

Contribution of Aggressive driving, Negative emotions, and Risky driving to Dangerous driving in young motorcyclists at Bandung City, Indonesia

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Abstract—The purpose of this study is to identify contribution of aggressive driving, negative emotions while driving, and risky driving to dangerous driving behavior in young motorcyclists at Bandung city, Indonesia. Subjects of this research are young motorcyclists and data was collected by using The Dangerous Driving Behavior measurement tool developed by James and Nahl, and Dula and Ballard. The results obtained show that aggressive driving, negative emotions while driving, and risky driving, together can predict the occurrence of dangerous driving behavior. Correlations among the highest variables are: negative emotions while driving with aggressive driving, followed by negative emotions while driving with risky driving, and the lowest is aggressive driving with risky driving. The risky driving is founded as the variable which the contribution was the highest to the dangerous driving behavior, followed by negative emotions while driving and the aggressive driving. In conclusion, dangerous driving behavior in young motorcyclists could be predicted by the present of aggressive driving, negative emotions while driving, and risky driving. The implication of this research was discussed.

Keywords—dangerous driving behavior; risky driving; negative emotions; young motorcyclists

I. INTRODUCTION

In the past two years, traffic accidents in Indonesia by the World Health Organization (WHO) are considered to be the third largest killer, under coronary heart disease and tuberculosis/tuberculosis. WHO data in 2011 said that as many as 67 percent of traffic accident victims were in the productive age of 22-50 years. There are around 400,000 victims under the age of 25 who died on the highway, with an average mortality rate of 1,000 children and adolescents every day. In fact, traffic accidents are the main cause of death for children in the world, with an age range of 10-24 years. While data from the Central Bureau of Statistics states that during the period 2009-2013, the number of traffic accidents increased by an average of 12.29 percent per year. The increase in the number of accidents was also followed by an increase in the number of deaths, serious injuries, and minor injuries, namely 7.23 percent, 4.92 percent, and 15.10 percent respectively. While the value of material losses due to accidents has increased by an average of 17.06 percent per year [1].

In Indonesia, the number of motorized vehicles that increase every year and human negligence is a major factor in the increase in traffic accidents. Police Department's data said that during January - November 2014 the number of accidents in Indonesia reached 85,765 incidents, while in 2013 touched 100,106 incidents. In the same period, the number of victims of serious injuries and minor injuries also decreased, each decreasing by 20 percent and 15 percent. Even though the total number of accidents and injuries felt, there is one thing that is of concern, namely the death toll remains high. In eleven months in 2014, 26,623 people lost their lives on the streets, tending to increase compared to 2013 totaling 26,416. And more deaths occur in motorcycle users [2], with the base year, 2010 which claimed 31,234 fatalities, by 2020 fatalities or casualties cross should be around 15,000 people. To realize the Decade of Indonesia's Road Safety in 2020, concrete steps are needed by the parties involved in implementing the Road Traffic and Transport Law. The WHO assessment also suggests that traffic accidents have become the third biggest killer in Indonesia, so it needs to be a common concern. Data from BIN said communities, transport entrepreneurs, the government and other stakeholders need to be aware of these warnings.

The focus of the research was on motorcyclists in the city of Bandung because based on data from the police it was noted that cases of violations on two-wheeled vehicles throughout the year 2011 in the Bandung region experienced an increase, which amounted to 72.95 percent from the previous year, 2010 [3]. These violations and accidents were mostly carried out and occurred at a young age range of 18-24 years old and carried out by men. Age is included in the productive age category. Based on interview data from Bandung City Polrestabes, it was stated that in 2012 violations and accidents carried out at that age per day were recorded as 150-200 cases [4].

Traffic accidents are influenced by a number of factors, including human factors, vehicles, roads, and the environment [5]. Among the four types of factors, human factors account for 92-94% in triggering traffic accidents [6]. This conclusion is parallel to Ross's study in Galovski and Blanchard, which states that vehicle malfunction and road factors only have an

effect not greater than 10% on traffic accidents, while human factors contribute as much as 90% or more. More specifically, these human factors are related to behavioral problems such as driving the vehicle very quickly and overtaking other vehicles in a careless manner and the attitude of the drivers themselves such as carelessness and antisocial behavior in driving [7].

