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The Effect of Big Five Personality on Aggressive Driving Behavior among *Angkot*[1] Drivers in Surabaya

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Abstract
The number of global mortality recorded at present reaches 1.24 million per year. According to the Police of the Republic of Indonesia, in 2016 the number of traffic accidents was 105.374 cases where the victims who were dead were 25,859, severely injured, 22,939 persons, and minor injured, 120,913 persons. An observational method with the cross sectional design analyzed using the PLS-SEM was employed. The population of this present research was all angkot (public transportation) drivers who have worked in Surabaya for at least 6 months. The results of this present research showed that the personalities belonging to angkot drivers showing aggressive driving behavior in Surabaya City are openness and conscientiousness ones viewed from the big five personality. This typical personality makes many angkot drivers show high emotional states as indicated by often sounding the horns or chasing/overtaking online cars.

Keywords:*Aggressive driving, Big five personality, Angkot drivers*

I. INTRODUCTION

Each year not fewer than 36,000 persons die or in average each day 99 persons die in the streets (The Globe Journal, 2013). This global mortality rate reaches 1.24 millions per year. It is predicted that the mortality rate will be threefold, namely 6.3 millions per year in 2030. Indonesia occupied the second highest position in terms of traffic accidents in the world after Nepal in 2013. According to the data from the Police of the Republic of Indonesia, in 2016 the number of traffic accidents was 105.374 cases where the victims who were dead were 25,859, severely injured, 22,939 persons, and minor injuries, 120,913 persons with the potential economic loss of from Rp. 203 billions – Rp. 2017 billions per year (BIN, 2016).

Surabaya as the second biggest metropolitan city in Indonesia where mortality rate due to traffic accidents is high serves as the site of this place. The data from the Local Police in East Java showed that viewed from (1) the types of vehicles involved in accidents are as follows: motor cycles, 69.4%; private cars, 7.35%, freight cars, 8.7% and bus 14.4% and special bus, 13.4%; (2) the ages of the victims are as follows: 16-60 years, around 87.9% during the last 3 years; under 15 years, 12.8%; (3) the professions, employees/businessmen, 71.6%; civil servant, 2.7%, Indonesia National Army/Police of the Republic of Indonesia, 1.3%, students, 19.5%, truck and bus drivers, 15.8% and others, 3.6% (Data of Local Police Station in East Java, 2016).

One of the causes of such high traffic accidents is the personality influencing the way to behave in driving, especially aggressive driving attitudes. Psychological research shows that according to Hansen (1988) in Sherwood (1996) personality factors, especially attitudes, influence safety . A crisis due to this attitude occurs in an extreme case, it may cause a panic that may result in an accidents or an injury (Reilly, 1985). According to Roberts and Jackson (2008) in Kandler (2015), the Ality Personality theory explains a personality change cased by the environmental process (for example, changes in an individual's life condition because of a great transition in life or changes in social roles). Some researchers have stated that 90% of accidents and injures may be related to human errors. Even, the first psychological involvement in safety is focused on finding a personality "prone to injury (Geller et al., 2013).

In the driving context, personality can influence how an individual approaches and behaves in driving. As a result, personality may influence a driver's behavior and may produce risky behavior such as traffic violations and involvement in traffic accidents (Manglam et al., 2013). A research made by Xie et al., (2016) is intended to identify types of personality among adolescents in China and to study how the big five personality type relates to adolescents' pro-social attitudes, and the result showed that among adolescents in China four types of personality is identified where the type of personality is different from the types found I other cultures. This difference may be caused by learning strategies and patterns of education in Chinese culture. Another research made by Bhattacharjee, 2015) on the relationship between the driver personality and the traffic accident area in

[1] Stands for *angkutan kota*, meaning *city transportation*. For further explanation, see http://www.globalindonesianvoices.com/22353/indonesias-angkot-phenomenon/

India showed that there is a significant negative correlation between the two, being shown by the fact that an individual with unstable emotional will be reactive to accidents.

