

Attention allocation of cyclists in interaction with other road users

K. Kircher^{1,2}, C. Ahlstrom¹, Jonas Ihlström¹, Sara Nygårdhs^{1,3}

¹The Swedish National Road and Transport Research Institute (VTI), Linköping, S-58195, Sweden

²Department of Behavioural Sciences and Learning, Linköping University, Linköping, S-58183, Sweden

³Department of Computer and Information Science, Linköping University, Linköping, S-58183, Sweden

Author email: katja.kircher@vti.se

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When moving in traffic, each road user has to attend to a particular set of targets to gain the necessary information on how to continue on the intended path in an efficient, safe and predictable manner. This sharing and exchanging of mutually compatible information has been described as system situation awareness (Salmon et al 2012). Thus, each road user collects information from relevant sources, assuming that the information is system compatible and that other road users sample the share of information that is relevant to their progress.

In a semi-controlled field study the information sampling and integration process of 41 cyclists was studied. The participants were recruited into four rider type groups based on self-categorisation: fast cyclists, recreational/comfort cyclists, “normal” cyclists and cyclists using e-bikes. All cyclists rode a predetermined city route of 3 km twice, with and without listening to music or spoken text. Speed data, eye movements, verbal protocol, video recordings of the forward scene, of the rider’s face and of the rider as seen from a following bicycle were acquired. For a number of interaction scenarios experts will determine a minimum set of attentional allocation targets that belong to the cyclist’s share of the system situation awareness model. Data collection was completed in June 2016 and analyses will start in August. We will update the abstract with results well in advance of the conference.

For the mentioned interaction scenarios, the cyclists’ interactions with other road users will be categorised and analysed with regard to type of interaction, right of way, type of road users involved, rider type and whether the auditory entertainment was on or off. The analysis will take into account whether there was eye contact, how early it was initiated, whether the interaction was smooth or included unplanned evasive manoeuvres, etc. Eye movement data in combination with the verbal protocol will provide insight into the cyclists’ visual sampling behaviour and reasoning behind the sampling strategy. The expected outcome will be an analysis of whether and how the investigated factors contribute to how well a cyclist maintains his or her share of the system situation awareness, whether any systematic issues can be identified, and whether this can lead to improvement suggestions in different components of the traffic system.

By building on the notion that a functioning traffic system demands that all system components play their role in communicating relevant information amongst each other, it is possible to identify systematic problems, which will indicate where the system can be improved.

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Salmon, P. M., Stanton, N. A., & Young, K. L. (2012). Situation awareness on the road: review, theoretical and methodological issues, and future directions. *Theoretical Issues in Ergonomics Science*, 13(4), 472-492.