Presentation

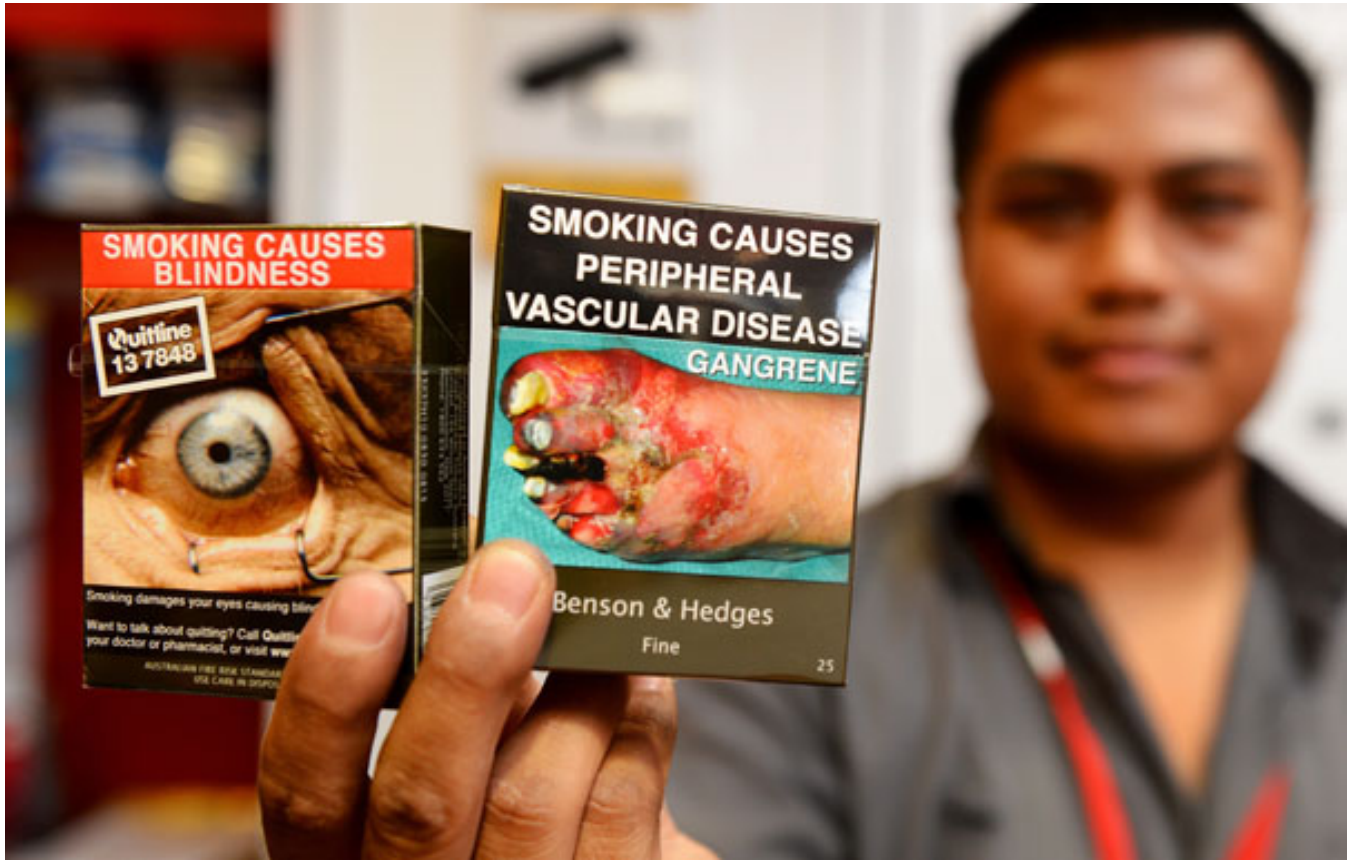
Targeting neurobiological mechanisms of tobacco and alcohol use

- **Professor Marcus Munafò**, Professor of Biological Psychology, University of Bristol

Overview

- Do design characteristics (of environments and elements within them) shape behaviour?
- Can we use laboratory studies to understand the cognitive mechanisms that underpin these effects?
- Can we reverse engineer this knowledge to introduce interventions that shape healthier behaviour?

