0.4748	0.0493	(0.3781, 0.5715)	9.63	0.000
4 - 2	1.4110	0.0493	(1.3143, 1.5077)	28.63	0.000
4 - 3	0.9362	0.0493	(0.8395, 1.0329)	19.00	0.000

The result obtained after the t-test in the table 4, we found no significant difference between the factor Verbally Aggressive Expression and Using the Vehicle for Aggressive Expression because P-Value is 0.555 greater than default α=0.05. Therefore, confirms that the verbal factor is in the same group with using the vehicle to express the aggressive expression while driving in Malaysia. This may be caused by drivers in Malaysia tend to express their anger without coming to practice the physical conflict, they just verbally express their anger or frustration and use the vehicle to show their anger to the other road users [10-12].

IV. CONCLUSION

The objectives of this research is to classify the highest factor that leads to aggressive driving in Malaysia besides to identify the factors that lead to aggressive driving behaviour amongst Malaysian drivers. Therefore, in order to achieve the objectives of this study, the survey conducted with the 25-items subjected using the revised DAX to identify the four factors and to classify the highest factor of aggressive expression while driving in Malaysia. In the revised DAX, the four factors that was used to express the aggressive expression while driving were the verbally aggressive expression, physically aggressive expression, using the vehicle for aggressive expression and adaptive/constructive expression. Then, from the result obtained from the survey we classify the highest factor that lead to aggressive driving in Malaysia among drivers.

From result obtained in this research, in Malaysia the highest factor among drivers to express their anger expression that lead to aggressive driving is Adaptive/Constructive Expression factor. Malaysian drivers are more focused on roads, drivers commonly adapt with the anger situation during driving and reduces their anger by ignoring the anger problems on the road. That was reported as the most common type of expression that drivers use in Malaysia. Then, the next common type of factor used in Malaysia is Verbally Aggressive Expression and followed by Using the Vehicle for aggressive expression. The last factor which drivers in Malaysia express their anger, that leads to aggressive driving is Physically Aggressive Expression, one being the least used among drivers.

Aggressively driving increases, the chances for motor vehicle drivers to be involved in a road crash. The aggressive driving on the road is a behaviour that leads to accidents and also major crashes currently. This study found significant relationships to exist between anger behaviour while driving and collision related situations, for example of not having proper control of their automobile, low attention, fast-moving, following the other vehicle closely, and moving violations. So, appropriate action should be taken to prevent and also to alleviate this problem. Therefore, we proposing some ideas of mitigation plans to be considered in order to reduce numbers of accidents in Malaysia which is rising yearly. Further actions or mitigation plan will be discussed in the future recommendations in the next subtopic to adequate the last objective of this research.

V. FUTURE WORK

In this section, we propose these mitigation plans as future recommendation towards reducing accidents on the road caused by the aggressive driving behaviour in Malaysia and also recommendations for further study by using the outcomes from this research.

The mitigation plan proposed that can be considered in order to reduce number of accidents in Malaysia are:

- The government or legislative need to improve their use of equipment to combat the aggressive drivers on the road with the latest technologies and clever strategies in reducing accidents rate.
- Increasing road safety campaigns by engaging with the road users by helping them to control their anger expression and showing good attitude while driving such as respecting other drivers on the road.
- The authorities need to constantly monitor the aggressive road users and improve the roadway information according to the road situations.
- Provide proper training procedures to new road users to improve their skills and also awareness about the anger expression that contribute to these accidents recently and stricter driving licensing.
- The road users always need to plan their journey to avoid being rushed while driving. If they are in a rush, they are compelled into taking risks in their driving and be pressured on the road that leads to aggressive driving. These situations can affect other drivers and actually contributes to a road crash.
- Show courtesy to the other road users by avoiding provoking and upsetting them. Strive to be in a relaxed and do not drive when stressful because this anger expression is one of the major contributions to the aggressive driving.
- Keep focusing on the drive and avoid engaging with the other road user that is trying to instigate conflict or challenges while driving. This action is the major factor that leads to a road crash.

As the recommendation of this study, the research can be used to apply the suggested mitigation plan and to find out the impact from the actions taken. Then, for the data collected from this study also can be applied for advance research such as to find out the Confirmatory Factor Analysis (CFA) to determine the factor structure for the 25-items of revised DAX. In future, researchers also can use the collected data and also the outcome for further studies about other factors that would also contribute towards aggressive driving amongst Malaysian drivers.

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