# Frontal lobe functioning in relation to risky or harmful alcohol use by young adults

## Researchers

1. Associate Professor Michael Lyvers, Bond University
2. Assistant Professor Mark Edwards, Bond University

## Summary

University students have a higher prevalence of alcohol use as well as high risk drinking than do non-students of the same age, yet not all students drink at high or risky levels, suggesting that excessive alcohol use by young adults may be influenced to some extent by underlying trait factors in addition to social environmental factors. To this end, this project tested the hypothesis that inherent deficiencies of frontal lobe functioning promote alcohol-related risk in young adults.

Data was collected from 124 Bond University (Qld) students and a further 47 non-student young adult social drinkers from southeast QLD and NSW. Participants were male and female, aged 18 – 26 years.

The participants completed six tests to determine if they had frontal lobe dysfunction (e.g. tests of executive functioning, impulsivity and problem solving) and three tests to measure their self-reported drinking and parental history of alcoholism.

## Outcomes

Data collected from university students found crucial trait measures of poor impulse control, poor self-regulation and high reward-driven behaviour were linked to harmful levels of drinking and earlier drinking onset as well as parental alcoholism.

Executive cognitive performance was found to be unrelated to scores on the Alcohol Use Disorders Identification Test (AUDIT) or age at onset of weekly drinking in the university sample. Because university students are likely to have high problem-solving skills, a further 47 young adults who were not university students were recruited and tested.

Frontal lobe executive functioning was tested using the Delis-Kaplan Executive Function System  
(D-KEFS) Tower Test, the Iowa Gambling Task (IGT) and the Wisconsin Card Sorting Test (WCST).

* Poorer performance on the D-KEFS and the IGT was found to be significantly related to harmful drinking as measured by AUDIT in the community sample of young adults.
* Poorer performance on the WCST was however only marginally related to harmful drinking, with the difference coming close to being significant.

## Recommendations

These findings are mostly consistent with our hypothesis that inherent deficiencies of frontal lobe related executive cognitive functioning promote risky or harmful alcohol consumption.

These research findings will inform both prevention and treatment efforts aimed at harmful alcohol consumption.

## Publications

Lyvers , M., Duff, H., Basch, V. & Edwards, MS (2012) Rash impulsiveness and reward sensitivity in relation to risky drinking by university students: Potential roles of frontal systems. *Addictive Behaviors*, 37, 940–946

[view the report](/wp-content/uploads/BOND-UNI-FINAL-REPORT.pdf)