

## Health & Physiology

# The Alcohol Hangover: A Thought Impairing Experience

by **Craig Gunn**<sup>1</sup> | PhD student

<sup>1</sup>: Department of Psychology, University of Bath, Bath, UK

This Break was edited by Max Caine, *Editor-in-chief* - TheScienceBreaker

### ABSTRACT

*The effects of hangover have often been overlooked, but recent research has shown that impairments on our thoughts and behaviours could extend to the following morning.*



*Image credits: Pixabay - CC0*

Headache, nausea, and fatigue are all common symptoms experienced the morning after a night of heavy drinking. Individuals also describe effects on concentration, mood and decision-making. However, the scientific literature investigating these effects is scarce, and has often produced mixed results, preventing firm conclusions.

Given that alcohol-related workplace absenteeism, which includes hangover, costs the UK economy an estimated £1.9 billion per year, the lack of research in this field is surprising. This cost could be even greater when considering the potential impact on productivity when people turn up to work with a hangover. Research studies have shown that driving,

the ability to perform surgery and even flying a plane are negatively affected the morning after a night of heavy drinking, highlighting that, as well as an economic cost, hangovers could also have a cost to public safety.

Studies that investigated the cognitive effects of hangover have often produced mixed results, creating uncertainty within the scientific literature. These mixed results could be due to a poor design and varying definitions of hangover. Until recently, there was considerable debate around how much alcohol could still be in a person's system, and what symptoms contribute to a hangover, leading to no clear academic definition. A newly established

definition (quoted below), which has received consensus from academics in the field, ensures participants are actually hungover during testing.

“The alcohol hangover” refers to the combination of mental and physical symptoms, experienced the day after a single episode of heavy drinking, starting when blood alcohol concentration approaches zero”

Our recent review provides some clarity to this field by the searching the literature based on a set criteria fitting the new definition and an established methodological framework. Studies were included if blood alcohol concentration was near zero, and measured hangover (i.e. with a questionnaire) to ensure that participants were experiencing one at testing. Emerging evidence suggests that individuals may not experience a hangover if they have consumed insufficient amounts of alcohol, or are hangover-resistant (i.e. do not experience a hangover despite heavy drinking).

To decide which studies to include we searched three scientific databases using key terms referring to alcohol consumption and hangover effects. Of 815 articles identified, only 19 fit our criteria for inclusion in analysis, and 11 provided sufficient data to combine in meta-analysis (a statistical technique used to see the ‘overall’ effect). The relatively low number of studies that fit our criteria reaffirm that well designed hangover research is scarce.

Our review revealed overall hangover-related impairments in sustained attention (the ability to maintain focus on a set task), reaction times, and short- and long-term memory. Our review also revealed behavioural impairments in everyday tasks, such as driving with a hangover.

Hangover-related memory impairments may be due to the way we create memories, rather than retrieve

them. When studies asked participants to recall information that they had learned in a sober state, performance was unaffected. Whereas when studies asked participants to recall information they had learned with a hangover, they recalled fewer items compared to when sober. Given these results, students might think twice about turning up to lectures with a hangover – where they learn new information.

The ability to maintain attention on a task is important in many aspects of life (e.g. at work, whilst driving) and so poorer sustained attention during hangover could have broad implications. Similarly, slower reaction times could also affect every day behaviours. Indeed, these cognitive abilities may underlie findings of poorer abilities to control a vehicle whilst experiencing a hangover. For example, whilst driving other cars may pull out in front us and we would need to, firstly be maintaining our attention on the road, and secondly be able to react in time to stop and avoid a collision.

Our review also showed few studies explored how hangover may influence ‘higher’ cognitive abilities, highlighting a significant gap in our current understanding. Are individuals able to inhibit behaviours effectively during a hangover? How might decision-making be affected?

Understanding how the way our thoughts are impaired during hangover could provide important insights into the wider consequences of a hangover. For example, why some people might decide to drive, despite feeling impaired. Our review revealed that hangover influences core cognitive functions, but future studies should focus on the influence of hangover on executive functions. This would better enable researchers to inform businesses, drinkers and policy makers about the potential consequences the morning after a night of heavy drinking.