Design and consumption



Health warning avoidance

- Do regular smokers preferentially attend to brand information, or actively avoid health warnings?

- Convenience sample of 30 adult dependent smokers (5+ cigarettes / day, first within 1 hour of waking)

- Used eye tracking to measure visual attention to different regions of blank, plain, and branded packs

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Avoidance of cigarette pack health warnings among regular cigarette smokers

Olivia M. Maynard[a,b,c,*], Angela Attwood[a,b,c], Laura O'Brien[c], Sabrina Brooks[c], Craig Hedge[c], Ute Leonards[c], Marcus R. Munafò[a,b,c]

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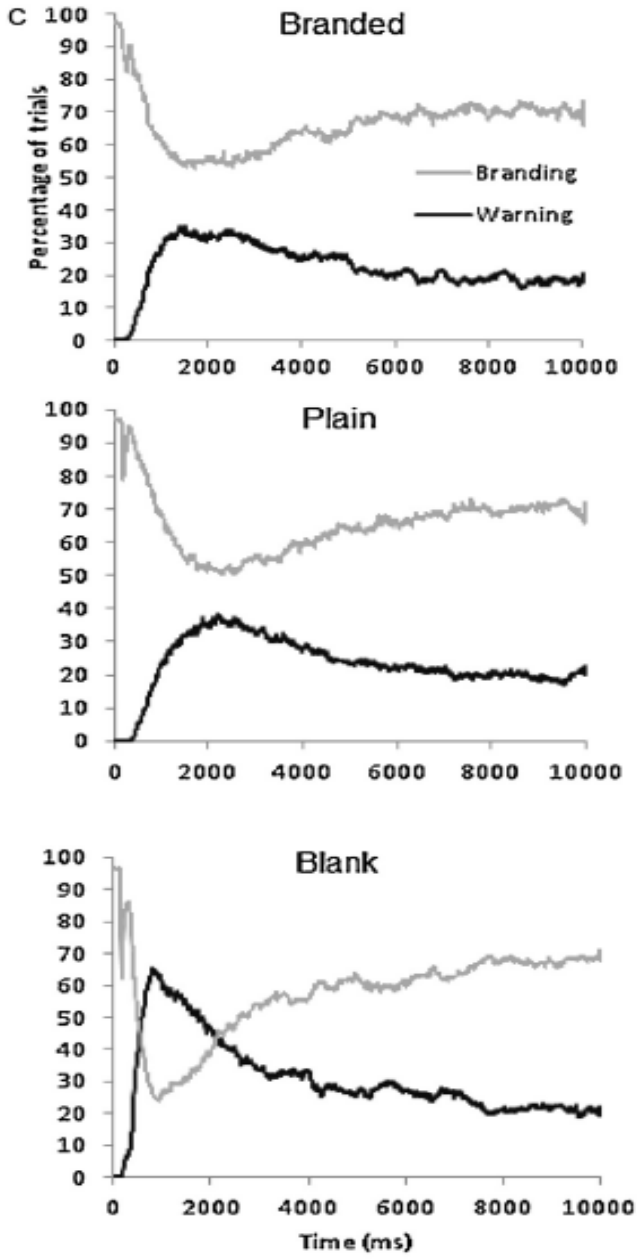

Maynard et al. (2014). Drug Alcohol Dependence, 136, 170-4.

Health warning avoidance

- Is health warning avoidance due to a pre-cognitive perceptual bias or a higher order cognitive bias?

