

Does More Attention Improve or Impair Lane Keeping Performance

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The effect of cognitive load on lane variation is inconsistent and theoretically unclear. The lateral prioritization hypothesis proposes that smaller lane deviation is due to more attention to steering control and active prioritization of lane keeping; the automatic steering hypothesis argues that it is due to less attention to the automatic behaviors of steering control. Would more attention to lane keeping improve or impair lane-keeping performance? Participants in a driving simulator performed a lane-keeping task while performing an N-back task. Participants were asked to prioritize lane-keeping, car-following or the secondary task. When drivers prioritized lane-keeping, lane-variability was significantly smaller than that in the drive-only condition and secondary-task prioritization condition. Drivers in the lane-keeping prioritization condition also produced higher steering reversal rates and quicker steering response time to lateral wind gusts. Data suggest that more attention to lane-keeping improves, rather than impairs, its performance. Results may help researchers understand the cognitive factors behind lane-variability.