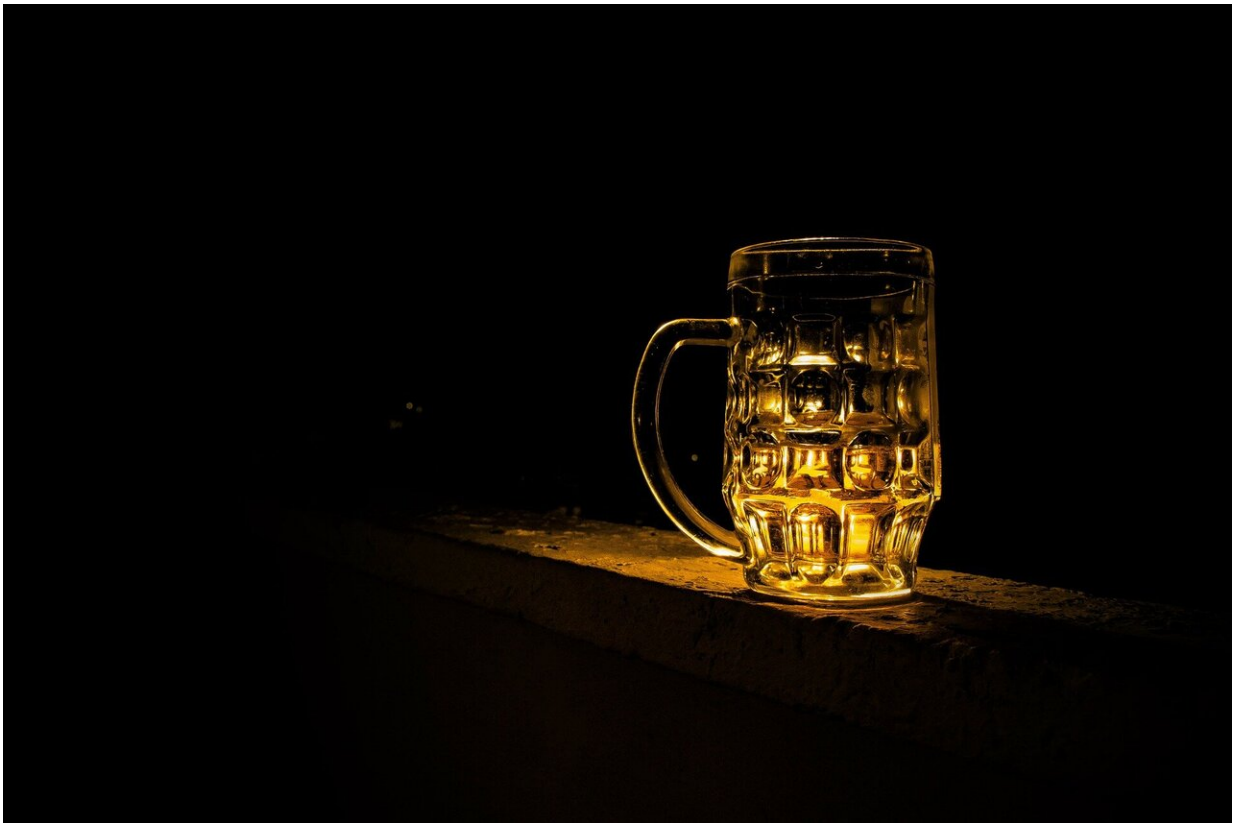


Neuroscience research questions current alcohol limit

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New research by neuroscientists from the University of Sussex shows that drinking only one pint of beer or a large glass of wine is enough to significantly compromise a person's sense of agency.

Sense of agency is the feeling of being in control of our actions. It is an important aspect of human social behaviour, as it implies knowledge of the consequences of those actions.

This new study, "Effect of [alcohol](#) on the sense of agency in healthy humans," is the first to test the [effect of alcohol](#) on sense of agency. The study focused on low doses of alcohol, typically consumed during social drinking, that do not produce a large impairment of behaviour. Until now, research has mostly focused on the loss of inhibitory control produced by obvious drunkenness, characterised by impulsivity, aggression and risky behaviour.

Dr. Silvana De Pirro, lead author of the research paper, said: "Our study presents a compelling case that even one pint of beer is enough to significantly compromise a person's sense of agency. This has important implications for legal and social responsibility of drivers, and begs the question: are current alcohol limits for driving truly safe?"

Explaining how the study was conducted, Dr. De Pirro said: "Measuring a person's sense of agency is tricky. When people are explicitly asked to tell how in control they feel, their answers are affected by several cognitive biases, such as poor introspection, the desire to conform to researchers' expectations, or even the inability to understand the question correctly."

Sussex researchers relied therefore on an indirect measure called 'intentional binding', which has been developed to investigate the unconscious mechanisms of 'volition'. When physical stimuli (such as sounds or lights) follow voluntary actions (such as moving a finger or a hand), people judge actions as occurring later and stimuli as occurring earlier than in reality, hence 'binding' the two. The neural mechanisms responsible for this phenomenon are thought to participate in creating the sense of agency.

In the experiments, subjects drank a cocktail containing doses of alcohol proportional to their BMI to produce blood alcohol concentrations within the legal limits for driving in England and Wales. These doses of alcohol, corresponding to one or two pints of beer, produced tighter binding between voluntary actions and sensory stimuli. This suggests that small amounts of alcohol might exaggerate the sense of agency, leading to overconfidence in one's driving ability and to inappropriate, potentially dangerous behaviour.

Professor Aldo Badiani, Director of the Sussex Addiction Research and Intervention Centre (SARIC), said: "It's important to note that in our experiments, all the participants stayed within the legal alcohol limit for driving in England, Wales, the US and Canada. And yet we still saw an impairment in their feeling of being in control.

"In England, Wales and North America, the argument to lower the limit has much momentum. The results of our study support the implementation of such a change in the law."

The legal limit for driving in England and Wales is currently 80 mg/100 ml. The legal limit for driving in Scotland and most European countries is 50 mg/100 ml.

The study, "Effect of alcohol on the sense of agency in healthy humans," is published in *Addiction Biology*.

More information: Effect of alcohol on the sense of agency in healthy humans. *Addiction Biology*. ISSN 1355-6215

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