

## **Performance assessment under visual, cognitive and manual secondary task load - How to interpret Lane Change Task (LCT) results**

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### **Abstract**

The Lane Change Task (LCT; Mattes, 2003) is implemented as an ISO standard (ISO DIS 2622:2010) with the aim to provide “a valid, reliable and sensitive laboratory method that estimates the effect on driving performance caused by the demand from in-vehicle information and communication systems. Consideration of the lane keeping performance in lane keeping phases only is supposed as a very sensitive indicator of distraction effects (ISO DIS 2622:2010).” Although it has been sanctioned by the ISO and is used more and more widely, test qualities (especially sensitivity and re-test reliability) are questionable, taking into account the mixed results found in research. For further clarification of effects that might be due to variance in test procedure, test setup and analysis used, a study was conducted with well-trained subjects. Strict instructions like in the ISO standard were used comparing four secondary tasks in two difficulties each. The secondary tasks are arbitrary but well-defined in their attentional demands. Twenty-five well trained subjects completed LCT trials with these different secondary tasks. The secondary tasks were visual-manual self-paced: SuRT (1) and continuous: CTT (2), cognitive: arithmetic calculation (3) and manual: plugging wooden sticks (4). Performance data is analyzed for LCT performance as well as for secondary task performance. Additionally gaze behavior is analyzed for the assessment of visual attention allocation for all tasks. Thus, for each task type, performance in the LCT and all supposed measures can be determined as a whole as well as for specific phases of driving task and/or secondary task. Underlying mechanisms of visual attention can be described and help understanding performance components in this driving-like task.

The authors would like to give a paper-presentation