

**EFFECTS OF SUPERVISED DRIVING ON YOUNG NOVICE DRIVERS'  
BEHAVIOUR**

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## ABSTRACT

Graduated Driving Licensing (GDL) system with supervised driving exercise had been adopted widely in the developing countries like New Zealand, Canada and United States. Previous studies indicated that GDL system proven effective in reducing road fatalities of young novices. Unfortunately, this system has not been implemented in Malaysia. Hence, the effectiveness of the system could not be assessed. Therefore, this study aims was two folds, first, to investigate the effect of supervised driving on young novice drivers behaviour in Malaysia and secondly, to identify the type of supervised driving that could be used to improve the performance of young novice drivers. The first study involved a quantitative survey of young novice drivers behaviour (N = 200). This study identified there were four factors contributed to young novice driving behaviour in supervised driving: accompany, attitude towards accompanied driving, gender and willingness to pay. Second study involved a simulation method using pre- and post-test of hazard perception test with different types of supervision (not being supervised; being supervised but the driving supervisor is talking about something not related to road safety and being supervised and the driving supervisor guide the young novice driver to anticipate hazard throughout the journey). It was found that supervisory person who assist and guide young novice driver to anticipate hazard had increase the driving performance of young novice driver. Overall, the study indicate that supervised driving had contribute to the positive and safer driving behaviour and it is suggested that a minimum hazard perception training for at least 150 minutes is needed to increase the driving performance of young novice drivers during their early stage of driving. The

result from this study had provide a useful insight to the policy maker if supervised driving would be implemented in the future.

## ABSTRAK

Sistem “*Graduated Driving Licensing (GDL)*” yang mengandungi amalan praktis memandu di bawah seliaan (MDS) telah digunakan secara meluas di negara membangun seperti New Zealand, Canada dan Amerika Syarikat. Kajian sebelum ini menunjukkan bahawa sistem MDS terbukti berkesan dalam mengurangkan kemalangan di kalangan pemandu baru. Walau bagaimanapun, sistem ini tidak dilaksanakan di Malaysia. Oleh itu, keberkesanan sistem itu tidak dapat dinilai. Dengan itu, matlamat kajian ini adalah untuk mengkaji hubungan memandu di bawah seliaan terhadap tingkah laku pemandu baru di Malaysia dan mengenal pasti cara penyeliaan yang berkesan dalam sistem memandu di bawah seliaan. Kajian pertama melibatkan kajian kuantitatif terhadap tingkah laku pemandu baru (N = 200). Kajian ini mengenal pasti bahawa terdapat empat faktor yang menyumbang kepada tingkah laku pemandu baru dalam sistem memandu di bawah seliaan iaitu: ditemani, sikap terhadap memandu di bawah seliaan, jantina dan kesanggupan untuk membayar. Kajian kedua melibatkan kaedah simulasi menggunakan kaedah pra dan pasca ujian yang melibatkan ujian persepsi bahaya dengan pelbagai cara penyeliaan (tidak diselia; diselia tetapi penyelia pemandu bercakap tentang sesuatu yang tidak berkaitan dengan keselamatan jalan raya dan diselia serta penyelia pemandu membimbing pemandu baru untuk menjangka bahaya yang terdapat sepanjang perjalanan). Kajian telah mendapati bahawa penyelia yang membantu dan membimbing pemandu baru untuk menjangka bahaya telah meningkatkan prestasi dalam pemanduan pemandu baru. Secara keseluruhan, kajian ini menunjukkan bahawa sistem memandu di bawah seliaan telah menyumbang kepada tingkah laku pemanduan yang positif dan lebih selamat dan latihan persepsi bahaya minimum selama 150 minit adalah disyorkan

bagi meningkatkan prestasi pemanduan di peringkat awal. Dapatan kajian ini telah memberi input yang berguna kepada pembuat polisi jika sistem MDS diamalkan di Malaysia.

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## APPROVAL

I certify that an Examination Committee has met on **12 August 2016** to conduct the final examination of **NUR AINI BINTI ROSLI** on her thesis entitled **“EFFECTS OF SUPERVISED DRIVING ON YOUNG NOVICE DRIVERS’ BEHAVIOUR”**. The committee recommends that the student be awarded the Master of Science.

