



Learner driver experiences and crash risk as an unsupervised driver

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ABSTRACT

Objective: The purpose of this study was to describe the driving experiences of learner licensed drivers and examine the association between these driving experiences, associated factors, and on-road car crash involvement during the unsupervised restricted license stage. **Methods:** Data were drawn from a cohort investigation of newly licensed drivers. Information on demographic characteristics, personality, and risk behaviors was collected at the baseline interview. At the first follow-up interview (restricted license stage) study members were asked details about their experiences as a learner licensed driver: professional driving lessons, supervised driving, unsupervised driving, and driving courses in which they participated. During the second follow-up interview (full license stage), data were collected on crash involvement and driving exposure during the restricted license stage. Regression analysis was used to determine independent relationships between learner license driving experience variables and crash involvement. **Results:** After adjusting for demographic, personality factors, and driving exposure at the restricted license stage, increased time spent on the learner license was associated with a reduced risk of crash involvement during the unsupervised restricted license stage. **Conclusion:** Results presented in this paper suggest that learner drivers in New Zealand should be encouraged to spend more time on their learner license to enable them to gain skills and experience to help reduce their crash risk when they are allowed to drive unsupervised. **Impact on Industry:** Compared with novice drivers who are on their learner license for the least amount of time, those who spend the most amount of time on their learner license have reduced risk of on-road crash involvement as an unsupervised driver. Learner drivers and their supervisors need to be aware of the length of time required for practice in order to reduce the risks of crash involvement when they are able to drive unsupervised (O'Brien et al., 2012). The recently introduced increase in the minimum driver licensing age in NZ, tougher restricted license stage driving test (aimed at encouraging 120 hours of supervised driving), and the Safe Teen driver campaign (NZ Transport Agency, 2012) are all strategies targeted at improving the safety of learner drivers. These strategies need to be evaluated to ensure they are achieving their goals.

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1. Introduction

In 1987, New Zealand (NZ) was the first country in the world to introduce a comprehensive Graduated Driver Licensing System (GDLS). Since that time, various versions of GDLS have been introduced in many countries, including the United States, Canada, and Australia.

A typical GDLS includes progression through three stages of licensing: learner, provisional, and graduation to a full license (Hedlund, Shults, & Compton, 2003). Progression through the NZ GDLS involves first passing a theory and eyesight test to gain a learner license. At this

stage, the newly licensed driver is able to drive while supervised by a driver who has had their full license for a minimum of two years. Progression to the restricted (provisional) stage requires a minimum of 6 months on a learner license and for the applicant to pass a practical driving test. The restricted license stage allows the driver to drive unsupervised, but not between the hours of 10 p.m. and 5 a.m., and they are not allowed to carry passengers, unless they are supervised. The restricted license applies for 18 months, but this can be reduced to 12 months by completing an approved course (defensive driving or a Street Talk course). Progression to a full privilege license, with no conditions, requires the driver to pass another practical driving test.

Although the introduction of the GDLS has been associated with reduced crash rates, heightened crash risk continues for young, learner drivers in the early stages of licensure due mainly to inexperience and immaturity (Begg & Stephenson, 2003; Lewis-Evans, 2010). One characteristic of GDLS, implemented to counter inexperience, is the requirement for learner drivers to only drive while supervised by a

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fully licensed person (Hedlund et al., 2003). From an analysis of fatal crash involvement of 15 year old drivers from 33 states in America, Williams, Preusser, Ferguson, and Ulmer (1997) showed that driving without a learner's permit, or with a learner's permit but unsupervised, was associated with single vehicle night time crashes in which the 15 year old was legally culpable. In contrast, evaluation of the introduction of a minimum 30 hours supervised driving for learner drivers in Minnesota showed no impact on already reducing fatal and serious injury rates amongst drivers aged 16 and 17 years (O'Brien, Foss, Goodwin, & Masten, 2012). However, the authors also indicated that only one third of parents could correctly identify the minimum number of supervised hours required.

To encourage more supervised, on-road driving experience before driving unsupervised, in 1993, the Swedish road authorities reduced the age of learner licensure from 17.5 years to 16 years. Evaluation of this change showed that, compared to those who obtained the typical level of supervised learner driving experience (41–47 hours), those who chose the extended supervised driving option and obtained the most supervised driving experience (mean = 118 hours) had significantly reduced post-license crash risk (Gregersen, 1997). 120 hours has since been adopted by some states in Australia (e.g., VicRoads, 2012) as the gold standard for supervised driving experience, while states in America range from no minimum requirement to 65 hours (of which 10 must be at night and 5 must be in inclement weather; Insurance Institute for Highway Safety, 2012). In NZ, apart from the time limit of at least six months, there is no legal minimum requirement for supervised driving experience during the learner license stage (New Zealand Transport Agency, 2010).

