

ABSTRACT TITLE:

Developmentally Adapted Driver Education programme: effects on driving competence, moral reasoning, driving outcomes and crash involvement

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ABSTRACT

Introduction

In 2004 the Driver Training Stepwise (DTS) programme was introduced in the Netherlands. DTS was assessed as a 'best practice' example of driver training in the EU-project SUPREME (SUPREME, 2007). DTS offers a modular driver training programme which differs from the traditional (driving school-based) training in two fundamental aspects: 1) the learner driver learns how to drive in a series of highly structured steps and 2) the learner driver is only allowed to enter the next stage of learning once he has shown sufficient mastery of the required competencies of the previous stage. Recently the DTS programme has been developed further into the Developmentally Adapted Driver Education (DADE) programme (Roelofs & Vissers, 2017). In order to meet the individual needs of the learner drivers, the following additional features were introduced in the DADE programme:

Social driving as mature moral reasoning in traffic

Juvenile delinquency studies show a strong association between immature moral reasoning and delinquent behaviours, especially when combined with self-serving cognitive distortions regarding one's own anti-social behavior (Roelofs & Hirsch, 2017). Studies in the field of driving indicate that immature moral reasoning in traffic was significantly associated with higher self-reported driving speeds, traffic violations and crash involvement. Adding a moral reasoning component to driver training could potentially increase the frequency of safe driving behaviours and reduce crash risk.

Systematic use of coach and self-assessments for learning

Based on a framework for competent driving, a scoring procedure was developed, in which driving tasks are judged against strict criteria (Cito, 2008). Five performance criteria were used: a) safety (safe timing, safe space, safe speed), traffic flow (no delays for others, aiding fluidity of traffic), social consideration (others are allotted space, error forgiveness), environment (economic fuel use, prevention of harmful emissions), control (comfort, prevention of wear). For the learner driver additional self-evaluation scoring forms are used, that are meant to elicit self-reflection on the part of the learner driver. Self-reflection is known to contribute to the monitoring of learning and the subsequent formulation of personal learning goals. In addition it is expected that the method will foster growth of self-regulation throughout the acquisition period and beyond. Finally, systematic comparisons between expert judgments and self-assessments of driving competencies are expected to contribute to the development of learner driver calibration skill, which is a key skill in decisions about engagement in complex traffic situations.

Coaching style for driving teachers

In addition to traditional instructor-led instruction the development of higher order skills requires coaching on the part of the driving educators. According to recent insights driver coaching puts the learner in an active role, encourages the learner to accomplish personal goals, and raises awareness and responsibility of the learner regarding his values, attitudes, knowledge, skills and habits. Coaching is expected to stimulate a sustainable learning process, by supporting cognitive and affective self-regulation on the part of the learner.

Method

During the period July 2015 – August 2017, in the Noord-Limburg region of the Netherlands, an experimental group of 112 learner drivers have been trained according to the principles of the new DADE programme. Data were collected on contents of driver training, test results and attitudes and driving style during the first period of solo driving. The experimental group was compared with a representative reference group (REF-group) of 384 learner drivers, that had attended traditional methods.

Results

DADE learner drivers need less attempts to pass the practical driving test (1.23) compared to learner driver enrolled in traditional driver training (1.63). Although de DADE programme has several extra's (driving under specific circumstances (track-based experience), independent route selection, feedback drive with two other learner drivers), costs of the programme are not meaningfully more expensive than traditional training programmes.

DADE learner drivers evaluated the instruction and coaching received more positively than REF-group learner drivers: they reported more opportunities to practice relevant skills, more frequent attention to safety margins and to defensive driving. In addition, they rated the received feedback on their learning progress, and specifically on their strong and weak points more positively than REF-group learner drivers.

DADE learner drivers reported more frequently independent and active learning activities: more often they strive to accomplish personal goals, more often reflect critically on their own learning process and are more inclined to plan follow-up learning activities based on the received feedback.

DADE learner drivers in general show a more mature level of moral reasoning in justifying their driver behaviour than REF-group learner drivers. More specifically, they less frequently use self-serving cognitive distortions about own undesirable driving behaviours than REF-group learner drivers. Controlled for exposition there is a tendency that DADE-learner drivers have less (self-reported) crashes, half a year after licensure. This indicates that adding a moral reasoning component to driver training could have safety benefits in terms of increasing safe driving behaviours, and a reduced crash risk.

References

- Cito (2008). *Driver performance assessment. Scoring manual*. Arnhem: Cito.
- Gibbs, J. C. (2003). *Moral Development and Reality - Beyond the Theories of Kohlberg and Hoffman*. London: Sage Publications Ltd
- Roelofs, E.C. & Vissers, J.A.M.M. (2017) *Rijopleiding op Maat. Resultaten van de praktijkproef in Noord-Limburg. (Developmentally Adapted Driver Education. Results of the pilot-study in the region Noord-Limburg)*. Amersfoort, Royal HaskoningDHV/ Arnhem, Cito.
- Roelofs, E.C., Hirsch, P. (2017). *Assessing Moral Reasoning, Cognitive Distortions And Driving Style In The Context Of Post-License Young Driver Coaching*. Paper presented at the 9th International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design, Equinox Manchester Village, Vermont.
- Stams, G.J., Brugman, D., Dekovic, M., Van Rosmalen, L., Van der Laan, P., & Gibbs, J.C. (2006). The Moral Judgment of Juvenile Delinquents: A Meta-Analysis. *Journal of Abnormal Child Psychology*, 34(5), 697–713.
- SUPREME (2007) *Final report Driver training, testing and licensing*. Vienna, KfV.