Alcohol and the Brain
A journey of scientific discovery

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How does alcohol affect the body?

WARNING

The consumption of alcohol may make you think you can logically converse with the opposite sex without spitting.
So, why does it make us feel and do these things?

- CENTRAL NERVOUS SYSTEM
- HEART
- STOMACH
- SMALL INTESTINE
The day after...
## So...what’s a hazardous level of alcohol use?

<table>
<thead>
<tr>
<th>BEER</th>
<th>WINE</th>
<th>SPIRITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>285ml Full Strength 4.8% Alc. Vol</td>
<td>150ml Average Restaurant Serving of Sparkling Wine 12% Alc. Vol</td>
<td>330ml Full Strength Ready-to-Drink 5% Alc. Vol</td>
</tr>
<tr>
<td>425ml Full Strength 4.8% Alc. Vol</td>
<td>150ml Average Restaurant Serving of Red Wine 13.5% Alc. Vol</td>
<td>30ml High Strength Spirit Nip 40% Alc. Vol</td>
</tr>
<tr>
<td>375ml Full Strength 4.8% Alc. Vol</td>
<td>150ml Average Restaurant Serving of White Wine 11.5% Alc. Vol</td>
<td>375ml Full Strength Pre-mix Spirits 7% Alc. Vol</td>
</tr>
<tr>
<td>750ml Bottle of Red Wine 13.5% Alc. Vol</td>
<td>375ml Full Strength Pre-mix Spirits 5% Alc. Vol</td>
<td>300ml High Strength Pre-mix Spirits 7% Alc. Vol</td>
</tr>
</tbody>
</table>
This imbalance leads to...

- risk taking

low effort - high excitement activities

interest in all things new

planned thinking

impulsiveness
Is the adolescent brain changed by drinking?
How does alcohol affect the developing brain?
Non-drinker, aged 21

But heavy drinking through teens
• Evidence beginning to emerge (n=6) that binge drinking does affect the developing adolescent brain

• Impacts on the connectivity of the brain and communication between regions in the brain

Maximum intensity projections of uncinate fasciculus (late developing tract) (N = 6)
Retention Rate

100%
95%
90%
85%
80%
75%

Verbal Information
Nonverbal Information

10% 10%

Alcohol Dependent
Nonabusing Comparisons
Alcohol Disorder
So, in summary...the bad news is

- Australia has some of the highest rates of alcohol abuse in the world.
- These problems start in adolescence
- Brain maturation is still occurring during adolescence
- Heavy alcohol use in young people may affect brain maturation
- Preliminary evidence that binge drinking affects brain maturation.
But the good news is...

- Although one in five Australians aged 16-17 years drink alcohol at least weekly -- 19-23% of adolescents binge drink in last week
- One in five do not drink any alcohol
- 82 out of 100 young people aged 12-17 did not drink in the past month
There is also evidence that our brains CAN recover...

- Young alcoholic comes to grips with his recovery.avi
And...by being involved in science...in learning or studying biology, chemistry, psychology...you can be a part of working out how all this can happen...