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## **LIST OF ABBREVIATIONS**

ATAD	Attitude toward accompanied driving
BAC	Blood alcohol concentration
CDL	Competent driving license
DBQ	Driver behaviour questionnaire
GDL	Graduated driver licensing
HPT	Hazard perception test
IIHS	Insurance Institute for Highway Safety
JPJ	Jabatan Pengangkutan Jalan
LDL	Learner driving license
NHTSA	National Highway Traffic Safety Administration
PDL	Probationary driving license
RTD	Road Transport Department
SPSS	Statistical package for social science
TIRF	Traffic Injury Research Foundation



# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Young novice drivers<sup>1</sup> are generally over-represented in road crashes and injuries than older drivers (Elvik, 2010). As young drivers, most of them are immature, overconfidence, inattentive, inexperience with the road conditions and more likely to take risks in driving (Mayhew et al., 2003; Williams, 2006; Williams & Shults, 2010; Begg et al., 2014). Usually during teenagers stage, their psychomotor, visual and hazard perception skills associated with driving are still developing. Thus this particular personal characteristics of young novice drivers place them at a higher risk of road crashes. According to road crash statistics represented in Table 1.1, about 37% of road crashes casualties involving car and motorcycles were aged between 16-25 (PDRM, 2013). In consideration with this alarming situation, it is therefore vital to design special interventions that are targeted to reduce their risks, besides continuing the efforts to determine the nature and factors influencing the driving behaviour of young novice drivers.

In developed country, such as Australia, Israel, Canada and United States, a system known as Graduated Driver Licensing (GDL) has been developed with

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<sup>1</sup> Deery et al., 1998 and Young et al., 2003 defined young novice driver as young adults who are new to the experience of driving on the road, particularly aged between 17-25 years and hold a provisional licenses.

consequence to reduce the involvement of young novice drivers in crash risk (Begg et al., 1995; Reeder et al., 1999; Begg & Stephenson, 2003; Toledo et al., 2014). Generally, the GDL system has three basic levels, which are; the learner license, intermediate license and full license. In the first level of license, young novice drivers need to be supervised by an experienced driver (usually parents) every time the young novice drives. Besides, there are certain restrictions in supervised driving phase such as, night time driving restriction and passenger restriction. Previous studies indicated that crash rates involving young novice drivers during the supervised driving phase has significantly decreased (Mayhew et al., 2003; Wiggins, 2005; Chen et al., 2006; Toledo et al., 2014).

**Table 1.1** Driver/ rider casualties by age group (PDRM, 2013)

<b>Age</b>	<b>Death</b>	<b>Serious</b>	<b>Minor</b>	<b>Total</b>
0-15	221	241	418	880
16-25	1775	1262	2486	5523
26-50	2146	1334	2491	5971
>50	1071	473	908	2452
Total	5213	3310	6303	14826

GDL system is a kind of risk management for all young novice drivers. This program allows the parents to make many important decisions regarding teenage driving. As parents they play an important role in enforcing and imposing driving restrictions on their teenage drivers, since they are involved in teenagers' driving exposure from the earlier stage. In previous studies addressing parenting and teenagers' driving suggests that higher parental monitoring and supervision contributed to a lower risky driving behaviours, traffic violation and motor vehicle crashes among young novice drivers (Hartos et al., 2001; Taubman-Ben-ari, 2011; O'Brien et al., 2013).

This GDL system is different from the licensing method in Malaysia in terms

of the minimum age to apply for driving license, supervised driving, duration to obtain full license and driving restrictions. In Malaysia, these young novice drivers are considered for license if they had passed the Highway Code test, completed theory and driving courses, passed the qualifying test and the Road Transport Department (RTD) driving test. Then the novice drivers are qualified to hold the Probationary Driving License (PDL) for two years before they can apply for a competent driving license (CDL) (JPJ Malaysia, 2016). There is no restrictions during the PDL phase such as the limitation of the peer-passenger and restriction on night time driving. In Malaysia the RTD has adopted the demerit point system<sup>2</sup> to restrict risky driving among young novice drivers.

## **1.2 Problem Statement**

The increased crash rates among young novice drivers are alarming because young drivers are the future leaders of Malaysia. Hence, a series of countermeasures should be made to reduce their involvement in road crashes. With the implementation of GDL system in some of the developed countries, the implementation of the GDL system has proven their commitment in downsizing the crash rates among young novice drivers in their country. Previous studies on the effectiveness of GDL system had revealed that the system had successfully reduced crash rates among young novice drivers (Foss et al., 2001; Foss & Goodwin, 2003; Brookland & Begg, 2011). Since there is no such program being implemented in Malaysia, thus, it is an advantage to consider if the GDL system is suitable to be implemented in Malaysia.

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<sup>2</sup> Malaysia is using KEJARA (Keselamatan Jalan Raya) demerit points system under the Motor Vehicles (Demerit Points) Rules 1997 where the PDL and CDL holder will be given a point for every offences they commit. The PDL will be suspended if the demerit point have reach 10 points or more while the CDL will be suspended if the demerit point have reach 15 points or more (JPJ Malaysia, 2016).