Previous research conducted by Fitrianti and Yanuvianti found that from the results of a survey of 100 motorcycle riders, it was revealed that there was emotional driving behavior, such as when they were driving in a hurry and if there were other vehicles honking towards them they tend to accelerate the speed of the vehicle [8]. The self-awareness that is lacking in safety, feels stressed when faced with a crowded and irregular traffic situation, and is prone to be provoked by emotion, for example, if there is another driver who honks when jammed, overtakes another vehicle, passes a road mark, or breaks a red light. tend to be provoked to follow what other drivers do and drive emotionally. In addition, there are also riders who show verbal behavior, namely grumbling or others who curse other drivers or road users. Other findings from the results of the initial questionnaire revealed that there were also drivers who were driving on the sidewalk during traffic jams, some were picking up phone calls or returning messages while driving, there were drivers who considered the behavior reasonable realized they had done something risky but they did so data that 70% of drivers do dangerous driving behavior.

Some of the previous studies related to the study of driving behavior were as follows: Research on public transportation drivers in the Bandung area [9], that identified aggressive driving behavior included driving public transportation quickly (29.5%), chasing with other drivers (18.1%), said rudely to passengers or other motorists (13.3%), honked repeatedly (13.3%), and violated traffic signs (13.3%). Subsequent research on motorcycle users in the city of Bandung, which showed that 76.5% or 153 people from 200 research subjects showed dangerous driving behavior that was classified as high [8]. Strengthened also by research conducted by Puji and Coralia which shows that as many as 83% of children and adolescents in Coblong Bandung sub-district have strong intentions in driving behavior [10].

In this study, the users of two-wheeled vehicles will be examined. The underlying reason is that the number of motorcycle users continues to increase every year. In the city of Bandung in particular, the number of motorbikes currently is around 895 thousand or around 72% of the total composition of motor Even at the world level, the highest number of motorcycle users is in Indonesia. In addition, the majority of traffic accident victims are those who use motorbikes and are at a productive age. This research is causal effect study in the Transportation Psychology which will find how dangerous driving behavior affected by some variables, such as aggressive driving, negative emotions while driving, and risky driving in the city of Bandung. The results of the study are expected to be input for the Bandung city government to determine policies for the creation of security on the highway, especially for its users.

The objectives to be achieved in this study are as follows: (1) Identifying what causes emergence dangerous driving

behavior in teenage drivers in the city of Bandung, (2) Getting types of dangerous driving behavior for teenage motorbike drivers in the city of Bandung, (3) This research is considered important because to realize the Indonesian Road Safety Decade in 2020, with concrete steps and implementing the Road Traffic and Transport Law to realize the 2015 zero accident declared by the United Nations.

II. METHOD OF STUDY

Research regarding dangerous driving behavior in motorbike riders in the city of Bandung is an explanatory study because it will capture problems in more depth and in more detail. The design used in this study is a causal effect on motorbike riders who drive dangerously through the Transportation Psychology approach. With this design, an explanation can be made of the model and the effect of each aspect of the dangerous driving behavior of teen motorcycle users in Bandung [11].

Dangerous driving behavior is the frequency of driving behavior of motorbike riders in the city of Bandung that shows behavior that is harmful or has the potential to endanger other motorists, passengers and also road crossers [12]. The population in this study were motorcycle users who had dangerous driving behavior in Bandung. The criteria for the sample are as follows (1) Motorcycle users (2) Have a license d (3) Have lived in Bandung for at least 1 year (4) Ever ticketed (5) Willing to be a respondent.

The sampling technique used is random sampling to choose motorcycle users who have dangerous driving behavior. The research subjects in this study amounted to 110 people. The measuring instrument used in this study is a measuring instrument that refers to the theory from Dula and Ballard using Aggressive Driving Behavior from the Early Dangerous Driving Index, Aggressive Driving Attitude Aggressive, and Thoughts and Feelings [13]. In fact, to get the cause of the dangerous driving behavior and dangerous driving profiles, a measurement tool from James and Nahl was used [14].

