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15. CAPTURING DRIVING ANGER FROM PERCEIVED STRESS OF CAR DRIVERS: THE JAKARTA EXPERIENCE

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ABSTRACT

Jakarta traffic has been a chronic problematic for commuters for it has stranded commuters for hours in cars, motorbikes and busses. This psycho-social condition may evoke many psychological strains such as stress and anger. In respond to this problem, little attention has been addressed in empirical study. This study aimed to elucidate the relationship between perceived stress and driving anger among Jakarta drivers. 370 drivers completed the Jakarta Driving Anger scale (JDAS – 37 item) and the Perceived Stress Scale-10 (PSS-10). The result showed that stress correlated positively with overall driving anger. Stress also correlated positively with all driving angers factors: (a) *obstructive traffic*; (b) *illegal public transportation driving*; (c) *illegal motorbike driving*; (d) *slow driving*; (e) *careless driving*; (f) *discourtesy*; and (g) *police presence*. These findings are hoped to initiate social intervention regarding emotional intelligence of driving behaviors as well as driver's stress coping

Key words : stress, driving anger, commuter, social intervention.

INTRODUCTION

Living in big cities send people mad, a study reported. A classic motive why people move to big cities is always seeking a better life. However they never prepare to be urbanised and probably more depressed.

Urban living is on the rise around world wide and unconsciously bring impacts to lives. Lindenberg (2014) mentioned in his article: "Sick cities: why urban living can be bad for your mental health." that city dwellers' brains did not handle stress well compare to those brains of countryside dwellers. To be specific, in stressed city dwellers, the amygdala was more active on the scanner; in people who lived in small towns, less so; in people who lived in the countryside, least of all. The amygdala is considered to be responsible in assessing threats and generating fear (Maren, 2001).

Jakarta has been reported as the second rank of vulnerability climate changes score among mega cities of Asia. Using criteria of population, GDP and the relative importance of that city to the national economy, Indonesia ranked in the first place of climate change impacts ("A Climate Vulnerability Ranking of Major Coastal Cities in Asia,"

These factors contributing why living in big cities may be depressive. Ratna as cited in Wisnu (2009) stated that many aggressive Jakarta residents repressed their emotions which later developed physiological and mental illness in the future. Cahyadi confirmed this notion by

saying that Jakarta conditions continued to threaten the residents' lives, where commuting became a struggle all its own.

These stressful living conditions may elicit a psychological reaction such as anger. Studies of Matthews & Desmond (1995) and Gulian, Matthews, Glendon, Davies & Debney (1989) stated that emotions like anxiety, depression and stress had detrimental effects on cognitive performance.

Stress experience can involve several negative emotions like anger or fear (Fridla, 1986). Applying this notion to the research social setting, this means that the Jakarta dwellers with high level of stress can engage in any forms of angers, such as anger while driving. Uncontrolled anger while driving might predispose ones to engage in risky driving behaviors (Defenbacher et al., 1994).

Previous studies to identify predictors of driving anger have tested both situational and personal factors. Shinar (1998) found that traffic congestion had a link to aggressive behavior including anger. The theoretical background of such condition was the activation of negative affect and anger (Berkowitz, 1993). Such stressful condition such as traffic congestion elicits negative affect which in turn leads to aggressive behavior.

In the view of personality, the state-trait approach has been endorsing driving anger. Defenbacher et al. (1994) have shown that individuals with higher trait in anger would experience more intense driving anger and aggressive driving behavior. This later influenced the likelihood to engage in more risky driving behavior (Deffenbacher, Huff, Lynch, Oetting, & Salvatore, 2000).

Stressful traffic congestion is indeed considered negative experience. This negative experience produces mental and physical fatigues. In a prolonged time, it would affect emotional wellbeing. Commuting, then has been strongly associated with stress and frustration (Van Roy, 2006). Lajunen and Parker (2001) found that negative emotions associated with commuting can reduce driving safety.

Thus, living in a constant stressing city like Jakarta might influence driver's emotional state which later becomes an important issue for driving anger and automotive safety in general. Frustration facing life stress may trigger anger.

Berkowitz (1993) defines frustration as "a barrier to goal attainment." The urban living which is associated with pleasurable living is not as good as imagined. Too many barriers to attain the imagined or ideal city living. This kind of frustration experienced by big city dwellers may elicit anger. Being closely related to frustration, anger is also a regularly occurring phenomenon with regard to driving behavior (Stephens & Groeger, 2011).

Potegal, Stemmler and Spielberger (2010) stated that anger has been associated with a sense that the self has been offended or injured, with the belief that a person or sometimes situational

context was responsible for the event. The blocking agents perceived by drivers are sometimes stressful and elicit driving anger.

Anger is somewhat different from other negative emotions such as fear and sad. Arnett et al. (1997) found that sad drivers may still adopt safe driving behavior, on the other hand, angry drivers may involve in a higher level of risky driving behavior (Deffenbacher et al., 2001) and found to be twice as likely to be involved in traffic accidents during simulated driving scenarios (Deffenbacher et al., 2003).

Much of driving anger studies focuses on its inherent disposition. The most widely used measurement of driving anger has been Driving Anger Scale (DAS; Deffenbacher et al., 1994). DAS is used to measure driving-anger traits in response to six types of traffic situations. Many studies have been dedicated to validate the structure of DAS. In New Zealand, study of DAS concluded a four-factor model (Sullman, 2006). Lajunen et al. (1998) found data from a sample of British drivers ($N = 280$) fitted a three-factor model of anger propensities across situations of reckless driving, impeded progress and direct hostility. In Swedish drivers, a three-factor model of anger propensities was supported (Björklund, 2008).