Malaysia, in consideration does not have the GDL system, it is difficult to study the effectiveness of supervised driving. Within a short time training period with the driving instructor during the learner driving license (LDL), it is believed that there are many informal supervision practices after young novice drivers received their PDL. They are most likely to be supervised by an experienced person who are close to them such as parents, siblings and close friends during their first stage of driving. On the other hand, it is advantageous to know the proper method of supervision which could eventually leads to reduce in risky behaviour, increase driving performance and increase in the ability of young novice drivers to perceive hazard. This scenarios lead to the development of research questions which are;

(A) How does the informal supervised driving affects the driving behaviour of young novice drivers?

(B) How does different types of supervised driving affect the performance of young novice drivers?

Hence, the interest of this study is to seek the knowledge by identifying the factors affecting supervised driving in Malaysia. Precise information is necessary, so that the findings of this study will be a useful benchmark if supervised driving is to be implemented in Malaysia.

### **1.3 Objectives of Study**

Prior to the research questions developed, it is advantageous to identify how informal supervised driving does affects the driving behaviour of young novice driver and what is the proper method in conducting a supervised driving that would increase the driving performance of young novice drivers. Hence, the specific objectives of this study are;

- (A) To investigate the effects of informal supervised driving on young novice drivers' behaviour;
- (B) To identify the types of supervised driving that could be used to improve the performance of young novice drivers.

#### **1.4 Hypothesis of Study**

Based on the objective stated, this study will focus on finding the potential of GDL system to be implemented in Malaysia to recognize how the informal supervised driving affects the driving behaviour of young novices and the proper type of supervision during the supervised driving phase that will benefit the RTD. It is hypothesized that:

- (A) Informal supervised driving could improve the behaviour of young novice drivers.
- (B) Supervisors who assist the young novice drivers to anticipate hazards throughout the journey could improve the driving performance of young novice drivers.

#### **1.5 Scope of Study**

To achieve the first objective of this study, the driving information of the supervised driving in Malaysia need to be collected. Since GDL system has never been implemented in Malaysia, therefore, it is vital to collect the information through the questionnaire survey method. In this study, 250 respondents who hold a PDL were located and the information regarding their driving experiences and behaviours were collected. The questionnaire survey was used to obtain the information regarding the demographic distributions, driving experiences, driving behaviours and drivers' attitude towards supervised driving. Drivers Behaviour Questionnaire (DBQ) and Attitude toward Accompanied Driving (ATAD) scale has been adopt in the

questionnaire to measure the driving behaviour of young novice and their relationship between driving supervisor during the supervised driving period. From the questionnaire survey obtained, the respondents were categorised into two different groups, (1) those who received supervised driving and (2) those who did not receive supervised driving during their provisional driving license period. The performances between the two groups of respondents were analysed compared using Hierarchical linear regression method to find the factors affecting driving behaviour of young novice.

From the questionnaire survey, the types of supervision received by the respondents were classified into three groups, (1) not being supervised (control group), (2) being supervised but the driving supervisor is talking about something not related to road safety<sup>3</sup> and (3) being supervised and the driving supervisor guide the young novice driver to anticipate hazards throughout the journey<sup>4</sup>. It is important to determine the effectiveness of the type of supervisions, thus a small sample group of young novice drivers (N = 15) were then recruited to undergo the three different types of supervision as indicated above. Driving simulation methods using Hazard Perception test (HPT) were used to collect information for the second study, where the respondents were asked to simulate driving by watching 13 video clips that were taken on different driving scenarios on the roads in Malaysia. The pre- and post-tests were conducted using one-way ANOVA repeated measures to evaluate the effectiveness on the type of supervision received. At the end of this study, the policy implication on supervised driving was suggested.

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<sup>3</sup> The driving supervisor might or might not have a driving license or driving experienced but have a close relationship to the young novice driver for examples the sibling or peers.

<sup>4</sup> The driving supervisor have driving experienced and also a close relationship to the young novice driver, usually family members.

## **1.6 Significance of Study**

This study investigate the suitability of supervised driving to be implemented in Malaysia. It has been proven that supervised driving can improve the driving skills of young novice drivers, especially in the ability to perceive and to detect hazards but the type of supervision is important. This study will provide policy makers on how to improve the current issuing of driving license system in Malaysia.