III. RESULTS AND DISCUSSION

To analyze more clearly the influence of variables negative emotion while driving, aggressive driving and risky driving in increasing variables in dangerous driving dangerous motorbike riders in the city of Bandung, the following results were obtained [15]:

TABLE I. EFFECT OF EACH VARIABLE

			Estimate	SE	CR	p	Label
Dangerous driving	←	Negative emotion	1,057	0,038	27,904	***	par_1
Dangerous driving	←	Aggressive driving	1,106	0,046	24,025	***	par_2
Dangerous driving	←	Risky driving	1,056	0,026	40,652	***	par_3

Table 1 showed that the *negative emotion while driving*, *aggressive driving* and *risky driving* influence on *dangerous driving* with the significance obtained is $0,000 < 0,05$ ($P =$

0,000) with *standardized coefficients* 0.026. Then the alternative hypothesis is accepted, meaning that there is a positive influence between *negative emotion while driving, aggressive driving* and *risky driving* towards *dangerous driving*.

From the calculation of the correlation of each variable from *Dangerous Driving* is classified as moderate, as listed in table 2.

TABLE II. CORRELATION OF EACH VARIABLES

Correlation		Estimate	
Negative emotion	↔	Aggressive driving	0, 703
Aggressive driving	↔	Risky.driving	0, 483
Negative .emotion	↔	Risky.driving	0, 644

From the table 2 above it can be seen that the highest correlation is the *negative emotion while driving* with *aggressive driving* ($r = 0.703$), followed by a *negative emotion while driving* with *risky driving* ($r = 0.644$) and *aggressive driving* with *risky driving* ($r = 0.483$). This means that aggressive behavior in motorcycle driving in adolescents can be related to the emergence of negative emotions when riding a motorcycle.

The influence of each variable on *Dangerous Driving* can be seen from table 3.

TABLE III. EFFECT OF EACH VARIABLE ON DANGEROUS DRIVING BEHAVIOR

Variables		Estimate	
Dangerous driving	←	Negative emotion	0, 393
Dangerous driving	←	Aggressive driving	0, 296
Dangerous driving	←	risky.driving	0, 465

The highest influence is the aspect *risky driving* of *Dangerous Driving*, followed by a *negative emotion while the driving* last new *aggressive driving*. This means that dangerous behavior in motorbike driving in adolescents is more determined by risky driving behavior, then negative emotions and finally by aggressive behavior.

The discussion that can be done on the results above is that is a dangerous driving behavior model produced that is fit. This means that dangerous driving behavior is determined by three variables [16], *while the negative emotion driving, aggressive driving, and risky driving*. Each of these variables can create dangerous behavioral behaviors and also each variable is interconnected. Respondents who have negative emotions, or have aggressive behavior, even driving behavior that is at risk, can bring dangerous driving behavior to teenagers riding motorbikes in the city of Bandung. And this is in accordance with the theory presented by Dula and Ballard, meaning that the theory applies universally and in accordance with the circumstances of adolescents in the city of Bandung [13].

The influence of negative feelings or emotions will contribute significantly to behavior (*dangerous driving dangerous driving*). In the results of this study, it can be said that subjects classified as driving dangerously, are influenced

by emotional conditions or negative feelings such as anger, resentment, and impatience that can be caused by internal things such as feeling frustrated, feeling inhibited by other driver's driving behavior or other highway users. Angry emotions also arise due to external factors such as traffic jams, congestion, damage or traffic lights that are not functioning or the traffic signs are ignored by other drivers on the highway. In addition to angry emotions, other forms of negative emotions that also affect driving behavior that is dangerous are anxiety and fear [17,18]. Anxiety and fear can reduce the likelihood of driving safely and efficiently, where cognitive overload occurs by those negative feelings which in turn reduce attention to focus on the conditions on the highway.

The subjects of this study who are adolescents, based on their psychological conditions are in *storm and stress* conditions, where the emotional conditions tend to be immature and easily ignited by situational things. In addition, there are studies that show that there is a significant relationship between personality traits and dangerous driving behavior. Drivers with personality traits who tend to be anxiously reported experiencing more accidents in driving. The same is true for drivers who have a character or angry trait, associated with frequent traffic accidents. This can happen because those who have a tendency to be angry will negatively interpret the stimulus that is seen as threatening that they meet on the highway. People with angry tendencies (*anger-prone*) tend to be easier to experience feelings of frustration and anger and as a result, increase the speed of the vehicle and overtake the vehicle in front of it. Anxiety and fear, in different contexts, affect driving behavior that is dangerous such as making a lot of mistakes (errors), unable to make decisions and feeling tired or exhausted.

