Bicylists' adaptation strategies when conducting self-paced vs. system-paced smartphone tasks in real traffic

C. Ahlstrom, K. Kircher

Swedish National Road and Transport Research Institute (VTI)
S-58195 Linköping, Sweden
e-mail: christer.ahlstrom@vti.se, katja.kircher@vti.se

ABSTRACT

The objective of this study is to investigate visual behaviour and speed adaptation among cyclists when conducting self-paced (initiated by the cyclist) and system-paced (initiated by somebody else) smartphone tasks in real traffic.

Twenty-two cyclists cycled while listening to music, receiving and making calls, receiving and sending SMS, and browsing the internet. The route and the types of tasks were controlled, but the cyclists could choose when and where along the route to carry out the tasks, thus providing semi-naturalistic data on compensatory behaviour.

The results show that cyclists use conscious strategies to adapt their behaviour to accommodate the execution of secondary phone tasks. Regarding tactical behaviour, cyclists kept on cycling in 80 % of the system-paced cases and in 70 % of the self-paced cases. In remaining cases, the cyclists chose to execute the phone task while standing still or when walking.

The baseline and music conditions were similar in terms of visual behavior, but the mean speed was slightly higher when listening to music compared to baseline. A clear decrease in speed was associated with phone interactions. For self-paced tasks, the speed adaptation was finalised before task initialisation, and for system-paced tasks the speed adaptation occurred in reaction to the incoming task. Glances directed towards the phone did not come at the expense of looking at traffic relevant targets, and in system-paced scenarios the cyclists checked the traffic more frequently and intensively than in self-paced tasks, leading to the assumption that cyclists prepare for self-initiated tasks by for example choosing a suitable location.

In conclusion, when the cyclists had the chance they either stopped or used visual and speed adaption strategies to accommodate the execution of the phone task. Further research is necessary to investigate whether the observed compensatory behaviour is enough. More information about the presented results can be found in [1, 2].

Keywords: Bicyclist, distraction, phone, self-paced, system-paced, attention, behavioural strategy.

REFERENCES

[1] Ahlstrom, C., Kircher, K., Thorslund, B. & Adell, E. (submitted). Bicyclists' visual strategies when conducting self-paced vs. system-paced smartphone tasks in real traffic.

[2] Kircher, K., Ahlstrom, C., Palmqvist, L., & Adell, E. (submitted). Bicyclists' speed adaptation strategies when conducting self-paced vs. system-paced smartphone tasks in real traffic.