- Convenience sample of 20 adult non-smokers and 20 adult dependent smokers (5+ cigarettes / day, first within 1 hour of waking)

- Used EEG to measure event-related potentials reflecting:
  - early perceptual processing (visual P1)
  - pre-attentive change detection (visual Mismatch Negativity, vMMN)
  - selective attentional orientation (P3)
  - emotional processing (Late Positive Potential, LPP)

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Full length article

Neural correlates of cigarette health warning avoidance among smokers

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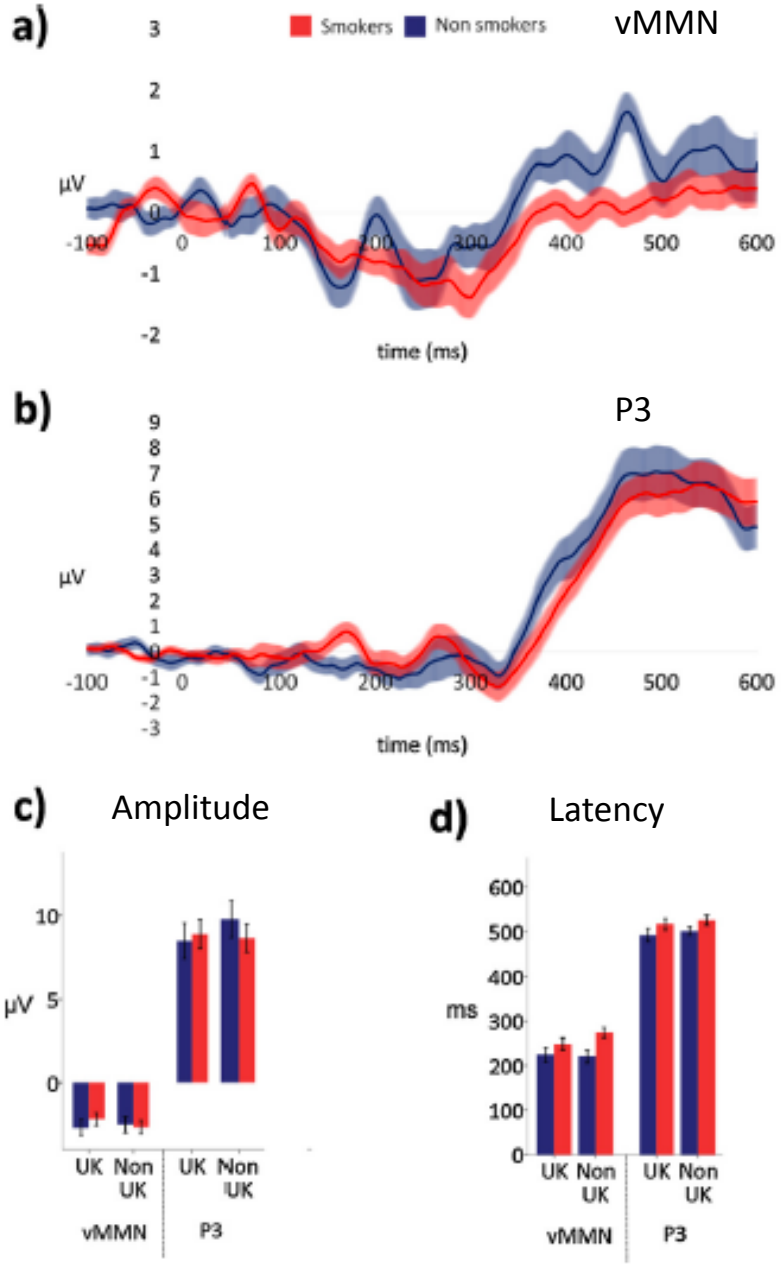
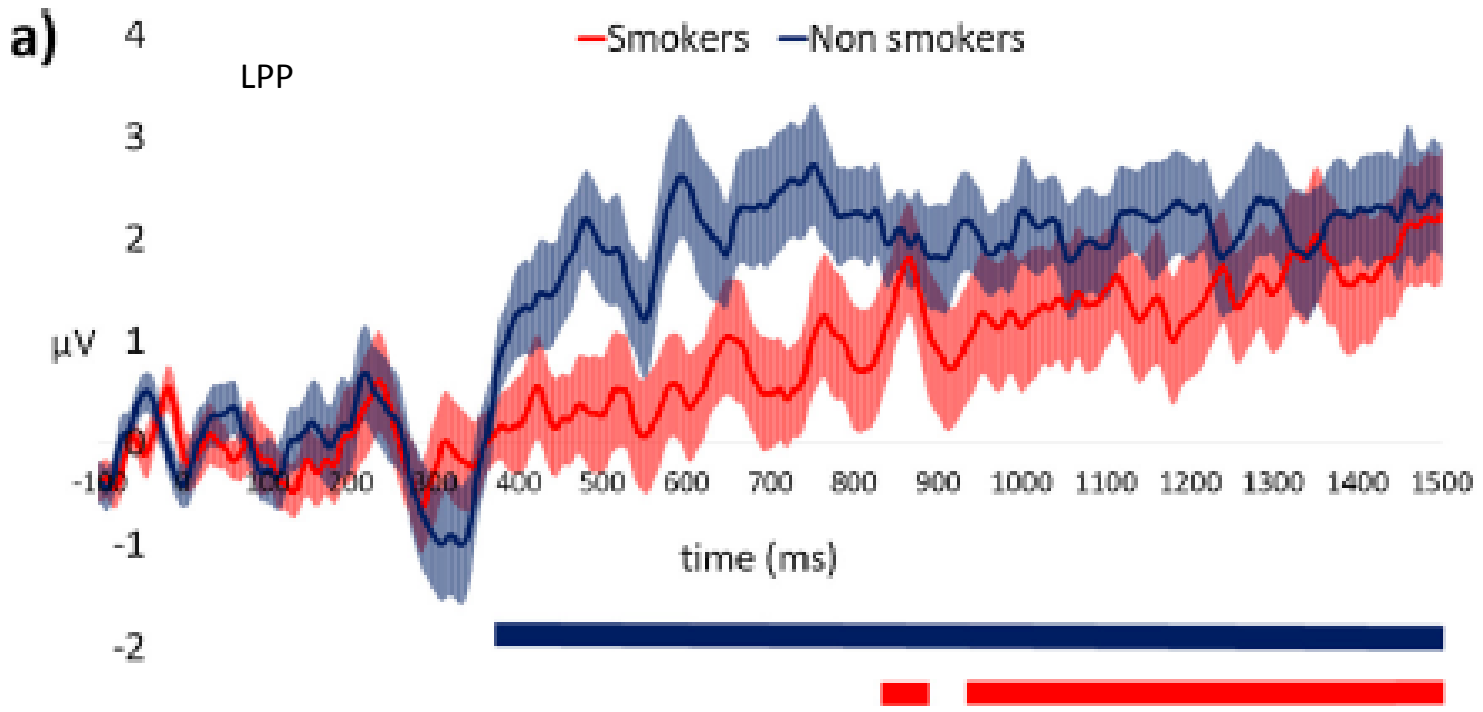
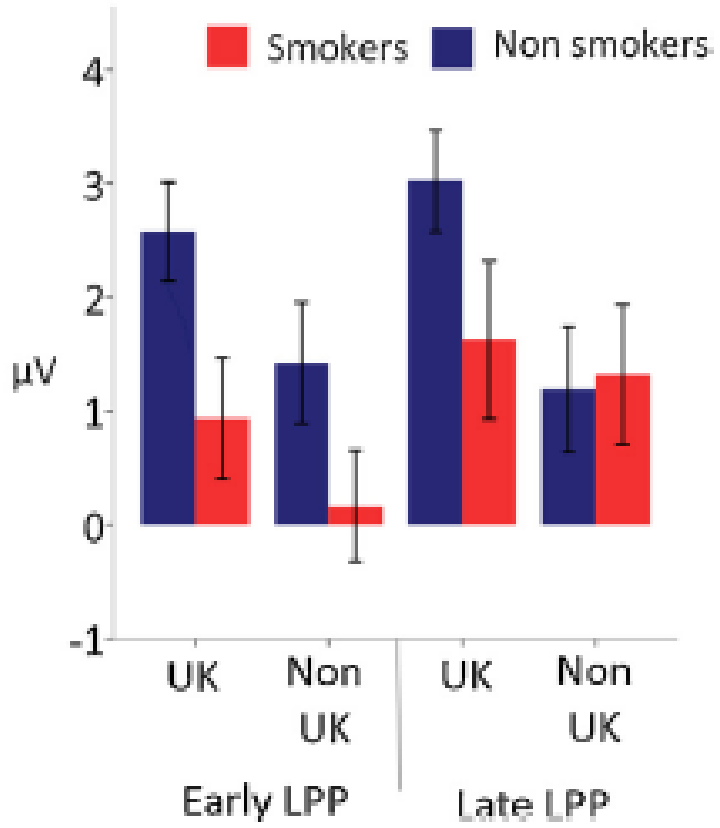


