

Towards a Conceptual Model of Motorcyclists' Risk Awareness: a comparative study of riding experience effect on hazard detection and situational criticality assessment

Abstract

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This research investigates risk awareness abilities among different populations of motorcyclists. Risk awareness is defined here as an extension of the Situational Awareness theory applied to critical driving situations. This study is more particularly focused on two main cognitive abilities supporting risk awareness: hazard detection, corresponding to riders' skill to perceive critical event occurring in the road environment and to identify it as a threat, and situational criticality assessment, corresponding to a subjective assessment of the accident risk. From this theoretical framework, the aim is to compare motorcyclists' performances in risk awareness according to their experience in motorcycling. Four populations of motorcyclists are investigated: Professional (Policemen), Experienced riders, Novices, and Beginners.

Method implemented is based on a set of 25 video sequences of driving situations presenting a risk of collision. Participants' task was firstly to stop the video film if they detect a hazard. Then, at the end of each sequence, they have also to assess the criticality of the driving situation as a whole, with a Likert scale (from 0 to 100% of criticality). Results obtained show that cognitive abilities in both (i) hazard detection and (ii) situational criticality assessment depend on the riding experience, and are learnt from two different timing.

On one side, Professional and Experienced riders obtained better results than Novices and Beginners for hazard perception (i.e. shortest reaction time). In terms of situational criticality assessment, Beginners underestimate the situational risk and seem overconfident in their abilities to manage the situational risk, against Novices, Professional and Experienced riders, who have better competences in criticality assessment. From these empirical results, a conceptual model of motorcyclists' Risk Awareness is proposed.