Young drivers’ hazard perception skills in pedestrian-related situations

Pedestrian fatalities contribute to more than one-fifth of the overall number of road traffic deaths. Despite general improvements in road safety over the last decades, since 2010, the decrease of pedestrian deaths has slowed down remarkably in Europe. In addition, young drivers (18-24 years old) constantly face the largest injury and fatality risks in traffic. There are several factors related to exposure and experience that increase the risk of accidents among young drivers, but one of the key reasons is a lack of hazard perception skills (HPS).

The overall objective of this project is to contribute to improving the safety of pedestrians and young drivers through an exploration and training of drivers’ HPS in relation to pedestrian-related situations. The research focused on examining and improving HPS of young drivers in a driving simulator, thus increasing the existing knowledge of pedestrian-related situations from the drivers’ perspective. Through identification of varying levels of HPS among young drivers, the project explored drivers’ hazard fixation and hazard response to pedestrian-related potential hazards of various difficulty. Furthermore, it was aimed to improve drivers’ HPS focusing on pedestrian-related potential hazards by training based on error learning in a driving simulator supplemented by an expert’s commentary and visual feedback.

To meet the objectives, driving simulator-based experimental studies were conducted. Based on the response to potential pedestrian-crossing situations, two sub-groups of drivers with lower and higher HPS were identified. The sub-group of young drivers with lower HPS had less efficient hazard fixation and lower self-assessed HPS than the drivers with higher HPS. In addition, results show that fewer drivers responded to the presence of child pedestrians by lowering the speed and even had a higher speed when passing a child than an adult pedestrian, indicating that among young drivers the child was to a lower degree considered a hazard. Therefore, there is a need for raising awareness among drivers of the necessity of speed adjustment in situations where a pedestrian might cross the street, especially those involving children.

The training intervention demonstrated a positive effect on improving drivers’ HPS, which manifested as a lower approach speed and more fixations on potential hazard location in hidden pedestrian-related situations, meaning that the intervention improved the more advanced HPS. The intervention can be used to improve young drivers’ HPS in more challenging situations in which potential pedestrian-related hazards have to be anticipated from the cues not directly related to the pedestrian thus requiring higher HPS.

The contributions of the PhD project are presented in four papers. Combined, the project contributes with new research-based knowledge on HPS among young drivers in pedestrian-related situations. The knowledge is relevant for the development of interventions to improve HPS among young drivers particularly in situations demanding higher HPS such as when a pedestrian, a potential hazard, is hidden. Furthermore, this project contributes to the development of a short HPS training intervention in a driving simulator. This training could be considered as an additional training module to the conventional driver training in classrooms and on the road.

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