



Accuracy of young male drivers' self-assessments of driving skill



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ABSTRACT

Accurate self-assessment of skill is important because it creates an appropriate level of confidence and hence behaviour. Inaccurate self-assessment of driving ability has been linked to reckless driving and accidents. Inaccurate self-assessment of driving skills may be a contributing factor to the over-representation of young male drivers in accident statistics. Most previous research on self-assessment of driving skills did not compare self-reported skills to objectively measured driving skills, so the aims of this study were: (1) to test the accuracy of young male drivers' self-assessments of specific driving skills by comparing them with performance in a driving simulator; (2) to test whether self-assessment accuracy varied with driving skill, driving experience and sensation-seeking propensity. We found that young male drivers' self-assessments were inconsistent with their driving performance, and that this inconsistency varied with driving skill, driving experience and sensation-seeking propensity. Groups with particularly inaccurate self-assessments are at high risk, because of their relative lack of skill, high mileage and sensation-seeking propensity. Self-assessments of hazard prediction and detection skills were particularly inaccurate. Understanding self-assessments of driving skill is crucial, but further studies are needed to allow preventive policies and interventions to take factors affecting self-assessments into account.

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1. Introduction

Self-assessment requires an individual to assess his or her own skills and this self-generated feedback can contribute to confidence in one's skills. The higher one's self-assessed skill the more likely one is to feel competent in a particular domain thereby influencing behaviour (Bandura, 1997). Accurate self-assessment is important because it creates an appropriate level of confidence in one's skill (Coronado-Aliegro, 2006). Underestimation may lead to unnecessary, self-imposed restrictions on activity whereas overestimation may lead individuals to participate in activities which are beyond their competence (Bandura, 1997). Drivers' self-assessments of their driving skills are not always accurate (Coronado-Aliegro, 2006; De Craen, Twisk, Hagenzieker, Elffers, & Brookhuis, 2011; Gregersen, 1996), which may cause serious problems such as underestimation of risk, reckless driving, sensation seeking, and accidents (Gregersen, 1996; Sümer, Özkan, & Lajunen, 2006; Özkan & Lajunen, 2006; Özkan, Lajunen, Chliaoutakis, Parker, & Summala, 2006). Sensation seeking is closely related to self-efficacy i.e. the belief in one's competence and capacity in a given domain (Bandura, 1994), which in turn is closely related to self-assessed competence (Coronado-Aliegro, 2006). As level of arousal is one of the means persons assess their self-efficacy through, high sensation seekers have the opportunity to develop positive perceptions of their self-efficacy by

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successful performance in the thrilling situations they expose themselves to. Thus, the relation between self-assessed skills and behaviour is the result of a continuous and dynamic interplay of mutual influence leading appropriate self-assessment to be of key importance for safe driving behaviour.

It is well-known that young male drivers are over-represented in accident statistics, and continue to be so despite road safety improvements, educational interventions and targeted policies (Hansen & Jensen, 2012; OECD, 2006; Twisk & Stacey, 2007). Inaccurate self-assessment of driving skill may be a contributing factor in this as young drivers have a tendency to overestimate their driving skill (De Craen et al., 2011) and there is evidence from other fields that the accuracy of self-assessments vary according to skill level, implying variability within sub-groups of people (Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008; Haun, Zeringue, Leach, & Fole, 2000; Kruger & Dunning, 1999). Specifically, it has been shown that less skilled individuals are less accurate in their self-assessments than highly skilled individuals (Ehrlinger et al., 2008). In relation to driving, drivers who passed their driving test made more accurate self-assessments of driving skill than drivers who failed the test (Mynttinen et al., 2009) and similarly, young drivers who had just passed their driving test had high confidence in their driving skill (Grayson & Elliott, 2004).

Research on self-assessments of driving skill has usually considered drivers as a homogeneous group, but given that driving behaviour and skill are known to vary according to individual factors such as gender, age, driving experience, personality etc. (Lajunen, Corry, Summala, & Hartley, 1998; Lucidi et al., 2010; Rimmö, 2002; Zuckerman, 2007; Özkan & Lajunen, 2006) it is important to establish whether such factors also influence the accuracy of self-assessments. This study contributes to this by investigating the influence of driving skill, driving experience and sensation-seeking propensity on the accuracy of driving self-assessments.

Many previous studies have found that drivers tend to overestimate their driving skills (for an overview, see Sundström, 2008). The majority of these studies used self-report measures in which drivers were asked to compare their driving skills to the skills of the average driver. This method of assessing driving skill has been criticised because it does not compare subjective self-assessments of skill with an objective measure of driving skill and therefore it has been suggested that self-reports should be validated through comparison with objectively measured driving performance (Sundström, 2008).

One approach to validation is to compare a driving license examiner's assessment of a driver's skills to his or her self-assessment (De Craen et al., 2011; Mynttinen et al., 2009). Using this method Mynttinen et al. (2009) found that about 40% of the drivers overestimated their skills, and De Craen et al. (2011) found that young drivers overestimated their driving skills. A potential problem with this method is that it relies on an expert's subjective assessment of driving skills and is thus subject to human flaws and inter-rater variability. Another way is to validate based on data from naturalistic driving, but safety issues make this problematic. Similarly, it is impossible to expose all participants to an identical driving scenario. Using a driving simulator to measure driving performance addresses these problems (Boyle & Lee, 2010): use of a virtual, controlled experimental setting ensures that drivers' skills and behaviour can be assessed safely and objectively. The driving simulator also enables the researcher to measure performance of specific driving skills for comparison with the driver's self-assessment of the same driving skills.

The main aim of this study was to test the accuracy of young male drivers' self-assessments of driving skills using a driving simulator. A second aim was to examine whether self-assessment accuracy varied with driving skill, experience or sensation-seeking propensity. Based on the above, we hypothesized that driving skill level, driving experience and sensation seeking would affect self-assessment accuracy. Specifically, we hypothesized inaccurate self-assessment among less skilled drivers and drivers with little experience, and we expected that high sensation seekers would have high confidence when self-assessing their skills. The study was conducted at the Technical University of Denmark.

2. Method

2.1. Participants

The participants were male students from the Technical University of Denmark. Participants were aged between 18 and 31 years old and were recruited on campus or via a Facebook site. Informed consent was obtained by all participants. The sample characteristics are given in Table 1. All participants had a driving license for cars (type B).

2.2. Equipment and materials

Driving skills were measured via a driving simulator. The Driving Skill Inventory (DSI; Lajunen & Summala, 1995) was used to collect self-assessments of driving skills and the Brief Sensation Seeking Scale (BSSS; Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002) was used to assess sensation-seeking propensity.

2.2.1. Driving simulator

The experiment was conducted using a fixed-base driving simulator with a 180° visual field with rear and side view mirrors. The simulator software used was 'ScanEr Studio'. Six different scenarios were scripted in ScanEr Studio in order to measure driving skills specified in the DSI (see Tables 2 and 4). The six scenarios were set in a city environment, a representation of an urban Copenhagen area or a rural environment, featuring a two-way rural road. A Latin Square procedure was used to

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