Stothart et al. (2016). Drug Alcohol Dependence, 161, 155-62.





No evidence for an early perceptual bias or explicit attentional orientation to health warnings among smokers (vs non-smokers)

Cognitive emotional response delayed and reduced among smokers (vs non-smokers), suggesting emotional salience of warnings should be increased

Glass shape

- Is beer consumed more quickly from curved / fluted glasses than from straight glasses?
- Convenience sample of 159 social alcohol consumers randomised to drink from curved vs straight glass
- Measured rate of consumption of lager and lemonade, and perceptual judgement of half way point

OPEN ACCESS Freely available online

PLOS | ONE

Glass Shape Influences Consumption Rate for Alcoholic Beverages

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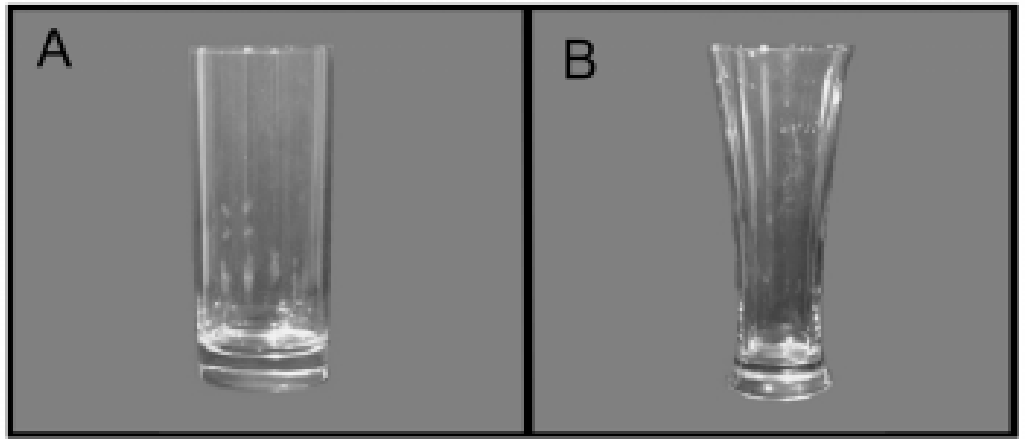
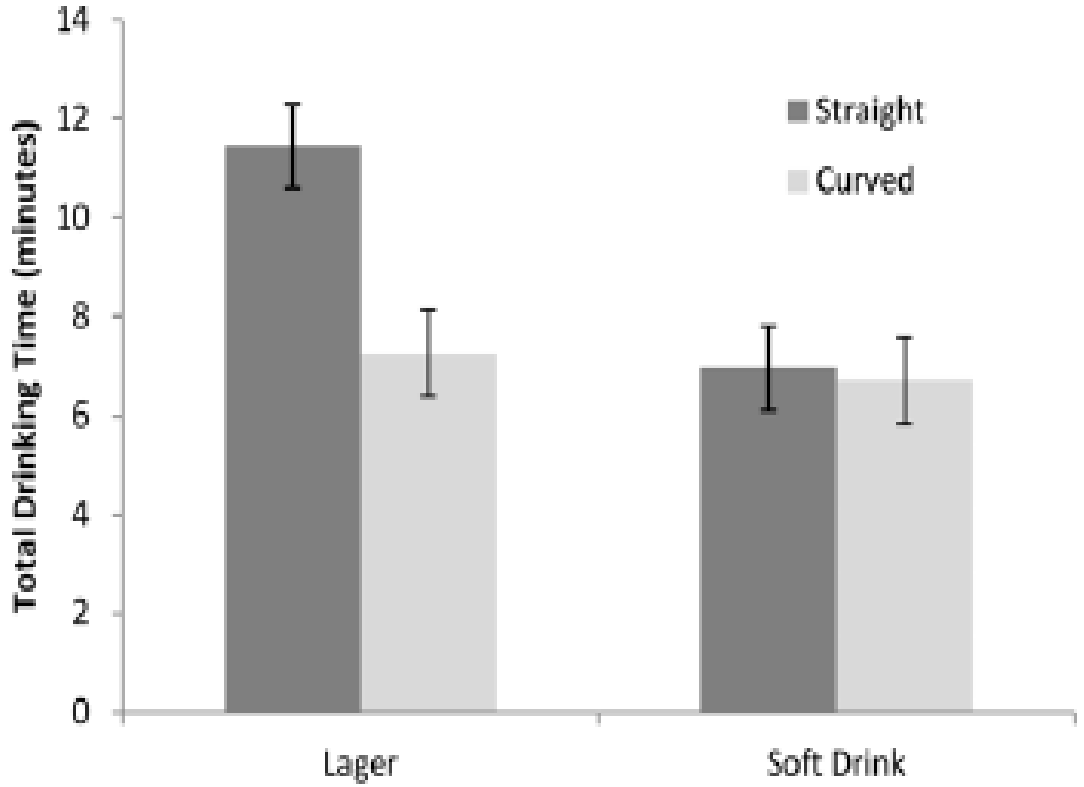




