

# Improving risk perception in adolescent motorcycle drivers



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## Could Risk Perception Abilities of Adolescence Motorcycle Drivers (Motorcyclist) be Improved Through the Distance Perception Psycho-education Program?

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### **Abstract**

The number of motorcyclists on the highway increased rapidly from year to year. The Central Bureau of Statistics recorded the number of motorcycles in 2010, 8.7 million units, rising to 9.8 million units in 2011, and became 10.8 million units in 2012. That means, there is an addition of 1 million units of motorcycles per year (Kompas, 11 November 2013). The impact of the number of motorcycle riders is a wide range of traffic problems as a result of hazardous motorcycle driver behavior manifested as high rate of motorcycle accidents. Motorcycle accidents are the biggest contributor to traffic accidents, as many as 60-77% in the period 2008-2012 (Maharani, 2012; Department of Transportation, 2010). Directorate General of Land Transportation, Ministry of Transportation noted 11,140 drivers and passengers of two or three-wheeled vehicles died in traffic accidents in 2010. Average motorcycle accident threatens 20,000 people per year, or 55 people per day, or about two people every hour. The cause of the accident on a motorcycle can be derived from the characteristics of the engine, the road environment and driver's behavior (Houston, 2011). Among these three factors, the behavior of the driver is important to note, because 70-90% of accidents are caused by human factors and behaviors associated with the driver (Hole, 2007; "Januari-Oktober 935 orang tewas," 2011; Shinar, 1978; Ullerberg & Rundmo, 2003; Yilmaz & Celik, 2004).

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In psychological studies of traffic, there are three perspectives used to explain the behavior of driving. These perspectives are: the perspective of personality, cognitive perspective, and social perspectives (Ullerberg & Rundmo, 2003). Among the above three perspectives, the cognitive perspective has not been the focus of much research. Whereas the cognitive aspects that include perception, attention, or the attention of the relevant matters around, concentration, ability to process information and make decisions is very important in driving activity. Those various aspects of cognitive are important to always be active when driving because individuals are facing situations in which highway environment is constantly changing. One of the cognitive aspects that play a major role in determining the dangerous driving behavior is the perception of risk. Chung & Wong, 2011; Guritnaningsih et al, 2011; Wong et al., 2010 found that the perception of risk is a significant predictor of risky driving behavior. According to Cohen, et al (1995, in Machin & Sankey, 2008), there is a negative relationship between risk perception and risky driving behavior, in which the perception of risk (hazard) against a low driving conditions will be followed by the higher possibility to display the driving behavior dangerous. Perception of risk in driving is " *the subjective experience of risk in potential traffic hazards* " (Deery, 1999). This means that risk perception is individual. Nevertheless, various studies have shown that the perception of risk in young adults is generally low. They will perceive a dangerous driving situation as low-risk. They will perceive a dangerous driving situation as low-risk. This is because of two main things, namely the lack of experience in driving skills or lack of processing information, and age factor related to lifestyle (Mayhew et al., 2008). Young adulthood is a period where they are easily provoked

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emotionally and fun sensation seeking. The research that has been conducted by researchers found that risky behaviors while driving, such as calling, moving lane, and speeding are assessed by participants as behavior that is not hazardous (Guritnaningsih et al., 2011). These findings corroborate the results that the young driver's risk perception is low.

When driving on the highway, the various situations faced are almost entirely received visual information (Shinar, 2007). Errors of perception (perception errors) are one of the causes of the accident on a motorcycle, which occurred because the driver failed to detect a dangerous condition (Tunncliff, 2006). To be able to drive safely among other vehicles required the ability of visual perception in the form of perceptual distance (distance perception). Rizania, Guritnaningsih, & Maulina (2010) in a study on the effect of distance perception on the young adulthood motorcycle driver found that dangerous overtaking behavior (weaving behavior) is influenced by perceptual judgment of distance. Assessment of distance (distance perception) may be one of the causes of the occurrence of motorcycle accident. (Pai, 2011). When the driver is mistakenly or unable to ensure a safe distance before deciding to overtake another vehicle, it can cause accidents (Shinar, 2007; Tunncliff, 2006). This shows that an error in assessing the safety distance may result in lower risks assessment and perform risky or unsafe motor driving behavior.

Assessing distance cannot be separated from assessing speed; the two are closely related to one another. In receiving stimulus on the distance and speed the driver will perceive it as safe or unsafe distance. For example, for a vehicle speed of 30 km / h, the relatively safe distance is 4 meters, while <https://assignbuster.com/improving-risk-perception-in-adolescent-motorcycle-drivers/>

for the vehicle speed of 40 km / h the safe distance is 8 meters, and so forth (Suryajaya, 1995). According to Sanders and McCormick (1993) accurate assessment of the time, distance and speed is needed to maneuver in a secure way. Rosenbloom, Shahar, Elharar, and Danino (2008) suggests that the driver, especially novice drivers must develop the ability to reduce hazard risk perceptions in a variety of road situations. Results of previous studies on the ability of risk perception shows that risk perception can be enhanced through the provision of training (Rosenbloom, Shahar, Elharar, and Danino, 2008); Horswill, Kemala, and Wetton; Scialfa, and Pachana, 2010). Referring to previous studies that show the effectiveness of training programs to improve the skills of risk perception, researcher sees the need to develop training programs on danger on the highway for motorcyclists who often displayed hazardously behavior in big cities in Indonesia, namely the behavior of slipping and overtaking other vehicles. Specifically this study wanted to test whether provision psycho-education program on recognition distance perception is significantly effective in lowering the risk perception scores of adolescence motorcycle driver.

