

Risk perception of driving as a function of advanced training aimed at recognizing and handling risks in demanding driving situations

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Received 17 May 2007; received in revised form 29 July 2007; accepted 8 September 2007

Abstract

The present study examined in 224 individuals whether an advanced driving training aimed at recognizing, avoiding and handling risks in demanding driving situations, affected perceived risk of driving situations (measured by a questionnaire). The training, which involved both experience and feedback on real performance, specifically intended to emphasize the dangers in loss of control of a vehicle. With that emphasis, it was hypothesized that perceived risk would increase after as compared to before the training. In addition, this study examined whether risk perception was dependent on gender or on age. A mixed ANOVA performed on mean scores on the questionnaire yielded significant main effects for training (before/after), gender, and age. Higher levels of perceived risk were reported after the training as compared to before it, by females than by males, and by older adult drivers than by younger adult drivers. An analysis of the data of a smaller sample showed that the increment in perceived risk was still present 2 months after the training, and that it did not decrease significantly as compared to immediately after the training. These results are discussed in relation to relevant methodological issues and future research.

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Keywords: Skid training; Driving skills; Driver education; Risk perception; Gender differences

1. Introduction

Young novice drivers play a disproportionately large role in traffic crashes. In Israel, 18–24-year olds comprise about 17% of the driving population, but account for around 24% of crashes (Israeli Statistic Bureau, 2006). The situation in many overseas countries is similar (Mayhew et al., 2003). It seems mainly due to their limited experience to develop the complex, higher-order perceptual and cognitive skills required to safely interact with the traffic environment (Deery, 1999).

One of the factors involved in this process is risk perception defined as subjective experience of risk in potential traffic hazards (Elander et al., 1993). There are evidence that novice drivers are more likely than experienced drivers to adopt a riskier driving style (e.g., speeding, tailgating) and thus are more likely to find themselves in potentially risky situations (Mayhew and Simpson, 1995). At the same time, novice drivers are less likely to deal with those situations effectively due to lower levels of driving skill.

According to previous research (Horwarth, 1988; Brown and Groeger, 1988) there is an association between risk perception and risky behavior. Harre (2000) claims that the driver's road behavior (especially the young driver) is much influenced by his/her "risk state". Drivers who perceive low crash-risk in an objective high crash-risk will drive recklessly, while those who perceive high crash-risk in the same situation will drive cautiously and will do anything to avoid risks.

Therefore, novice drivers must develop their risk perception in order to reduce their involvement in dangerous road situations. One of the tools of improving novice drivers' safe driving is by advanced driving trainings aimed at handling risks in demanding driving situations. This research is aimed to assess the utility of such training for drivers in developing their risk perception.

The effectiveness of driver education programs in reducing traffic casualties has been the subject of research and debate of many studies (e.g., Carstensen, 2002; Christensen and Glad, 1996; Gander et al., 2005; Glad, 1988; Hirsch, 2003; Katila et al., 1996, 2004; Ker, 2005; Morrissey et al., 2006; Shope and Molnar, 2003). While there appears to be some general agreement in the literature concerning the effectiveness of some programs, such as some of the graduated driver's license (GDL) programs, which introduce stages for young drivers prior to the acceptance of

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a full license (e.g., Morrisey et al.; Shope and Molnar), there is less consensus concerning other, particularly post-licensing advanced driving programs.

The studies by Shope and Molnar (2003) and Morrisey et al. (2006) have both assessed the effectiveness of GDL programs in the USA. Both studies, provided support for the effectiveness of GDL programs in reducing casualties among teen drivers, Shope and Molnar, using the data from GDL programs implemented between 1996 and 1999, and Morrisey et al., using those from GDL programs which were operative in the USA between 1992 and 2002.

Carstensen (2002) sought to evaluate whether the modified driver education program in Denmark (changed in 1986) had any effect on car accidents. Although young drivers who had trained according to the new, as compared to the old training program were found less involved in some accident types, this decrease was limited to the first year of driving. Ker (2005) was interested in assessing the effectiveness of post-license driver education for preventing road traffic crashes. She performed a meta-analysis on 21 studies which used some form of such trainings (almost exclusively in the USA). The results did not provide a definite proof for the effectiveness of post-licensing training in preventing car accidents.

