

## Abstract

Self-driving cars will be on the roads within the next decade. As the driver will remain responsible at all times, driving behavior after a take-over request (TOR) needs to be safe. This study investigated learning effects of drivers that recurringly had to take over vehicle control while completing either a visual or auditory secondary task, in a two-step TOR design. For this, gaze behavior, reaction times and driving performance were measured. Gaze behavior changed to fixating the road less frequently after the first warning in the visual condition. In the auditory condition however, the frequency of road fixations did not change over trials. Reactions tended to be faster in the visual condition but did not change with trial repetitions. Concerning driving performance, no effect was found.