Safety driving attitudes, according to Elander et al., (1993) in Hossein Karimi Moonaghi (2015) are correlated to certain personality characteristics and are also influenced by attitudes and belief. Meanwhile Beirness (1993) in Zhang, Qiong, (2011) said that the roles of personality in the driving attitudes and in the traffic accidents are correlated to driving styles and the high level of personality characteristics influences drivers to show higher risks in driving.

This present research would study what typical big five personality will much influence the *angkot* drivers in Surabaya, and what aggressive driving and safety driving are often violated by the drivers and also study the causes.

II. METHODS

An observational method with the cross sectional design was employed. The population was all angkot drivers who had worked for at least 6 months in Surabaya. A quantitative method was conducted to measure the level of the effect of the Big Five Personality on Aggressive Driving Attitudes among Angkot Drivers in Surabaya City. The sample was taken in Joyoboyo and Bratang stations in Surabaya city. A Structural Equation Model (SEM) with the PLS (Partial Least Square) program of which the superiority is as a component-based predictive model was adopted.

III. RESULTS

The results of the cross tabulation of the personality and the aggressive driving are presented in Table 1. It is shown that personality may be divided in terms of its typicality namely extraversion, agreeableness, conscientiousness, neuroticism, and openness.

The result in table 1 is that the aggressive driving under the low category among the angkot drivers with low with conscientious personality (28.12%), and those with high openness personality (57.14%). A high category of aggressive driving is shown by the angkot drivers with low agreeableness personality (82.12%), and low conscientiousness (25%).

Table 1. Cross-tabulation of Personality with Aggressive Driving

No	Personality	Aggressive in driving						Total
		Low		Medium		High		
		n	%	n	%	n	%	
1.	Extraversion							
	Low	12	33.33	21	58.33	3	8.33	36
	Medium	41	56.94	20	27.78	11	15.28	72
	High	7	25.93	16	59.26	4	14.81	27
	Total	60	44.44	57	42.22	18	13.33	135
2.	Agreeableness							
	Low	19	29.68	27	42.19	18	82.12	64
	Medium	34	59.65	3	5.26	20	35.09	57
	High	7	50	7	50	0	0	14
		60	44.44	37	27.41	38	28.15	135
3.	Conscientiousness							
	Low	9	28.12	15	46.88	8	25	32
	Medium	19	26.02	43	58.90	11	15.07	73
	High	8	26.67	19	63.33	3	10	30
	Total	36	26.67	77	57.03	22	16.29	135
4.	Neuroticism							
	Low	8	25.80	19	61.30	4	12.90	31
	Medium	25	53.19	19	40.42	3	6.38	47
	High	25	43.86	25	43.86	7	12.28	57
	Total	58	42.96	63	46.67	14	10.37	135
5.	Openness							
	Low	19	24.05	43	54.43	17	21.52	79
	Medium	20	40.82	18	36.73	11	22.45	49
	High	4	57.14	3	42.86	0	0	7
	Total	43	31.85	64	47.40	28	20.74	135

The angkot drivers' knowledge is categorized into three types namely knowing, understanding and evaluating as presented in Table 2. A high ability in knowing is found among the drivers with a tendency to do low aggressive

driving (52.08%). While a high ability in evaluating is identified among the drivers who tend to have low aggressive driving (55.56%).

Table 2. Cross Tabulation of Knowledge with Aggressive Driving

No	Knowledge	Aggressive in driving						Total
		Low		Medium		High		
		n	%	n	%	n	%	
1.	Knowing							
	Low	1	16.67	4	66.67	1	16.67	6
	Medium	7	25.93	15	55.56	5	18.52	27
	High	52	50.98	45	44.12	8	7.84	102
	Total	60	44.44	54	40	14	10.37	135
2.	Understand							
	Low	1	7.70	10	76.92	2	15.38	13
	Medium	9	34.61	11	42.30	6	23.07	26
	High	50	52.08	44	45.83	2	2.08	96
	Total	60	44.44	65	48.15	10	7.40	135
3.	Evaluate							
	Low	0	0	4	80	1	20	5
	Medium	21	36.20	28	48.27	9	15.51	58
	High	40	55.56	31	43.05	1	1.39	72
	Total	61	45.18	63	46.67	11	8.14	135

