The relation between the perception of safe traffic and the comprehension of road signs in conditions of ambiguous and redundant information

This study proposes the investigation of the relations between the perception of safety improvement, the provision of information with road signs, the amount of provided information, and observable and unobservable traits of road users. A web-based survey collected information about the estimation of conflicts and the perception of safety improvement in 12 traffic locations grouped according to (i) low amount of information that generated ambiguity and (ii) high amount of information that generated redundancy. Moreover, the web-based survey gathered information about socioeconomic characteristics, driving frequency, driving habits, driving style and need of closure of road users, the latter being measured with two validated psychometric scales. The survey was administered to 753 Hungarians with expertise in transport and traffic (for the purpose of having a good estimation of safety improvements) and experience with redundant information (for the purpose of having a sample familiar with one of the issues). A Structural Equation Modelling approach allowed estimating a system of relations that suggested the following: (i) the perception of safety improvement is not related only to road sign comprehension, but also to the amount of information and, more relevantly, the driving style and the information processing needs of the drivers; (ii) the perception that road signs improve safety varies with gender, age, driving frequency and driving habits, thus making the purpose of road signs to reduce conflict a more complex task because of the effect of the traits of the road users; (iii) the road design should adhere to three of the principles of sustainable safety that have been proposed to design self-explanatory roads; (iv) solutions should look into personalised driving assistance that would be able to address the different needs that drivers have to feel safe.

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