Weak correlation between perceptual bias and drinking time ($r = 0.15$, $P = 0.059$)

Attwood et al. (2012). PLOS One, 7, e43007.

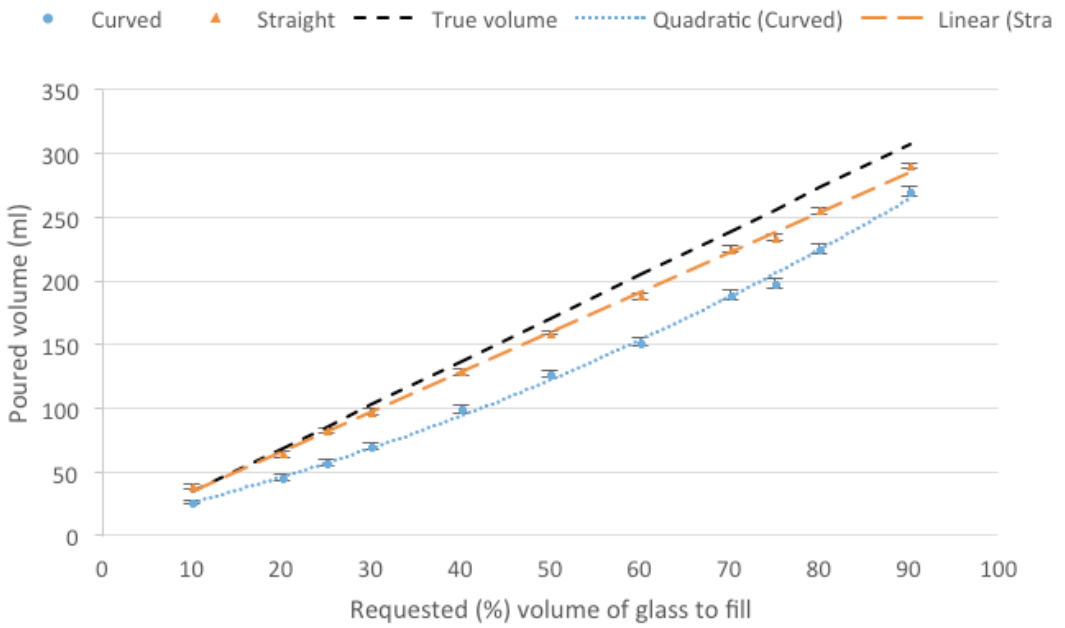
Glass shape

- Is beer glass shape associated with the accuracy of volume of liquid poured to different levels?