Although the present study did not assess the effectiveness of a driving training in preventing accidents, nor did it measure confidence and overconfidence directly, it examined how risk perception was affected by participating in an advanced driving training which aimed at increasing perceived risk of traffic situations. Since the training evaluated in the present study particularly focused on skid training, only studies concerning skid training (Christensen and Glad, 1996; Glad, 1988; Katila et al., 1996, 2004) are presented below.

Generally, while skid trainings may aim at educating drivers to drive more safely on slippery roads, on many occasions such attempts have been considered failures, possibly due to improper expectations of students from such courses (Katila et al., 1996). Thus, Katila et al. have compared the views of instructors and students in Denmark, Finland, Norway and Sweden on the goals of skid training courses. In all four countries, students who have completed a skid training course assessed maneuvering skills and anticipating skills in the courses as equally important, whereas instructors assessed anticipating skills to be more important than maneuvering skills. The authors suggested that the skid training may give students the wrong impression that maneuvering skills are more important than anticipating skills. Likewise, they suggest that maneuvering exercises also increase their self-confidence, leading to underestimation of the risks involved, resulting in unsafe driving.

Katila et al. (2004) introduced much of the research about skid training in Nordic countries. They point out that following the renewed driver training policy in Norway in 1979, which included a compulsory skid training course, the total number of accidents increased by 17% among novice male drivers and accidents in slippery road conditions increased by 23%, as compared to the control group with no skid training. They also mention that decreased safety has also been found regarding skid training for truck drivers (Christensen and Glad, 1996),

possibly due to increased self-confidence among drivers (Glad, 1988).

Thus, in order to avoid the decreased safety that was found following the Norwegian skid training, the emphasis in such training in Finland has been shifted to anticipatory skills, as opposed to maneuvering skills (Katila et al., 2004). Specifically, the main goal in Finland was to teach drivers how to become more aware of the possible risks of slippery conditions, and generally to promote foreseeing risks; vehicle handling and maneuvering skills were considered to be of secondary importance.

The Katila et al. (2004) study specifically evaluated the effect of Finnish driver skid training on accidents in slippery road conditions. The study gathered information on driving exposure and accident rate during 6–18 months following licensing. Half of the drivers received and half had not received skid training. The results showed no effects of the training on slippery road accidents for either male or female drivers.

Although effects of the training on slippery road accidents were not obtained, the training affected self-confidence, as reflected by a self-assessment questionnaire about skills, worries and perceived risks regarding driving in slippery conditions. Specifically, although the Finnish driver skid training tried to avoid an increase in confidence, drivers who had passed the skid training showed higher levels of confidence in their skills and were less afraid to drive in slippery conditions than drivers who had not passed the training. Katila et al. (2004) point out that nevertheless, this increase in confidence did not lead to an increase in slippery road accidents. They further argued that high confidence in one's personal skills does not necessarily imply negative safety; the crucial factor is how skills are used.

In recent years, the Israel Ministry of Transportation has begun implementing a GDL program for novice drivers. Amongst several requirements presented, some of which have already been activated (e.g., following their initial permit to drive, novice drivers are legally prohibited to drive without an experienced escort driver during the first 3 months, and they are obligated to complete a 12-h knowledge-refreshing course after 3 years), the new regulations would condition the approval of a permanent license in the completion of an advanced driving course (which is expected to be activated in the near future). This course would include both theoretical education of, and practical training in, a number of different complex situations. Each training site would be designed to enable training in a number of special driving situations, such as skidding on water and on sand, bypassing, driving in a traffic circle, getting on and off road shoulders, entering a puddle, driving in a steep descent, and slalom driving.

Although we agree with Katila et al. (2004) that it is an oversimplification to say that increased confidence in skills will inevitably lead to more accidents, the goal of designing a training which would avoid leading to overconfidence still seems worthy. Assuming that more awareness of the dangers of slippery conditions is more or less equivalent to higher levels of perceived risk in such conditions, Gerald Wilde's (1982, 1988) risk homeostasis theory RHT provides some basis for implementing

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