

ALCOHOL, THE BRAIN & Violence



Whilst consumption of alcohol is not necessary for someone to become violent, it is a significant contributor to social violence. We do know that with increased sales of alcohol comes increased rates of violent crime (Room & Rossow, 2001), with assaults often highly concentrated around licensed premises such as bars, clubs, and pubs (Burgess & Moffatt, 2011). Research has also shown that not only is the assailant likely to be intoxicated, but so too is the victim of the violence (McMurran, 2007).

So how does alcohol increase the likelihood of violence?

Alcohol disengages a very important part of our brain called the prefrontal cortex. The role of the prefrontal cortex can be likened to a “CEO” of a company, allowing us to effectively direct our attention to different things in our environment, to reason and problem-solve through social situations, and help us regulate our basic instinct and emotions.

So, when this part of our brain is disengaged, we become:

- more impulsive (i.e. less able to inhibit aggressive tendencies and inappropriate behaviour)
- disinhibited (i.e. doing of saying things we normally wouldn't or that may be socially inappropriate)
- less able to cope with the number of choices we face when problem solving (i.e. all the different ways in which we can respond)
- less able to attend to things in our environment, a phenomenon known as “drinker blinkers”

What are “drinker blinkers”?

Alcohol essentially puts blinkers on our attention system and restricts the number of cues or things that we can perceive in our environment, a process termed “alcohol myopia”.

If we feel that there are cues in our environment that are threatening (e.g. someone trying to make a move on our girlfriend), we become more sensitive to our instinctive cues (e.g. an insult, a wrong look), less sensitive to more distant cues (e.g. the consequences of punching the insulting person), and less able to figure out alternatives to aggression. In essence, alcohol often reduces our ability to employ good social problem solving strategies and increases the likelihood that we make default aggressive responses.

Did you know our expectations of alcohol can change how our brain processes it?

From a very young age, we develop expectations about alcohol and the types of experiences we might associate with drinking. We pick these up by observing how other people in our life behave and interact whilst drinking, and often have an expectation of what to expect before we even have our first drink!

These expectancies may be positive (e.g. alcohol enhances social functioning) or negative (e.g. alcohol leads to loss of self-control or feelings of sadness). Our expectations can also change depending on the time of day, day of week, drinking venue, and/or which social group we are drinking with.

ALCOHOL & THE BRAIN



WHAT IS ALCOHOL?

Alcohol is an intoxicating substance made from fermented starches. It is the **most widely used** psychoactive, or mood-changing, recreational drug in Australia.

HOW DOES ALCOHOL ACTUALLY REACH OUR BRAIN?



Alcohol only takes a few minutes to reach the brain. It is absorbed directly into the bloodstream through the walls of the stomach and small intestine, and is then quickly distributed to all parts of the body, including the brain. This is how alcohol changes the way we think and feel.

WHAT EFFECT DOES ALCOHOL HAVE ON THE BRAIN?



Alcohol enters our brain through our bloodstream by crossing the blood-brain barrier. Because all our neurons in the brain use blood as their fuel, alcohol is distributed to all regions of the brain.

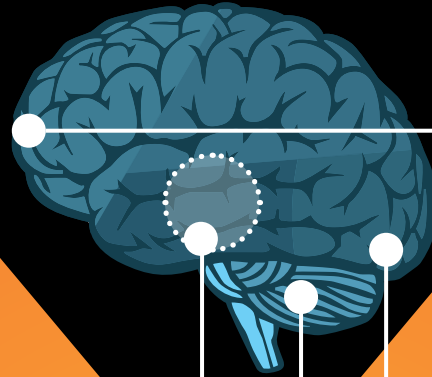
The notes to the right explain how alcohol differentially affects the various regions of the human brain, and gives examples of the types of observable behaviours or experiences that may result from this.

DOES DRINKING WATER AND EATING HELP SOBER SOMEONE UP?



No. Food in the stomach slows down the rate at which alcohol is absorbed, **but does not prevent intoxication or drunkenness**, as all alcohol consumed reaches the bloodstream.

Sobering up takes time. The liver is the main organ in the body responsible for removing alcohol from the bloodstream. The liver can only work at a fixed rate, taking about an hour to break down the alcohol in a standard drink. Cold showers, exercise, black coffee, fresh air or vomiting will not speed up the process.



Prefrontal Cortex

- Impaired decision-making and reasoning
- Disinhibition - saying/doing things you usually would STOP yourself from doing

Primary Visual Cortex

Blurry or double vision due to eye muscle imbalance

Cerebellum

- Poor coordination
- Slowed Reflexes
- Unbalanced 'Stumbling'

Hippocampus

Memory Loss or 'Blackouts'



Limbic System

Our emotional brain

Amygdala

Fear and aggression makes us react quickly to things in our environment, before processing them



Prefer a video?

Alcohol and your Brain is a fantastic YouTube video which explains the effects of alcohol on the brain in simple language with great imagery.

Click this link: <http://goo.gl/w3YHE2>
or SCAN CODE ON SMARTPHONE

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QUICK FACTS about ALCOHOL & VIOLENCE in Australia

ACCORDING TO THE AUSTRALIAN
INSTITUTE OF HEALTH AND
WELFARE **SURVEYS OF MILLIONS
OF AUSTRALIAN HOUSEHOLDS**
(AIHW, 2011)....



In up to 73% of all
assaults, alcohol is implicated

35% of drinkers say their
primary purpose when drinking
is 'to get drunk'

Binge drinking is linked to
1 in 8 deaths
for people under 25 years

Hazardous and harmful alcohol
consumption results in costs of more than
\$15.3 billion a year
(combination of law enforcement costs
and medical/rehabilitation costs)

1 in 4 Australians
were a victim of alcohol-related
assault

Those who drink at risky levels
(>4 standard drinks) at least once
a week are

**1.7 times more
likely**
to experience high levels of
psychological distress

Over the past 50 years, there have
been changes in drink choices, towards

**drinks with higher alcohol
percentage,**

increasing the rate at which young people can
become drunk (ABS, 2012):

- the consumption of beer has decreased from 76%
to 42%
- wine consumption has increased from 12% to 37%
- spirits and pre-mixed drinks has risen from 12% to
20%.

13% were made to feel
fearful by someone under the
influence of alcohol

59% of physical assault
victims aged 18+ years believed
alcohol contributed to their
most recent incident

Approx two thirds
of males aged 18+ years put
themselves at risk of an alcohol
related injury at least once a month

Alcohol was
nominated as the
**drug of
most
concern**
to the general
community
(nominated by
42.1%)

More than 1/3 of victims
(38%) had consumed alcohol themselves
at the time of the incident



66% of patients
presenting at an emergency department with injuries
from interpersonal violence reported having consumed
alcohol prior to the incident (Poynton et al, 2005)

References

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McIntosh, M. (2007). Alcohol and aggressive cognition. In T.A. Gannon, T. Ward, A.R. Beech, & D. Fisher (Eds), *Aggressive offender's cognition* (pp. 231-246) West Sussex, England: Wiley-Interscience

Poynton, S., Donnelly, N., Weatherburn, D., Fulde, G. & Scott, L. (2005). The role of alcohol in injuries presenting to St Vincent's Hospital Emergency Department and the associated short-term costs. *Alcohol studies bulletin* no. 6. Retrieved from <http://www.bocsar.nsw.gov.au/agdbasev7/wj/bocsar/documents/pdf/ab06.pdf> Room, R. & Rossow, I. (2001). The share of violence attributable to drinking. *Journal of Substance Abuse*, 6, 218-228.

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