Aggressive driving behavior, occurs when a person or several motorists violate traffic signs that cause a threat of danger to other vehicle drivers, road users, and property in the vicinity [19,20]. Some aggressive driving behaviors include speeding (driving at high speed), trailing, breaking traffic lights and stopping signs, overtaking other vehicles in the wrong way (from the right), driving on the wrong track, taking the lane specifically for emergency conditions. These behaviors have the potential to cause threats to the safety of drivers and other motorists or road users around them. Driving at high speed can also cause the safety of drivers and other road users to be threatened. Because when driving at high speed, it is often not accompanied by good self-control abilities as found in teen drivers. Driving with feelings of anger or other negative emotions causes it to become less focused on the conditions around it.

Risky driving or risky driving behavior is a condition where the driver or driver of the vehicle displays driving behavior that has the opportunity to cause an accident or endanger himself or others. Perception of the risks or consequences that arise in driving varies and is influenced by individual factors. Moreover, anger was positively correlated with negative cognitive/emotional among them are age and sex factors Drivers under the age of 25 are at the level most at risk of experiencing a traffic accident, especially if they are male. One of the factors that also cause driving risk is one that tends to be ignored, according to Hole is that drivers only get a little

feedback about driving risks [15,21]. This condition can explain why driving containing risk has a positive effect on *dangerous driving*.

By looking at the correlation of each variable, it can be seen that the highest correlation is the variable *while emotion negative driving* with *aggressive driving* followed by a *negative emotion while driving* with *risky driving* and *aggressive driving* with *risky driving*. This means that aggressive behavior in motorcycle driving in adolescents can be related to the emergence of negative emotions when riding a motorcycle [22]. The aggressive behavior here can be in the form of behavior that intentionally attacks or hurts physically or psychologically other drivers, which is caused by the presence of negative emotions in adolescents. Therefore, when driving as much as possible negative emotions, whether in the form of anger, resentment, hate, even sadness or depression, and anxiety are expected not to color the driver. In this study, where adolescents with *storm and stress* make it easier for them to ignite feelings for stimuli that are likely to cause negative emotions. The existence of these negative emotions can be related to the emergence of aggressive behavior, although the results of previous studies for teenagers in Bandung, the aggressive driving behavior is relatively low, but does not deny if there is a negative emotion, the aggressive driving behavior will emerge.

From the results of the study, even negative emotional variables related to driving behavior are at risk, meaning negative emotions contribute to risk behavior, where adolescents are still colored by emotion, making it easier for the desire to break the rules, even driving behavior does not heed or think about risk Will appear. These emotions tend to have the effect of damaging the concentration level of the driver so that the teenager becomes less clear-thinking so that he cannot think about the risks that will arise. Likewise, the correlation between aggressive behavior and risky driving behavior, the more adolescents behaving aggressively in driving can lead to increasingly risky riding on a motorcycle. Although it cannot be ignored the influence of internal factors such as personality, needs, and certain motives, external factors such as the situation on the road, (congestion, density), whether or air temperature, even noise (*noise*) can be related factors for the emergence of dangerous driving behavior [22,23].

IV. CONCLUSION

Based on the result, the variables while emotion negative driving, aggressive driving, and risky driving together contribute to dangerous driving. The main cause dangerous driving behavior in teenage drivers in Bandung was risky driving followed by a negative emotion while driving and the last is aggressive driving behavior. Dangerous driving behavior was shown by the teenage driver in Bandung is the tendency to become a risky driver or motorcyclist.

Based on the above conclusions, the suggestions that can be given are (1) For motorcyclists, the ability to control driving behavior is at risk, by managing negative emotions that arise when driving a motorcycle. (2) For institutions with an interest in dealing with dangerous driving behavior, they can provide information on traffic rules and the risks that arise when

driving in adolescents, as well as provide training in stress management, or training in emotional regulation. (3) For the Government of the City of Bandung (Department of Transportation) can curb the traffic situation or create an orderly traffic situation, socialize traffic rules for adolescents, both in schools and in communities.

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