



Why do drivers become safer over the first three months of driving? A longitudinal qualitative study

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ABSTRACT

Drivers are at high crash risk when they begin independent driving, with liability decreasing steeply over the first three months. Their behavioural development, and other changes underlying improved safety are not well understood. We adopted an innovative longitudinal qualitative design, with thirteen newly qualified drivers completing a total of 36 semi-structured interviews, one, two and three months after acquiring a full UK driving license. The interviews probed high-risk factors for new drivers, as well as allowing space for generating novel road safety issues. Analysis adopted a dual deductive and inductive interpretative thematic approach, identifying three super-ordinate themes: (1) Improvements in car control skills and situation awareness; (2) A reduction in the thrill of taking risks when driving against a background of generally increasing driving speed; (3) Early concerns about their social status in the eyes of other road users during the early stages of driving, which may put pressure on them to drive faster than they felt comfortable with. The study provides important new leads towards understanding how novice driving becomes safer over the first few months of driving, including how well-studied concepts of driving skill and style may change during development of independent driving, and bringing the less rigorously studied concept of social status into focus.

1. Introduction

Road traffic crashes are one of top ten global causes of mortality resulting in approximately 3400 deaths per day (Peden et al., 2004; World Health Organisation, 2013). Younger or novice drivers are at greater risk than older or experienced drivers. Studies of novices who began driving at different ages indicate that age and experience have independent effects on crash risk, with some evidence that the effect of experience is greater than that of age (McCartt et al., 2009). Experience is a particularly important protective factor in the early months of independent driving; crash risk declines steeply over this period, irrespective of the driver's age when obtaining a license (McCartt et al., 2009). However, the behavioural changes that underpin this reduction in crash risk are unclear.

Identifying the behavioural developments that underpin this fall in crash liability over the first few months of driving would inform efforts to improve novice driver safety. Pre-driving interventions usually result in null or limited safety benefits (Glendon et al., 2014; Poulter and McKenna, 2010; Roberts and Kwan, 2006). In contrast, educational

interventions that have targeted intentions towards health behaviours such as smoking, drinking, safe sex, and exercise have led to safer behavioural outcomes (Webb and Sheeran, 2006). Therefore, it seems plausible that pre-driving education programs could improve road safety if they adopt effective behaviour change techniques and, crucially, focus on the key behaviours involved in novice driver safety. One approach might aim to equip pre-drivers with the safer driving behaviours that otherwise naturally develop only during the first few months of independent motoring.

Many existing driving behaviour measures, predict crash involvement in novice drivers (de Winter et al., 2015; Horswill et al., 2015) but do not appear to capture the key elements that underlie the improvement in road safety over the early months of driving. Current approaches differentiate between driving skill and style (Elander et al., 1993). Skill includes perceptual-motor skills such as steering and gear-changing. General models of skill development propose that perceptual-motor performance becomes faster and more automatic with practice, making fewer demands on attentional resources (Logan, 1988). There is evidence that self-reported driving errors become more common over

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the first three years of driving (Roman et al., 2015). It is possible that increasing error-rate might indicate the development of automaticity, as attentional slips and lapses are more likely in the performance of well-practiced tasks which only require minimal attentional input (Reason, 1990). We do not know of any studies that directly test the extent to which car control skills become automatic during the learning period or continue to develop post-licensure.

Driving skill also involves the processes underlying situation awareness. Situation awareness is defined as “the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future” (Endsley, 1995, p. 36). In driving, situation awareness is often measured through hazard perception video simulations which measure the ability to anticipate dangerous traffic situations (Horswill and McKenna, 2004). Hazard perception is related to experience when measured in years (e.g., Wallis and Horswill, 2007) but as yet there is only limited research addressing development over the first few months. One small scale study found no substantial differences in hazard perception measured 1, 5 and 9 months post-licensing (Sagberg and Bjørnskau, 2006).

Driving style refers to deliberate choices in terms of speed, following distance and engagement in other violations of recognized safe driving practices. A number of studies indicate that violations become more common in the early stages of driving (Ozkan et al., 2006; Roman et al., 2015; Rowe et al., 2013). This is a counter intuitive finding given the well-established associations between crash involvement and driving violations (de Winter et al., 2015; Evans, 2004).

