



Young drivers who obtained their licence after an intensive driving course report more incidents than drivers with a traditional driver education

Saskia de Craen*, Willem P. Vlakveld

SWOV Institute for Road Safety Research, Anticipatory Research, PO Box 1090, 2260 BB Leidschendam, The Netherlands

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ABSTRACT

This paper studies the effectiveness of intensive driving courses; both in driving test success and safe driving after passing the driving test. The so-called intensive driving course (IDC) consists of a limited number of consecutive days in which the learner driver takes driving lessons all day long; and is different from traditional training in which lessons are spread out over several months and in which learners take one or two driving lessons of approximately 1 h each per week. Our study indicates that – in the first two years of their driving career – IDC drivers ($n = 35$) reported an incident significantly more often (43%) than 351 drivers who obtained their driving licence after traditional training (26%). Our study also indicates that the IDC drivers underwent almost the same number of training hours as the drivers who had traditional training, although spacing of these hours was different. There was no difference in the number of attempts to pass the driving test. We did not find any evidence that a self-selection bias was responsible for the difference in reported number of incidents.

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1. Introduction

In some countries (e.g. the Netherlands, Poland and the United Kingdom) learner drivers are offered the possibility to obtain their driver's license in a short period of time, for instance two weeks. These so-called intensive driving courses (also called 'crash courses') consist of a limited number of consecutive days in which the learner drivers take driving lessons all day long. This paper studies the effectiveness of this compact arrangement of driving lessons; both in driving test success and safe driving after passing the driving test.

A study from the Netherlands (Vlakveld, 2006) indicates that intensive driving courses are effective; this is to say that, in general, learners need fewer hours of practicing with a qualified driving instructor in order to pass the driving test compared to the traditional driver training method. The study showed that, on average, an intensive driving course takes 34.9 ($SD = 16.5$) hours of tuition behind the wheel to pass the driving test. On average, traditional driver education takes 43.1 ($SD = 19.9$) hours of training to pass the driving test. With a traditional driver education, these hours are spread out over several months in which learners take one or two driving lessons of approximately 1 h each per week.

Although many studies have investigated the effectiveness of driver training (see for overview studies and meta analyses: Christie, 2001; Mayhew and Simpson, 2002; Engström et al., 2003; Senserrick and Haworth, 2005; Elvik et al., 2009) no other studies – except Vlakveld (2006) – could be found on the effect of intensive driving courses. However, much research has been done on skill acquisition in general (other than driving skills), which could indicate the effect of intensive driving courses. Relatively *simple cognitive skills* such as memorising new words or simple motor skills such as hitting an object with a particular force, are learned most effectively (i.e. in the shortest net number of hours of practice) when the practicing periods are short and when there are periods of rest between the practicing periods (Shea et al., 1990; Cepeda et al., 2006). This effect is mostly denoted as 'the spacing effect' (Dempster, 1988). The fact that an increased temporal lag between training periods often enhances performance on a retention test is one of the earliest findings of experimental psychology. Ebbinghaus in 1884 and Jost in 1897 already reported this spacing effect (cited by: Cepeda et al., 2009). However, for complex skills, the spacing effect does not seem to hold (Wulf and Shea, 2002). This is to say that complex skills tend to be learned slightly faster when long practicing periods are applied with no or only a few breaks (Donovan and Radosevich, 1999). An example of a complex task in which spacing had no effect on initial skill acquisition is a simulated air traffic controller task (Kanfer et al., 1994). The use of long training periods with no or hardly any breaks is called 'mass practicing'. There are no studies that examined the effects of spaced practicing

* Corresponding author. Tel.: +31 70317 3333; fax: +31 70320 1261.

E-mail address: Saskia.de.Craen@swov.nl (S. de Craen).

or mass practicing on learning how to drive. But as driving is a very complex skill (Groeger, 2000), mass practicing could theoretically be more effective than spaced practicing. The fact that drivers who follow an intensive driving course, generally need fewer lessons to pass their driving test than drivers with a traditional education (Vlakveld, 2006), may be seen as an indication that this is indeed the case.

Although skill acquisition may be quicker after mass practicing, long term retention of skills may not. For example, Baddeley and Longman (1978) trained postmen to sort post on a rather complicated new sorting device on which they had to type in zip codes. There were four groups. The training method did not differ per group. Only the duration of a practice period and the lag between the lessons differed between the groups. Group 1 got 1 h training per day during two months (only on working days). Group 2 got 1 h training in the morning and 1 h training in the afternoon during one month. Group 3 got two consecutive hours training per day during one month and group 4 got two consecutive hours training in the morning and two consecutive hours in the afternoon per day during two weeks. Group 4 learned the fastest expressed in net hours of training (i.e. their number of typing errors declined the fastest). However, one, three and nine months after the training, group 4 had the worst performance during retention tests and group 1 the best.