## **Method**

### **Participants**

There were 60 male adolescences in this study. The mean age was 17. 12 (SD = 0. 329) with a range between 17-19 years. More than half respondents (22. 4 percent) had been riding motorcycle for 3-5 years, 17. 2 percent had been driving for more than 5 years and the rest (10. 3 percent) had been riding for 1-2 years. Male adolescence motorcycle drivers have been chosen because they are inexperienced motorcyclists and tend to drive dangerously.

In addition, male riders more often display dangerously behavior than women riders. Participants in this study were drawn from secondary school i. e. SMAN 38.

## **Measures and Apparatus**

The instruments used were: 1) a video film about riding a motorcycle on the highway, which is made up of 10 scenarios, with details of 5 scenarios that describe the behavior of line splitting and 5 scenarios that describe the behavior of overtaking. Highway situation for all five scenarios in each type of motor driving behavior (i. e. line splitting and overtaking) varied according to variables: time of the day, weather, speed, distance, and type of road (one-way vs. two ways). Psycho-education program contains information on three common dangerous behaviors of motorcyclists, i. e. the splitting line and overtaking. The information provided includes: (a) the definition of each type of behavior, i. e. slip, and overtaking another vehicle, (b) the factors that influence the driving behavior of the motorcyclists, (c) the importance of the perception of a safe distance, and (d) risks/dangers of unsafe driving hatched. Psycho-education program was presented to the participants with audio along with presentation in the form of PowerPoint, and also video footage of line splitting and overtaking to serve as an example of behavior.

3) Questionnaire, containing items that measure the perception of distance, namely by asking the estimation of the distance between the motor and the driven vehicle nearby, as perceived by the participants. The measuring instrument also contained items to assess how much is the risk to have an accident if the partisipants do the splitting line and overtaking.

Measurements were performed using a Visual Analogue, in which

participants were asked to visualize the assessment of the risks in a continuum line with range 0-100 percent. The questionnaire also tapped into demographic information such as age, riding experience, and accident experience.

### *Procedure*

#### *Preparation Phase*

Prior to the experiment, the researchers had conducted two activities. The first activity was Focus Group Discussion to investigate the push and the hamper factors of unsafe riding motorcycle, especially for doing line splitting and overtaking, and also the role of distance perception on riding behavior. The result of Focus Group Discussion was used to develop film scenarios concerning riding motorcycle on the road. There were 14 film scenarios that consist of 7 scenarios representing road situation and a motorcyclist that intend to do line splitting, and 7 scenarios representing road situation and a motorcyclist that intend to do line overtaking. The scenarios of road situation were varied in several variables, i. e. weather variable (clear vs rainy), time of day (afternoon vs night), type of road (one-way street vs two-way street), distance between vehicles in front or beside the motorcycle (2.5 meter or less vs 2.5 meter or more), and speed of the motorcycle (20-30 km/hour vs 50-60 km/hour). The film was developed in real situation to make the measurement of distance perception and risk perception more natural. The cameraman shot the road situations using Yamaha Vixion, 150 cc motorcycle, year 2012. They were using the equipment as follows: Camera Canon EOS 60D; Logger: HP Huawei Ascend P1; and Monopod Manfrotto.

After the pictures have been collected, they were then edited and assembled into a movie. Editing were done using a computer set with following specification: CPU: 2-GHz Intel Core i7-2630QM; OS: windows 7 home premium (64 bit); RAM: 8 GB; Hard Drive: 750 GB SATA; Display size: 15. 6 inch; Resolution 1920 x 1080 pixels; Optical drive: Bluray/DVD; Graphic card: Nvidia Ge Force GT 540M; Video Memory: 2GB. The film then validated using face validity approach, to ensure that the road situations had been represented each scenario.

### *Experimental phase*

From a list of 98 students in a senior high school in Depok area that met the sample criteria the researchers took 60 students using random number in SPSS program and divided the selected students into two groups (experimental group vs control group) by randomization technique, each group consists of 30 students. Both experimental group and control group was measured two times, pre-test and post-test. Between the pre-test and the post-test the experiment groups of students were given psycho-education program, whereas at the same time the control group was asked to watch a short film. Therefore, the study design for this study is experimental laboratory and the design called *randomized two groups before and after design*.

### *Results*

Comparative analysis was used to examine the effect of psycho-education program concerning distance perception on motorcyclists' risk perception in



riding their motorbike. To test the equality between experimental and control group comparison had been made.

## Referensi

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