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From control of the vehicle to personal self-control; broadening the perspectives to driver education

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Abstract

The objective is to formulate guidelines and goals for future development in the area of driver training and education. The content of this paper is not empirical, but merely an analytical summary or review. A four-level descriptive model is presented in which driver behaviour is conceptualised as a hierarchy, in which the goals and motives of the driver play an essential role. The recent constructivist ideas in mainstream pedagogy and psychology of learning are combined with a hierarchical approach to driver behaviour. A comprehensive framework for goals and contents of driver education (GDE framework) is presented. Two main conclusions can be drawn. Firstly, the conceptual analysis points towards a need to emphasise the motivational aspects in driver education more than it is done at present. Secondly, in order to reach the goals, pedagogical methods should be re-evaluated. For example, active learning methods and use of self-reflection should be promoted in driver education.
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Keywords: Driver training; Driver education; Educational methods; Theory in traffic psychology; Driver behaviour

1. Introduction

The objective is to formulate a conceptual model of driver training and education. The idea is to be prospective, with clear emphasis on finding new goals and methods. A solid theoretical framework is needed to cover a driver's task as broadly as possible. Issues that are addressed

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include, for example, what the driver has to master; which factors affect the learning process and, in particular, which educational methods are needed.

2. Theory of traffic behaviour and driver education

2.1. Hierarchical approach to drivers' task and skills: defining the complexity of the problem

An analysis of the driver's task and accidents has shown that adequate psychomotor skills and physiological functions are not sufficient for good and safe performance as a driver. This conclusion is in line with the notion that driving is a self-paced task (Näätänen & Summala, 1974). Recently, for example, Rothengatter (1997) has pointed out, that research in traffic psychology shows not only the importance of performance factors, but also the importance of motivational and attitudinal factors. This observation concurs with the distinction between the concepts "errors" and "violations" in driver behaviour (Parker, Reason, Manstead, & Stradling, 1995; Reason, Manstead, Stradling, Baxter, & Campbell, 1990). Since Miller, Galanter, and Pribram (1960), hierarchical approaches have been typical in more recent psychological attempts to explain human behaviour. The importance of hierarchical approaches is realised also in the more general debate in traffic psychology (Janssen, 1979; Michon, 1985, 1989; Ranney, 1994; Summala, 1985).

Although in the past hierarchical approaches have been used mainly for describing the performance aspects of driving behaviour (Mikkonen & Keskinen, 1980; Rasmussen, 1980; Van der Molen & Bötticher, 1988) a hierarchical approach can also be used to combine the motivational and attitudinal aspects of driving behaviour with performance, or operations in certain traffic situations. The interplay between the elements of driving skill as well as the conceptualisation of driving as a task that includes all components from motor coordination to higher motivational levels becomes evident, when driver behaviour is schematised in a hierarchical approach (Keskinen, 1996) (see Fig. 1).

Skills for vehicle manoeuvring and mastery of traffic situations are the basis for successful operation in traffic and these aspects should be learned well during driver training. Psychomotor and physiological aspects are important as basic requirements for operations at the lowest levels of the hierarchy of driver behaviour. However, these skills are applied under guidance of higher

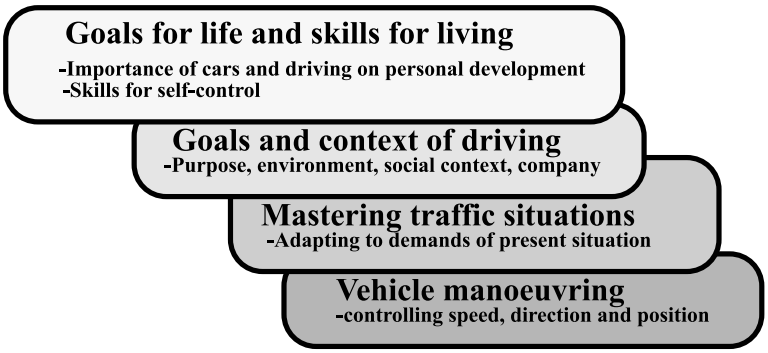

Fig. 1. Illustration of hierarchical levels of driver behaviour (adapted from Keskinen, 1996).

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