DISSOCIATION BETWEEN SUBJECTIVE, COGNITIVE AND PERFORMANCE IMPAIRMENTS FROM ALCOHOL DURING DRIVING SIMULATOR PERFORMANCE

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Introduction and Aims: Alcohol is the most frequently detected substance in fatal vehicle accidents, causing dose-dependent impairments to driving and related cognitive tasks. One example of the latter is the four-choice reaction time task (FCRT). By alternating fixed and random sequences, the FCRT mimics elements of the automaticity and unpredictability relevant to driving and traffic accidents. This study examined the effects of alcohol on simulated driving, FCRT performance, and self-rated confidence in driving ability. It specifically focused on levels below and above the legal on-road drink-driving blood alcohol concentration (BAC) threshold in many jurisdictions (0.05%).

Design and Methods: A double-blind, placebo-controlled, balanced, crossover design was utilised. Eighteen participants (mean age 25.53 years, SD=3.46) received each treatment (alcohol equating to a mean BAC of 0.04%; 0.06%; placebo) on separate visits. Participants underwent the FCRT task at baseline, and 45 min post-treatment. They then completed a 1 hour simulated freeway driving task, the FCRT task and rated their subjective confidence in their driving performance.

Results: There was a dose-related alcohol impairment to driving ability ($F(2,34)=6.04$, $p=.006$). Standard Deviation of Lateral Position was significantly greater at 0.06% BAC ($t(17)=2.12$, $p=.04$). Conversely, there were no significant alcohol effects on FCRT or subjective confidence scores.

Discussion and Conclusions: These results suggest that alcohol effects on driving performance, cognitive task performance and subjective awareness of impairment can be a dissociated. They may have serious real-world implications as, despite driving ability being significantly more impaired at the illegal BAC level (0.06%), drivers were unaware of their impairment.

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