This example with the training of postmen indicates that people may learn complex skills slightly faster by mass practicing than by spaced practicing, but retention of skills is poorer when mass practicing is used than when spaced practicing is applied. This study is not very recent, and sorting post is not the same as driving. There are, however, recent theories on deficient memory consolidation that could explain why long term retention is poorer when mass practicing is applied (McGaugh, 2000). Although practicing a new task over and over again without a pause may speed up learning and has led to the adage 'practice makes perfect', recent studies suggest that after initial training, the human brain continues to learn in the absence of further practice, and that this delayed improvement develops during rest and sleep (see Walker and Stickgold, 2005, for an overview of studies on the acquisition of complex motor skills). These periods of rest and, in particular, sleep make skills more resistant to interference from competing or disrupting factors and make skills more flexible. This means that sleep and rest seem to promote retention of skills and far transfer of skills. The latter means that learners apply what they have learned in situations that conceptually differ from situations in which they originally learned the skill. This is very important for driving because situations are never completely identical in traffic.

To recapitulate, one previous study from the Netherlands (Vlakveld, 2006) indicates that intensive driving courses seem to be effective; on average learners need fewer hours of practice in order to pass the driving test compared to the traditional driver training method. However, research on acquiring skills (other than driving skills) suggests that retention is poorer with intensive driving courses. To our knowledge, no research is available that studied the retention of driving skills after attending intensive driving courses. This paper examines data from a large longitudinal study on young novice drivers (De Craen, 2010) to explore whether long term retention is poorer when learners attend an intensive driving course instead of a traditional driver training programme.

The Netherlands, where the present study was situated, has no national curriculum with learning objectives or a prescribed minimum number of driving lessons or theory lessons before one can take the driving test. There are regulations with regard to the quality of the driving instructor; one can only take driving lessons from a qualified driving instructor. The consequence of this system is that what is not tested during the driving test usually is usually not taught during driver training. Hatakka et al. (2002) have developed

a framework for goals and contents of driver education; the so-called GDE-framework. In this framework four control levels that characterise the driving task are distinguished: vehicle manoeuvring, mastering traffic situations, goals and context of driving and goals for life and skills for living. The first level, vehicle manoeuvring, concerns operating the vehicle. The second level, mastering traffic situations, concerns decisions in traffic (e.g. 'can I overtake this vehicle? Can I safely turn left now?'). The third level, goals and context of driving, concerns weighing the conditions for driving (e.g. stop driving when one is tired, resist the temptation to drive when one has consumed alcohol, resist peer pressure of passengers to speed). The fourth level, goals for life and skills of living, concerns lifestyle and norms and values in relation to driving and car use (i.e. do drivers for instance know their own limitations?). As motivational aspects and aspect that deal with self-reflection are almost impossible to test in the driving test, not much attention is paid to the third and the fourth level of the GDE-framework in driver training in the Netherlands. This is true for both traditional driver training and for intensive driving courses. A questionnaire study amongst 2180 students of either an intensive driving course ($n = 240$) or a traditional driving course ($n = 1940$) confirmed that there was no difference in what was taught or which subjects were addressed during the driving lessons (Vlakveld, 2006). So, the only difference between the traditional and the intensive driving course is the time it takes a student to prepare for the driving test. The aim of this study is to investigate whether intensive driving course (IDC) drivers are equally safe in the first two years after licensing as drivers who followed a traditional training.

Self-selection may influence the results of a comparison between the two training programmes. It is possible that people who choose an intensive driving course to learn how to drive rather than a traditional training have different motives: for example, they want to obtain their driving license as quickly as possible and are perhaps less concerned about becoming a safe driver. Because the self-selection effect could explain differences in safe driving that are not related to the content of driver training, this effect was also studied.

To sum up, this paper aims to answer the following questions:

1. Do drivers who obtain their driving license after an intensive driving course need fewer lessons or fewer attempts before they pass their driving test?
2. Do drivers who obtained their driving license after an intensive driving course report more incidents in the two years after licensing?
3. If there are any differences, can they be explained by self-selection?

2. Methods

2.1. Participants

In collaboration with CBR, the Dutch Driving Test Organisation, all drivers under the age of 25, who had passed their driving test in September 2005, were invited to participate in a two-year longitudinal study (De Craen, 2010). Within two weeks we contacted 553 drivers of whom 509 agreed to participate (a response rate of 92%). After some initial drop-out (14%) the total sample consisted of 436 novice drivers.

In order to keep the drivers motivated during the two years of the study, we used the following incentive strategy: participants were rewarded €20 for each completed questionnaire, half of which was available immediately and half was saved in a virtual piggybank until the end of the study. In practise, this meant that, while the study lasted, the amount of money saved grew;

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