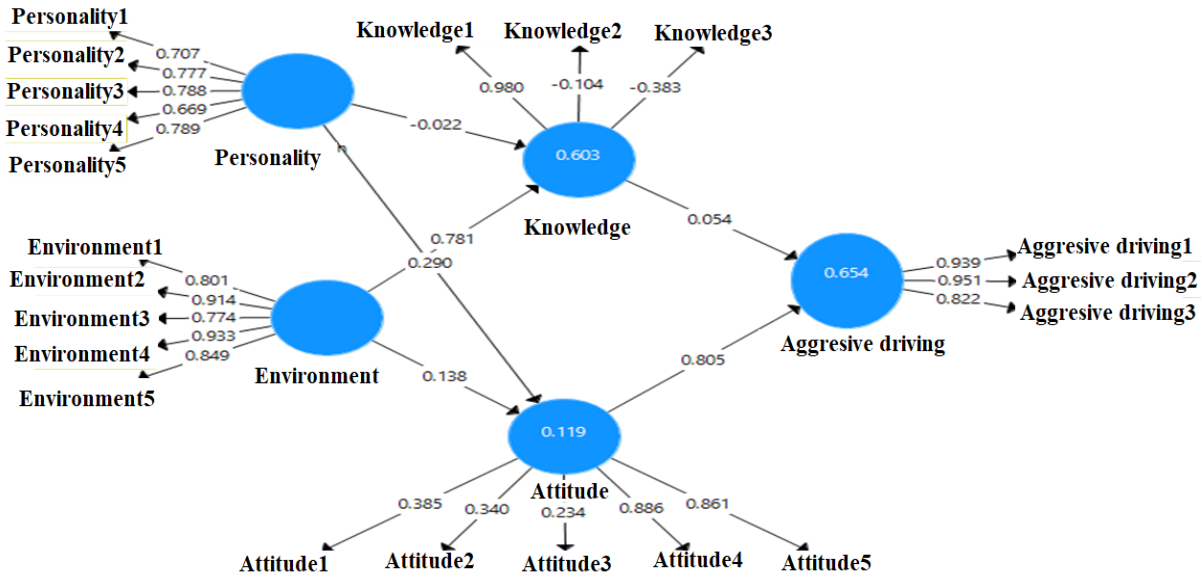
Table 3 presents disobedience attitudes that are often made by the angkot drivers by stopping their cars suddenly when they see prospective passengers, waiting for prospective passengers without parking their cars in the proper place, driving their cars slowly, often sounding the horns, or chasing online cars that are their competitors or disobeying the traffic signs such as violating the traffic signs or stopping their cars in forbidden areas. In the cross tabulation, it is shown that driving attitudes and aggressive driving tend to decrease when the scores in the driving attitudes in each indicator increase. Each indicator in the low and moderate categories shows a tendency to increase, while each indicator in the high category tends to decrease in all indicators of driving attitudes.

Table 3. Cross Tabulation of Disobedient Attitude Driving with Aggressive Driving

No	Disobedient Attitude Driving	Aggressive in driving						Total
		Low		Medium		High		
		n	%	n	%	n	%	
1.	Stopped suddenly							
	Low	3	16.67	13	72.22	2	11.11	18
	Medium	3	25	7	58.33	2	16.67	12
	High	33	31.42	67	63.80	5	4.76	105
	Total	39	28.89	87	64.44	9	6.67	135
2.	Waiting for prospective passengers without pulling over							
	Low	3	18.75	9	56.25	4	25	16
	Medium	4	50	4	50	0	0	8
	High	19	17.12	89	80.18	3	2.70	111
	Total	26	19.25	102	75.56	7	5.18	
3.	Driving their cars slowly							
	Low	2	25	5	62.5	1	12.5	8
	Medium	5	25	12	60	3	15	20
	High	6	5.60	91	85.04	10	9.34	107
	Total	13	9.63	108	80	14	10.37	135
4.	Often sounding the horns, or chasing online cars that are their competitors							
	Low	2	25	6	75	0	0	8
	Medium	8	20.51	29	74.35	2	5.12	39
	High	8	9.09	77	87.5	3	3.40	88
	Total	Low	13.33	112	82.96	5	3.70	135
5.	Stopping their cars in forbidden areas							
	Low	3	33.33	3	33.33	3	33.34	9
	Medium	4	57.14	3	42.85	0	0	7
	High	15	12.60	102	85.71	2	1.68	119
	Total	22	16.3	108	80	5	3.7	135

