



CROSS-CULTURAL DIFFERENCES IN DRIVERS' SELF-ASSESSMENTS OF THEIR PERCEPTUAL-MOTOR AND SAFETY SKILLS: AUSTRALIANS AND FINNS

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Summary—Australian ($N = 201$) and Finnish ($N = 203$) drivers completed Type-A and Sense of Coherence questionnaires, Driver Behaviour Inventory, Driver Social Desirability Scale, self-reported number of accidents, penalties and driving speed and the Driver Skill Inventory (DSI), which measures driver's self-assessment of his/her perceptual-motor and safety skills. The English version of the DSI had the same factor structure and reliability as the original Finnish version and is, therefore, a viable instrument for measuring drivers' self-assessment of their perceptual-motor and safety skills in English-speaking countries. Hierarchical regression analyses showed that the number of accidents and penalties as well as the self-reported driving speed were predicted by safety skills whereas perceptual-motor skills predicted the number of penalties. Perceptual-motor skills were positively related to life-time mileage, being male, driving aggression and alertness, and sense of coherence, but negatively to dislike of driving and age. Safety skills were predicted by impression management, nationality, driving aggression and alertness. Results suggest that drivers with strong trust of their perceptual-motor skills have an emotional attitude to driving and overestimate their driving abilities, but drivers emphasising safety skills have a matter-of-fact attitude to driving. © 1998 Elsevier Science Ltd. All rights reserved

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INTRODUCTION

In recent years, there has been growing evidence that drivers tend to over-estimate their skills compared to the "average driver" (Brown & Groeger, 1988; Delhomme, 1991; Goszczynska & Roslan, 1989; Groeger & Brown, 1989; McCormick *et al.*, 1986; Näätänen & Summala, 1976; Sivak *et al.*, 1989a; Svenson, 1981; Svenson *et al.*, 1985). This over-estimation of one's own driving skills has been found among Australian (Job, 1990), Finnish (Näätänen & Summala, 1976), German (Sivak *et al.*, 1989a), Polish (Goszczynska & Roslan, 1989), Spanish (Sivak *et al.*, 1989a), and Swedish drivers (Spolander, 1983; Svenson, 1981; Svenson *et al.*, 1985) as well as among drivers from Great Britain (Groeger & Brown, 1989), New Zealand (McCormick *et al.*, 1986) and the United States (Slovic *et al.*, 1978; Svenson *et al.*, 1985). Drivers in Western industrialised societies thus seem to over-rate their driving skills.

Although the basic distinction between driver behaviour and driver performance, or in other words driving style and driving skills (Näätänen & Summala, 1976; Elander *et al.*, 1993; Evans, 1991), has been generally accepted in traffic psychology, in the earlier studies concerning drivers' self-assessment of their own skills, driving ability has usually been defined almost exclusively as a combination of perceptual-motor skills. Safety-related skills have not been included in these studies or have been in a supporting role, although it can be supposed that the driver's view of himself/herself as a safe or dangerous driver may influence his/her driving style (Lajunen & Summala, 1996). Spolander (1983) studied drivers' self-assessment of their technical and defensive skills, the former consisting of quick and fluent car control and traffic situation management while the latter refers to anticipatory accident avoidance skills. He asked subjects to compare themselves to the average driver and found that males overrated their manoeuvring skills and this overrating developed rapidly

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after licensing, being greatest in the first year (Spolander, 1983). It is also possible that not only the skill evaluation in relation to the average driver, but the driver's internal balance between manoeuvring and safety skills is of importance and reflects the driver's attitude to safety. Therefore, a questionnaire, the Driving Skill Inventory (Lajunen & Summala, 1995) based on Spolander (1983) and Hatakka *et al.* (1992), was developed for measuring driver's perceptual-motor skills and safety skills. In the Driver Skill Inventory (DSI), drivers have to assess their skills not in relation to drivers in general, but to an internal reference, i.e. drivers were asked to identify the weak and strong components in their driving.

The Driver Skill Inventory has been found to have a consistent factor structure and high reliability in very different populations: university students (Lajunen & Summala, 1995), male army conscripts (Lajunen & Summala, 1996), male traffic criminals, male policemen and male traffic instructor candidates (Summala & Hyvén, 1990). It has been reported that drivers rating their vehicle-handling skills highly also drive faster in a driving test (Lajunen & Summala, 1996). However, all these results concerning factor structure, reliability and applications of the DSI were obtained in Finland with the Finnish version of the DSI. Since the English version of the DSI has never been used before, it is necessary to validate its factor structure and viability in an English speaking country and in a different traffic culture. In general, it has been suggested that all new questionnaires and inventories as well as the theoretical concepts underlying those applications should be tested cross-culturally before using the instrument in a new culture or country (Berry *et al.*, 1992). The first purpose of this study was to evaluate the reliability, suitability and usefulness of the English version of DSI among Australian drivers and to investigate cross-cultural similarities and differences between Australians and Finns in correlates of driver self-assessments of skills and safety. The present study was conducted both in Australia and Finland, because this study was aimed at validating the English version of the DSI and because the Australian traffic conditions, e.g. weather conditions in winter time, traffic culture including driver training and traffic policy, differ from the Finnish traffic culture considerably.

International studies show that there is considerable cross-cultural variation even between European countries in driving behaviour (Association Amicale des Ingénieurs Ancien Elèves de l'Ecole National des Ponts et Chaussées, 1994), which is also reflected in accident statistics. In addition, earlier studies suggest that there are differences among nationalities in driver self-assessment (Sivak *et al.*, 1989a), risk-perception (Sivak, 1987; Sivak *et al.*, 1989b) and the target risk-level of performance (Sivak *et al.*, 1989c). Since drivers' risk perception can be seen as a combination of two main inputs, (1) information on potential hazards in the traffic environment and (2) information on the joint capacity of driver and vehicle to prevent potential hazard (Brown & Groeger, 1988), the driver's view of his/her perceptual-motor and safety skills can be claimed to be directly related to risk-taking and finally, the negative consequences of hazardous driving. Cross-cultural differences in self-assessments of driving skills and safety may thus partly explain international differences in accident statistics (for other factors like degree of motorization, see Näätänen and Summala, 1976 chapter 1; Trinca *et al.*, 1988). Earlier findings suggest that social behaviour, cognitive processes and attitudes are influenced by cultural background (Berry *et al.*, 1992), so it can be supposed that Australian drivers' views of themselves may differ from those of Finnish drivers. The second aim of this study was to investigate cross-cultural differences in drivers' self-assessments of perceptual-motor skills and safety skills between Australians and Finns.

Driving style as a deeply internalized way of driving is influenced by personality characteristics, the driver's sense of herself/himself as a driver and driving experience. Thirdly, this study was intended to investigate how aggressiveness related to driving and how sense of coherence and Type-A behaviour are related to the driver's view of herself/himself as a skilful or safe driver. These personality measures were chosen, because they have been reported or can be hypothesized to be related to risk-taking (for a review of aggressiveness see Näätänen & Summala, 1976; Sivak, 1983; and for sense of control see Arthur & Doverspike, 1992; Montag & Comrey, 1987). It has also been reported that subjects from different cultures express different levels of sense of control, i.e. locus of control (Rotter, 1966) and aggressiveness (Berry *et al.*, 1992) and that these factors influence driving behaviour. Evans *et al.* (1987) studied the effects of Type-A behaviour on driving behaviour among U.S. and Indian bus drivers and reported that Indian Type-A drivers brake, pass and blow their horns more often than Type-B drivers. This difference between Type-A and B drivers was not

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