

# The Effect Locus of Control on Driving Behaviour among Malaysian Young Drivers

Kamarudin Ambak<sup>1, a</sup>, Basil David Daniel<sup>2, b</sup>, Zaharah Mamat<sup>3, c</sup>, Joewono Prasetijo<sup>4, d</sup> and Munzilah Rohani<sup>5, e</sup>

<sup>1,2,4,5</sup>Smart Driving Research Center, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Johor, Malaysia

<sup>3</sup>Kolej Kemahiran Tinggi Mara Sri Gading, 86400 Batu Pahat, Johor, Malaysia

<sup>a</sup>kamardin@uthm.edu.my, <sup>b</sup>basil@uthm.edu.my, <sup>c</sup>zaharah@kktmsrigading.edu.my, <sup>d</sup>joewono@uthm.edu.my, <sup>e</sup>munzilah@uthm.edu.my,

**Keywords:** MDSI factor, locus of control, young driver, behaviour

**Abstract.** In Malaysia, road accidents are major concern that needs to be resolved by the related authorities. The human is the most significant factor in road accidents especially among young driver. This study was conducted to investigate the characteristics, effectiveness and relationship between locus of control and human factors. Self-administered questionnaires were distributed to 247 young drivers in Batu Pahat, Kluang and Johor Bharu. Results show that more than 60% of the respondents' ages are between 24 and 29 years old. From correlation analyses, it was found that there were moderately positive relationships between internality and dissociation while external showed moderately positive relationship between careful and distress reduction. A multiple regression analysis demonstrated that internality had a strong relationship with dissociation and anxiety. Also, the externality is statistically significant with speeding and patience. In addition, the externality and internality showed a significant relationship to driver behaviour. Therefore, it can be concluded that Locus of Control is useful model for understanding the human behavior in relation to road accidents.

## Introduction

Malaysia has seen an increase in the number of road accidents from year to year. This is probably an impingement of rising vehicle ownership in the country. In the state of Johor alone, the number of registered rose from 2,609,671 in 2009 to 2,745,092 in 2010 and 2,912,145 in 2011. Road accidents also impact various socio economic aspects, such as loss of life, disability and injury. Disabilities and injuries suffered by accidents victims cause loss of quality of life and human resources, especially when young drivers are involved [1]. Road accidents and traffic violations are approximately 60% higher in young and middle aged male drivers compared to their female counterparts [2]. Driving behaviour is influenced by the drivers' age, their personal characteristics, travel patterns and lifestyle of driving. It has been widely thought that young drivers have a greater risk than other drivers of being involved in traffic accidents [2]. Human factors involving young drivers are commonly classified as either patient, risky, angry or the speeding type. [3].

According to Rotter (1966) [4] locus of control (LOC) is a personality attribute reflecting the degree to which a person generally perceives events to be under their own control (internal LOC) or under the control of powerful others or other outside forces (external LOC). The internal or external LOC in driving behaviour among young drivers were analysed using the Multidimensional Driving Style Inventory (MDSI) as suggested by Taubman-Ben-Ari *et al.*, (2004) [5] with eight driving styles' being considered.

A variety of factors may contribute to the effect of LOC. It is depends on drivers and experience characteristics of participants and these factors interact with LOC to influence

driving. Young drivers and LOC vary driving styles. It is also suggested that driving experience influences driving style, and LOC influences the effect of driving experience.

## Materials and Methods

The most important part of this research was to design the questions for studying LOC in the related psychology behaviour on the road. According to Jason & Kevin, (2011) [6] differentiating the internal LOC and external LOC question is pivotal for analysing the relationship with the driving styles. This research was divided into two stages; questionnaire design and LOC analysis. The LOC factors were the independents variable while LOC (internal and external) and behaviour were the dependent variable.

Data were collected from the questionnaire respondents. The respondent was qualified drives i.e driving licences, aged between 18-29 years old. The surveys were conducted at shopping malls, mosques, theme parks, recreation places, and exhibitions in Batu Pahat, Kluang and Johor Bharu between February 2013 and April 2013. Three hundred questionnaires were distributed, an 82% response rate. The next step was to process the data, which involve identifying, categorizing and coding the data. For this study, the researcher employed the descriptive analysis, reliability analysis (coefficient alpha), correlation analysis and hierarchical multiple regression to analyze the data using software Statistical Package for Science Social (SPSS) version 19.

## Results and Discussion

From Table 1, there was a moderately positive relationship between dissociation and internal LOC among respondents with  $r = 0.613$  and  $p (0.000) < 0.01$ . There was a weak positive relationship between anger and risk with  $r = 0.260$  and  $p (0.000) < 0.01$ , which could likely be due to most of the respondents having tendency to be dependent on their own skills and behaviours. For the external LOC (Table 4.2) there was a moderately positive relationship between careful and distress reduction. The relationship between external LOC and speeding was weak but positive with  $r = 0.179$  and  $p (0.005) < 0.01$ . From these results, it can be shown driving behavior influences drivers' capacity for developing safe driving.

Table 2 shows some insignificant items. For example, the correlation between perceived patience and speed was found to be insignificant with  $r = -0.024$  and  $p (0.708) > 0.05$ , as well as careful and external LOC with  $r = -0.124$  and  $p (0.053) > 0.05$ .