## **1.7 Summary**

This chapter provides the essential part of study which elaborates the problem statement, hypothesis, objectives, scope and the contributions of this study. The next chapter will provide a literature review on the implementation of GDL system in developed countries and an overview of drivers' behaviour questionnaire, attitude towards accompanied driving scale and hazard perception test as the research methodology.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

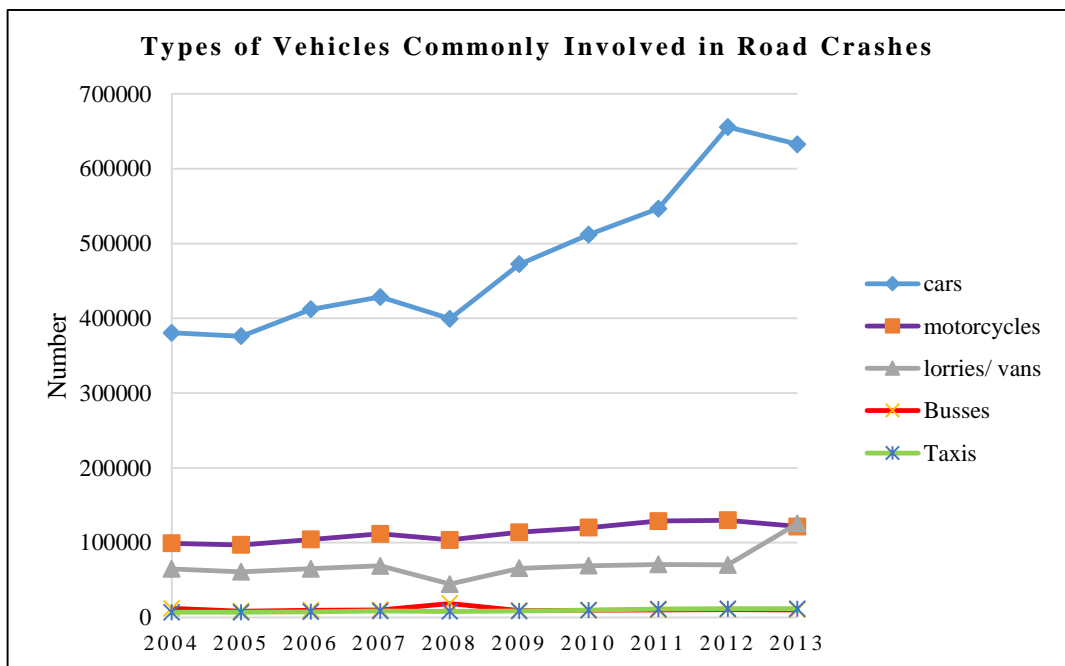
In the previous chapter, the purpose of the study has been discussed briefly, which is to investigate the effects of informal supervised driving on young novice drivers and to identify the suitable type of supervision in supervised driving. Prior to the investigation, it is necessary to research on some of the literature background related to the study. Therefore, this chapter covers the literature review and on research conducted in this area in order to identify the issues raised and the rationale for this study such as the overview of road crashes in Malaysia, nature of young novice drivers' problems, implementation of GDL system in developed countries and tools (questionnaires) adopted in the study to achieve the objectives.

#### **2.2 Involvement of Young Novice Drivers in Road Crashes**

According to the report and statistics from PDRM (2013), the number of registered vehicles have increased about 6.45 percent annually from 2004 to 2013. The increased in number of vehicles corresponds with the number of registered motorcycles in Malaysia. However, with reference to road crashes statistics for the last 10 years duration in Figure 2.1, the involvement of the number of cars in road accidents is high compared to the other types of vehicles. In summary, it shows that among one in ten cars registered is involved in road crashes.



From the reports of road traffic fatalities, teenagers aged between 18-20 showed the highest fatality rate which is 30 deaths per 100 000 population (Syukri et al., 2014). In addition, 37% of road traffic fatalities among young novice drivers and riders were aged between 16-25 years old (PDRM, 2013). According to a previous studies it identified and understood that the psychological factors of young novice drivers' or riders' involvement in the road crashes might be due to their immaturity, inexperience and lack of driving skills. (Mayhew et al., 2003; Williams, 2006; Williams & Shults, 2010; Begg et al., 2014).



**Figure 2.1** Types of vehicles commonly involved in road crashes (2004 – 2013)

### 2.3 Driver's Licensing Process in Malaysia

Competent (Full) driving licenses in Malaysia can be obtained at the age of 17 by registering at the driving institute approved by RTD Malaysia or In *Bahasa Malaysia* known as the *Jabatan Pengangkutan Jalanraya (JPJ)*, by completing the learner's phase and probationary phase (JPJ Malaysia, 2016). Before one is eligible for the learner's license, the young novice drivers' need to enrol in the 5 hours classes