Various options exist in NZ for gaining relatively safe driving experience as a learner driver, including professional instruction, supervised driving with a person who has held a full license for a minimum of two years, and learner driver courses. One nation-wide learner driver course, aimed at improving the safety of NZ learner drivers, is 'Practice,' developed by the NZ Transport Agency (NZTA) and the Accident Compensation Corporation (ACC; Accident Compensation Corporation & Land Transport Safety Authority, 2003). 'Practice' is a computer- and print-based driving program for 15¹ to 19 year olds and their driving supervisors, with an interactive CD-ROM (or internet based) to help learner drivers identify potential hazards and manage risks (Accident Compensation Corporation, & Land Transport Safety Authority, 2003). In the current format, 'Practice' participants are encouraged to practice driving with a supervisor for 120 hours, in a range of conditions, before they sit the restricted license test. All newly licensed drivers aged 15–19 years are posted a flyer advertising the program and inviting their participation. Preliminary evidence from the NZTA and ACC indicates that from 2007 to 2010, registration rates for 'Practice' had increased from 14% to 28% of eligible 15–19 year olds. The increase was considered to be the result of the re-development and re-launching of the program (Joel, 2010). Although there has been no independent evaluation of 'Practice,' the results of an internal unpublished evaluation of the re-development suggested that young drivers registered with 'Practice' had fewer crashes and traffic offenses than drivers who did not register (Andrew Joel, NZTA, personal communication, June 2011).

In a recent review of investigations conducted to understand the effectiveness of the GDLS, Williams, Teft, and Grabowski (2012) acknowledged the increased availability of naturalistic studies of learner drivers (e.g., Lajunen & Summala, 2003). These studies have the potential to provide information about what learner drivers and their parents are actually doing on the roads, although the number participating in these investigations is generally quite small (e.g., O'Brien et al., 2012). Williams and colleagues also highlighted preliminary investigations on the effect of delaying licensure for one year (e.g., from 15 to 16 years; McCartt, Teoh, Fields, Braitman, & Hellinga, 2010). In the McCartt

investigation, fatal crash rates reduced by 13% with a one year delay in licensure (McCartt et al., 2010).

In addition to this growing body of work, there have been recent studies that have described the key components of the GDLS for reducing crash involvement. For example, Jacobsohn, Garcis-Espana, Durbin, Erkoboni, and Winston (2012) described practice driving amongst American teens whose parents were involved in their driving education, and related this to parent characteristics (confidence in teaching their teen to drive, provision of support to teen) and the policy environment of the state in which they resided, while Scott-Parker, Watson, King, and Hyde (2011) described car ownership and driving exposure of novice drivers and how these relate to risky driving behaviors. However, as one of the concluding remarks in their review, Williams et al. (2012) suggested that "more information is needed about what transpires during the learner period and the policies and practices that will best prepare beginners for independent driving."

The aim of this work is to describe the driving experiences of learner licensed drivers and examine the association between these driving experiences and on-road car crash involvement as a driver during the unsupervised restricted license stage after controlling for a wide range of potential confounding factors.

2. Materials and methods

The NZ Drivers Study (NZDS) is a longitudinal investigation of a cohort of 3,992 newly licensed novice drivers. A comprehensive description of study methods have been previously published (Begg et al., 2009). The main recruitment of cohort members was through face-to-face interviews at driver licensing centers and licensing courses throughout NZ. Recruitment regions were selected to ensure coverage of geographical locations (North and South Islands, rural and urban) and ethnicities (Māori, the indigenous people of NZ, and non-Māori). The eligible population was all drivers who passed the learner license test at the venues where recruitment was being undertaken, who had not previously held a car driver's license. At recruitment, background information was collected. When the learner licensed driver passed the restricted license test, the first follow-up interview was undertaken. This was a telephone administered questionnaire to obtain data about the quality and quantity of driving experiences as a learner licensed driver and the supervision received. When the full license test was passed, a second follow-up interview was conducted to determine the quality and quantity of driving experience as well as traffic crash outcomes such as traffic offenses and crash involvement as a restricted license driver.

2.1. Data collection

The data presented in this paper have been drawn from the baseline, first, and second follow-up interviews. As highlighted above, the baseline interviews were conducted during cohort recruitment ($n = 3,992$, 1 Feb 2006 to 31 Jan 2008). Data were extracted from the first follow-up stage on 17 September, 2010. At this point 2,474 had passed the restricted license test and 88% of them had completed the follow-up interview. Data were extracted from the second follow-up interview on 30 May 2011. At this point 1,470 study members had passed their full license test (full license drivers, FLDs), 93% of whom completed the NZDS second follow-up interview. There were 1,379 study members who had participated in both the first and second follow-up interviews and are included in the current analysis. The remaining 91 did not do both interviews either because they refused one or the other of the interviews, or could not be traced at one of the stages.

2.2. Driving experience variables

At the first follow-up interview, study members were asked details about professional driving lessons (lessons paid for with a

¹ At the time this cohort was recruited the minimum licensing age was 15 years. In 2011, the New Zealand government increased the minimum licensing age to 16 years.

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