Table 1: Correlation between internal variables of LOC

	Internal	Dissociative	Anxious	Risky	Angry
Internal	1				
Dissociative	.613**	1			
Anxious	.434**	.552**	1		
Risky	.381**	.433**	.422**	1	
Angry	.312**	.461**	.261**	.260**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlation between external variables of LOC

	External	Speed	Distress Reduction	Patient	Careful
External	1				
Speed	.179**	1			
Distress Reduction	-.154*	.154*	1		
Patient	-.202**	-.024	.513**	1	
Careful	-.124	.227**	.517**	.412**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Hierarchical multiple regression analyses were conducted to examine the relationship between the proposed predictors and internality. Four standard MDSI factors variables i.e angry, risky, anxiety, and dissociation were entered in Step 1 and another four factors i.e speeding, patience, careful and distress, were taken as the predictors towards externality at Step 2. In Step 3 predictors towards behaviour were internality and externality. Table 3 shows the model summary of multiple regressions toward internality. Table 4 shows the summary of ANOVA analysis toward internality. The Step 1 variables ( $R^2$ ) accounted for 45% of the variance in internality,  $F(4, 242) = 49.75, p < .001$ , reported as significant.

Table 3 shows the multiple regression coefficients toward internality. In step 1, dissociation was significant while anxiety take about 7% was significant and the risk and anger factors were insignificant towards internality.

Table 3: Multiple regression coefficient toward internality

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.300	.203		1.472	.142
	Dissociation	.621	.073	.540	8.482	.000
	Anxiety	.135	.075	.113	1.806	.072
	Risk	.065	.042	.086	1.541	.125
	Anger	.015	.027	.029	.555	.580

Dependent Variable: Internality

Another four factors in MDSI (speeding, patience, careful and distress) were predictors towards externality in Step 2. The model explained a significant proportion of variance (8%),  $F(4, 239) = 5.363, p < .001$ , with all the factors were reported as significant.

Table 4 shows the hierarchical multiple regression coefficients toward externality. At step 1, speed was significant, meanwhile patient take about 4% significant. However, the distress reduction and careful factors were insignificant towards externality.

Table 4: Multiple regression coefficient toward externality

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.378	.237		14.232	.000
	Distress	-.058	.069	-.066	-.842	.401
	Patient	-.117	.055	-.159	-2.118	.035
	Careful	-.047	.084	-.041	-.552	.581
	Speed	.130	.041	.196	3.149	.002

Dependent Variable: Externality

The locus of control (externality and internality) was the predictor towards behaviour. The regression analysis was conducted explore the significance driving behaviour on the road. The model explained a significant proportion of variance (33%),  $F(2, 241) = 59.47$ ,  $p < .001$ , with internal LOC and external LOC reported as significant.

Table 5 shows the hierarchical multiple regression coefficients toward behaviour. Model shows internality and externality were significant towards behaviour.

Table 5: Multiple regression coefficient toward behaviour

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.360	.162		8.396	.000
	Internality	.395	.045	.480	8.691	.000
	Externality	.157	.042	.206	3.727	.000

From the descriptive analysis, less than half respondents who participated in this survey were aged 27 - 29 years old. Those who have driving experience between 1 – 3 years were the greatest number (45.3%). About 46.6% of the respondents drive less than 5 hours per week. More than 71% of them have B2/D licenses. This generally reflects that the respondents in this age group may be more susceptible to being involved in the road accidents than other age groups.

Based on the correlation analysis towards internality, there are strong positive relationships between internal LOC and dissociation factors. Those who have a strong internal LOC may take bigger risks because of their greater belief in their own control over the outcomes.

Apart from this, the correlation towards externality also showed a strong positive relationship between careful and distress reduction. Patience was found to be insignificant with the speed factor. From the hierarchical multiple analyses towards behavior, internality and externality were found to be significant. However, the risky and anger factors were insignificant towards internality. Likewise, the distress reduction and careful were insignificant towards externality.

## **Conclusion**

This study postulates that the internal locus of control affects the behaviour of young drivers in relation to their involvement in road accidents. Internal and external locus of control with behaviour can be linked to accidents and the human error also can contribute to accidents. Although the influence of locus of control seems to vary to factors determined in past research, the populations sampling accounts for this and it has an influence in the development of safer driving styles with increasing driving experience. This research shows that the internality based on experience have a generally positive influence on dissociative and anxious driving styles. The considerable human factors and economic cost of traffic accidents highlight the need for research into driving behaviour.

## **Acknowledgement**

The author would like to thank Universiti Tun Hussein Onn Malaysia (UTHM) and Kolej Kemahiran Tinggi Mara (KKTMM) Sri Gading for providing facilities and support for the accomplishment of this study.

## **References**

- [1] M.B. Ahmed, K. Ambak, R. Ahmad and N.S.Sukor, Helmet Usage among Adolescents in Rural Road from Extended Theory of Planned Behaviour. *Journal of Applied Science* 13 (2013) 161 – 166.
- [2]. Y.J. Kweon and K.M. Kockelman, Overall injury risk to different drivers: Combining exposure frequency, and severity models. *Accident Analysis and Prevention* (2003) 441- 450.
- [3] C. Holland, J. Geraghty and K. Shah, Differential moderating effect of locus of control on effect of driving experience in young male and female drivers, *Journal of Personality and Individual Differences* (2010) 821-826.
- [4] J.B. Rotter, Generalised expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs* (1966) 1-28.
- [5] O. Taubman-Ben-Ari, M. Mikuliner and O. Gillath, The multidimensional Driving inventory- scale construct and validity. *Accident Analysis and Prevention* (2004) 323-332.
- [6] J.L Huang and J.K Ford, Driving locus of control and driving behaviors: Inducing change through driver training, *Transportation Research Part F* 15(2012) 358 -369.