One possibility is that the measures being used in the studies reviewed above, whilst successful in predicting crash risk in novices, are not sufficiently nuanced to identify the precise behaviours that become safer in the early stages of driving. For example, while driving speeds become faster overall, there may be particularly high risk situations in which novice drivers learn that speed reduction is paramount to safe driving. These might include driving around bends and driving at night; both high crash risk situations for inexperienced drivers (Clarke et al., 2006). Therefore, new behavioural tools may be required to provide more fine-grained assessment of the key behaviour changes that underlie the improvement in driving safety over the first few months of driving. The Behaviour of Young Novice Drive Scale (BYNDS; Scott-Parker and Proffitt, 2015) was constructed from the literature on young drivers to measure relevant aspects of skill, style and exposure to risky situations, including driving at night and driving with same age peers. The BYNDS has five subscales, including one measuring transient violations (that can change across a journey, such as speed choice), and one measuring fixed violations (that are unlikely to change across a journey, such as wearing a seatbelt) as well as a scale measuring exposure to risky situations, including driving at night and driving with same age peers. In a New Zealand study, the exposure to risky situations scale was independently associated with self-reported crash involvement (Scott-Parker and Proffitt, 2015). Data are so far unavailable on whether BYNDS scores change over the first few months of driving.

This study took a fresh approach to examining the behavioural development of new drivers by using a detailed qualitative investigation. Qualitative methods have rarely been employed in driving behaviour research. Exceptions include the use of individual and small group interviews with young and novice drivers about normative influences on risky behaviour (Scott-Parker et al., 2012), and focus group research on young drivers' perceptions of early driving, including the perceived importance of gaining a sufficient quantity and variety of experience soon after passing the driving test (Glendon, 2013), perceptions of risk and vehicle handling competency among young rural drivers (Knight et al., 2012), and a study of social influences on speed choice (Fleiter et al., 2010). The latter study highlighted that drivers feel pressure from other motorists to drive faster, an effect that has received little attention in quantitative studies. Ehsani et al. (2015) have also employed qualitative methods to explore the perceptions of young drivers on the

implications of driving with passengers of similar age, finding that they are aware of the direct and indirect influences on their behaviour.

To date there have been no qualitative studies that have sought to gain repeated information as driving experience develops. Uniquely in the novice driver literature, we used a longitudinal qualitative design in which drivers were interviewed at approximately 1 month, 2 months and 3 months after acquiring a full UK driving license that qualifies them to drive independently. This approach facilitated reflection upon driving development over time. A dual deductive and inductive interpretative thematic analytic approach was adopted (Joffe, 2012). This enabled both the close examination of existing theory/knowledge, whilst allowing novel concepts to emerge. As such, our semi-structured interviews targeted behavioural change in situations in which novice driver crashes commonly occur and become less frequent with experience as identified in a study of 3000 crashes involving UK young drivers (Clarke et al., 2006). These situations included driving around bends, following distance (relevant to rear-end shunts), driving at night and turning right at junctions (i.e., across the oncoming traffic flow, equivalent to a left turn in countries that drive on the right). We also probed for development in speed choice. This has been shown to be a robust predictor of crash involvement (Evans, 2004), and a desire to drive faster may underlie many other forms of dangerous driving. Probes asking participants to generate other areas of challenge and improvement provided space for novel aspects of safer driving over the early months to emerge.

2. Method

2.1. Participants

Thirteen newly qualified drivers (aged 17–19 years, 6 male, 7 female) who had passed their test within one month of their first interview were recruited through educational establishments and driving instructors in the North of England. This age and experience range was selected as being representative of young drivers at high crash risk (Williams and Carsten, 1989). All were White British and in full-time education. Nine owned cars and four had regular access to a car. Five participants had a telematics device fitted to monitor their driving as part of their insurance policy at first interview, and another participant had a device fitted during the study. Ten had passed their first driving test, two passed on their second attempt, and one passed on the third attempt. Seven participants drove 5–7 days a week, four drove 3–5 days, one drove 1–2 days a week, and one drove less often. None of the participants had received any traffic citations and none had been involved in a crash while driving. All participants provided informed consent. The study procedures were approved by the Research Ethics Committee of the Department of Psychology, University of Sheffield.

2.2. Data collection

A total of 36 interviews were conducted; all but three participants took part in all three stages of data collection. The number of participants and amount of interview data generated is well within the range suggested as being sufficient for saturation to be achieved (Guest et al., 2006). Individual semi-structured interviews were carried out by MRD, either in the participants' educational establishment or home. The interview schedule [supplementary materials] covered known risky driving situations for novices; speed, cornering, right turns, night driving, close following and general driving behaviour. The schedule was devised with an awareness of the literature on risk factors among novice and young drivers (e.g., Clarke et al., 2006), as well as discussion with experts in the field. The interviewees were asked to describe their behaviour in each area and to describe changes over the previous month. They were also asked to describe other aspects of driving that they had found challenging during the previous month, and how they thought their driving had changed.

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