

Enhanced Lane Keeping during Driver Distraction: the Effect of Lead Car Presence

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Previous simulator studies on driver distraction suggest that the effect of distracting in-vehicle tasks on driver performance may depend on the nature of the task itself. Whilst tasks that divert drivers' visual attention away from the road impair lateral control of the car and may increase reaction time to a sudden event in the road, non-visual tasks which allow drivers' eyes to remain on the road seem to 'improve' lateral performance, with less deviation in the lane and better steering control (Jamson & Merat, 2005; Merat & Jamson, 2008). Drivers' eye movements are also shown to be more focused towards the road centre, when they perform a demanding non-visual task, with the pattern more 'spread' during baseline driving (Victor, Harbluk & Engström). A recent study by Mühlbacher & Krüger (2012) suggests that these improvements in lateral control may be due to the presence of a lead vehicle in such studies. We report on a study which investigated this proposal further, using both visual and non-visual secondary tasks, in different road layouts. The paper will report on how drivers' lateral and longitudinal performance and eye movement pattern was affected by lead car presence and secondary task performance.