Figure 1 shows the results of analysis using the PLS. It is in line with the aim, namely to predict each indicator block of the existing latent variable. It is said by World (1995) in Ghozali (2014) that PLS is a powerful method

of analysis since it is not based on assumptions. The modeling results made in this research is presented in the following picture.



IV. DISCUSSION

From the results of the research findings, it is known that the personality variable affecting someone to do aggressive driving is the openness personality namely 0.789 and it is followed by conscientiousness personality (0.788). Viewed from Cosra and McCrae's (in Deist & Feist, 2010) explanation, it can concluded that the drivers with low conscientiousness personality tend to be careless, lazy, disordered, late, and not to have certain direction, while those with low scores in openness to experience tend not to be creative, be conventional, like something permanent, be ignorant, and be conservative. Those with low scores in agreeableness tend to be cruel, suspicious, stingy, antagonistic, critical and short-tempered.

According to research made by Davide (2012) with the sample of the students under the transitional period from the beginning to the middle adolescent, their driving attitudes are riskier than the adults. Personality merely affects to those who have been mature than those who are still adolescent (Marengo, Settanni, & Vidotto, 2012).

Sakaguchi (2003) studied "extraordinary attitudes" of driving styles which are more or less influenced by personality. Deffenacher, Lynch, Oetting, & Swaim, 2002; Deffenacher, Oetting, & Lynch, 1994 state that an aggressive driving style is also believed to be played by the role of personality factor (Sagberg, Selpi, Bianchi Piccinini, & Engström, 2015).

From the correlation between the respondents' education level and the safety driving behavior, it is known the the drivers graduated from Elementary School and Junior High School levels tend to show moderate aggressive driving (52.30% and 53.26%, respectively). As a whole, aggressive driving decreases in line with the increase of respondents' educational level. One's educational level will affect the levels of aggressive driving, including the avoidance of accident risks. It is in line with Prasetya's (2016) statement that the high educational level will not guarantee that drivers show their safety driving because long experiences give more effects on the learning of safety driving. The knowledge variable shows understanding and evaluating indicators that may give a negative effect. Moreover, personality may also give a negative effect on the knowledge with the coefficient values of -0.022.

Personality variable that may give a great influence to someone that will show aggressive driving is openness one namely 0.789 and followed by conscientiousness (0.788). The environment variable that may give a great effect on aggressive driving behavior is the hot, dusty environment (0.814) and also a long distance driving activity . (0.933)

The influential attitude variables are emotion (0.866) and disobedience (0.980). Aggressive driving attitudes that are mostly shown are aggressive gesture (0.951) and aggressive verbal in the form of words (0.939).

The results of the PLS show that knowledge has understanding and evaluating indicators that may give negative effect. Environment gives a strong effect on knowledge than other personality variables. Attitude gives high effects on aggressive driving, especially verbal and gesture aggressive attitudes.

V. CONCLUSION

1. The lowest knowledge indicators in the drivers' ability in evaluating
2. *Safety driving* that is mostly broken by the drivers viewed from the attitude indicators is to drive with high emotion when they see online transportation shown by sounding the horns repeatedly and chasing the online transportation. Moreover, they often stop their cars suddenly when they see prospective passengers without paying attention to the surrounding environment..
3. Personality viewed from the big five personality that gives a great effect on someone who will show aggressive driving behavior are openness and conscientiousness personalities.

CONFLICT OF INTEREST
None.

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ETHICAL CLEARANCE
The study was approved by the institutional Ethical Board of *Shipbuilding Institute of Polytechnic Surabaya.* All subjects were fully informed about the procedures and objectives of this study and each subject prior to the study signed an informed consent form.

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