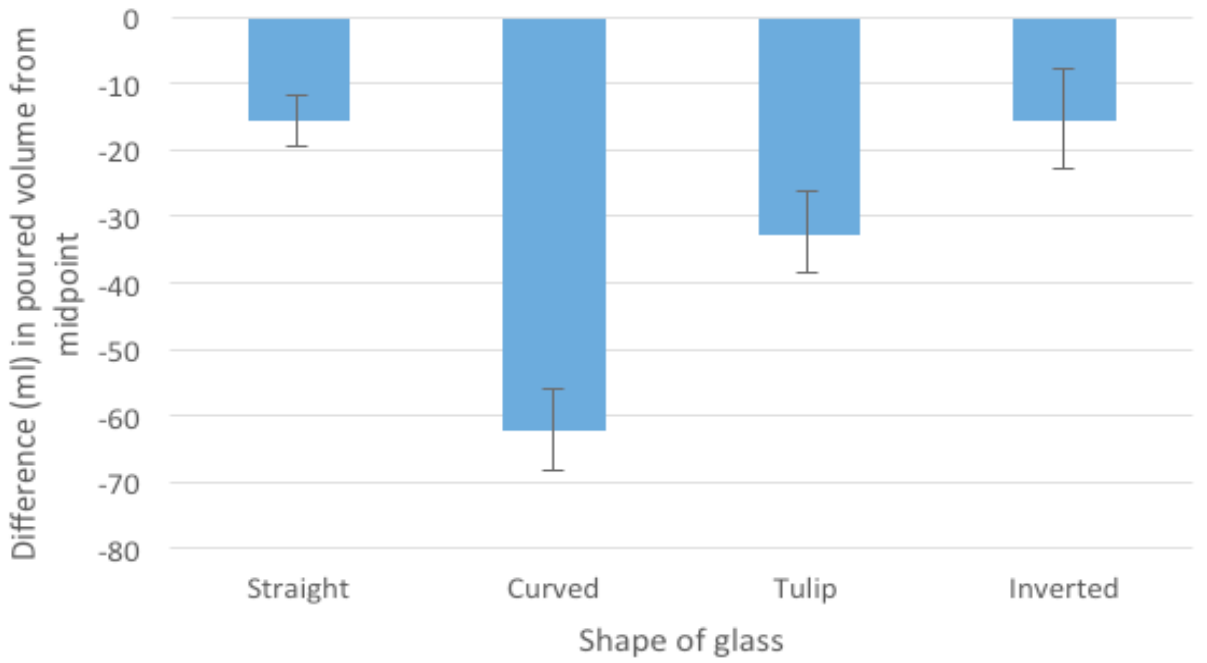
- Convenience sample of 211 social drinkers (study 1) and 96 social drinkers (study 2)

- Measured accuracy of pouring in curved vs straight glasses (study 1) or range of glass shapes (study 2)

Study 1



Study 2



Troy et al. (under review).

Summary

- Pack / glass design features may influence smoking / drinking behaviour via cognitive mechanisms
- Identifying how these features influence behaviour allows us to develop interventions to counter these effects
- Currently running a cluster-randomised trial of straight glasses to reduce alcohol consumption

Future Directions

- Can we identify cognitive risk mechanisms in large cohort studies to guide selection of targets for laboratory study?

Working Memory — Tobacco Use

Emotion Recognition → Alcohol Use

Impulsivity — Cannabis Use