

## **Acute effects of alcohol on covert and divided attention in men**

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We investigated the effect of acute moderate alcohol doses on divided and covert visual attention. While several studies identified divided attention to be sensitive to alcohol effects, the impact of alcohol on covert attention is still not studied despite its important role in perception. We tested divided and covert attention using a computer-based standardized test battery in 46 right-handed male volunteers (mean age 28.5 years). The design of the study involved a double-blind trial with an alcohol and a placebo condition; measurements were taken before and after an oral dose of 0.6 g/kg alcohol versus placebo. In the divided-attention task simultaneous visuo-spatial and auditory stimulation was applied. Covert attention was measured by the internal (cognitive) act of shifting spatial attention from one place in the visual field to another without head or eye movements. The attentional shift was manipulated by a central arrow cue, indicating the place (left or right) of the target stimulus (cue-valid cases). Under the divided attention condition, reaction times were significantly prolonged after alcohol ingestion compared to placebo. A shift of covert attention (pre-post change) was also significantly different between the alcohol and placebo groups. This change of the validity effect (difference between valid and invalid response times) after consuming alcohol showed a lateralized reaction pattern with a significant loss of spatial orienting to stimuli in the left visual field. In the placebo group, no significant differences in the right-left performance were obtained. The results suggest that sensory-attentional mechanisms play a key role in altered visual perceptual performance after alcohol ingestion. Furthermore, differences between the right and left visual field in the cued target-detection (Posner) task point to a right-hemispheric attentional priming process on which alcohol exerts its effects.