Cristianta and Budiarto (2014) have identified seven factors of driving anger in Jakarta. The unique characteristics of traffic condition in Jakarta are not be automatically captured by DAS. Triggering driving anger factors like motorbike driving styles as well as public transportation busses driving styles are additional factors to Deffenbacher's DAS. Thus, the first aim of this study is to investigate general driving anger reported by Indonesian drivers as measured using the contextual Jakarta Driving Anger Scale (JDAS) as a result of perceived stress.

METHOD

Participants

Three hundred and seventy Jakarta car drivers volunteered in this study. These drivers were located in malls' parking lots, university, and office complex. Of these, 72 drivers were female and 298 were male and their ages ranged from 18-65 ($M = 30.76$, $SD = 11.138$). 106 of the participants were university students, 50 were personal drivers and 214 were office workers.

Materials

Two questionnaires were used. The 37 Jakarta Driving Anger Scale (JDAS) (Cristianta & Budiarto, 2014) and the 10 items Perceived Stress Scale (PSS-10) (Cohen et al., 1983). The JDAS was to measure overall driving anger in Jakarta elicited by 7 factors: police presence, obstructive traffic, illegal public transportation driving, illegal motorbike driving, slow driving, careless driving, and discourtesy.

The internal consistency of the JDAS (total items, $\alpha = .953$). Respectively, police presence (2 items, $\alpha = .677$), obstructive traffic (7 items, $\alpha = .917$), illegal public transportation driving (7

items, $\alpha = .886$), slow driving (5 items, $\alpha = .856$), careless driving (6 items, $\alpha = .826$), illegal motorbike driving (7 items, $\alpha = .864$), and discourtesy (3 items, $\alpha = .825$).

The Perceived Stress Scale is the most widely used questionnaire to measure the perception of stress during the previous month. The Alpha Cronbach of the scale was .867. All of the questionnaires scores are derived by summing the scores based on Likert scale with with 1 = never, 2 = almost never, 3 = sometimes, 4 = fairly often, and 5 = very often.

RESULTS

Descriptive statistics

The participants reported high perceived stress ($M = 3.88, SD = 0.727$). The participants' driving anger were highly elicited by illegal public transport driving ($M = 3.35, SD = 0.883$). Police presence was not perceived as participants; driving anger generator ($M = 2.51, SD = 0.727$).

Table 1 provides descriptive statistics for all the measures in each scale.

Table 1

Descriptive Statistics of All Variables

Measures	Mean	Std. Deviation
Careless Driving	3.1869	.82828
Discourtesy	3.0640	1.01322
Illegal Public Transportation Driving	3.3490	.88318
Slow Driving	2.5411	.92616
Obstructive Traffic	2.5656	1.00286
Illegal Motorbike Driving	3.0189	.91139
Police Presence	2.5189	1.16970
Perceived_Stress	3.8889	.72741

A two-tailed Pearson correlation analysis was performed to examine the relationships between perceived stress and driving anger. Perceived stress was significantly and positively correlated

with driving anger, $r(368) = .695, p < .01$. Perceived stress also correlated with all the subcategories of driving anger. The following table 2 displays all of the correlations among variables studied.

** $p < .01$

Table 2

Pearson Correlation Matrix among Perceived Stress Driving Anger

	1	2	3	4	5	6	7
Spearman's rho							
Perceived Stress							
Careless Driving	.504**						
Discourtesy	.513**	.564**					
Illegal Public Transportation Driving	.528**	.622**	.526**				
Slow Driving	.503**	.521**	.459**	.508**			
Obstructive Traffic	.430**	.495**	.391**	.582**	.611**		
Illegal Motorbike Driving	.899**	.570**	.582**	.597**	.544**	.493**	
Police Presence	.373**	.335**	.303**	.371**	.455**	.510**	.405**

Regression Analysis

In order to obtain information about direct effect of perceived stress toward driving anger, simple regression was used. Perceived stress significantly predicted driving anger scores, $\beta = .52, t(368) = 18.55, p < .001$. Perceived stress also explained a significant proportion of variance in driving anger, $R^2 = .48, F(1, 368) = 344.16, p < .01$.

Comparison between groups

This study found that there was no significant effect for gender, $t(368) = .69, p > .05$, with male experiencing the same perceived stress mean scores as female. The same case also applied to driving anger scores $t(368) = 1.69, p > .05$, with male experiencing the same driving anger mean scores as female.

DISCUSSION

The results of this study suggest that perceived stress of Jakarta dwellers indeed affect their level of driving anger. Heavy traffic density blocks goal directed and targeted activities of the dwellers. This frustrating and stressful experience increasing the anger occurrence while driving (Mabel, 1994).

Hartley & Hassani (1994) found in their research that stress affected how people drove in terms of cognitive lapses, errors and traffic violation. Legree, Heffner, Psozka, Martin, & Medsker (2003) found that perceived stress increases the likelihood of driving anger and crash involvement.

Importantly, this research result supports previous studies mentioned above that individuals may be predisposed to unsafe and unhealthy driving behaviors due to stress experienced. The stress experienced may not be exclusively experienced on the road but may be transferred from other areas of life.

Lazarus (1981) stated that daily hassles typically have additive effect, where one event can add to severity of the other. For example, as personal concerns at work which are too demanding such as rigid leaving time may simply increase frustration and irritation associated with driving situation.

Limitations

Whilst the current study produced result supporting the proposed theoretical framework this must be interpreted with some caution due to several limitations.

First, this study, did not involve the role of trait vs. situation anger so that modeling stress and its impact to driving anger is less comprehensive. Secondly, the sampling procedure did not facilitate balance proportion of drivers' demographic. This of course weaken the generalization of the results.

Future Directions

Next study must include driving behaviors as the effect of one's emotional state. By including driving behaviors measurement, it is hoped that the result would be more contributory to public road safety.

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