Interaction with of type 4 autonomous car: The impact of expertise in the visual scanning quality during the few seconds until the resumption of the steering wheel

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Abstract

In a very close future, car will drive most of the time in autonomous mode, allowing the drivenger (the people behind the steering wheel) free to do what (s)he wants while being transported from until the Autonomous System (AS) cannot insure any more the driving activity management in complete safety. In this critical case, the system will alert the drivenger few seconds before it will stop its action. Drivenger should then regain behavioral control over the vehicle while it runs on the road. Present study interested in the visual scanning behavior of drivenger while the system manages the simulated driving activity until it let it to the driver. Drivengers are told to watch a movie until the AS asks them to control back over the driving activity. 10 seconds before the end of the road trip, the voice from the AS informed the drivenger to control back the driving activity. A recognition test, at the end of the trip, insured that participants had paid attention to the movie. Results indicate that visual scanning of the driving scene is decreasing over the 30 minutes of road trip in AS condition. Finally, during the critical delay of 10 seconds, (1) only the speedometer and the

zone just in front of the car are scanned by all the drivers, and (2) only two drivers (14% of the sample) stop the movie in the tablet. Results are discussed regarding to theoretical models of attentional control.