

A comparison of three types of web-based inhibition training for the reduction of alcohol consumption in problem drinkers: preliminary results

Introduction: Inhibitory control - the ability to suppress, delay or change a response that is no longer required or is inappropriate - is a core feature of both impulsivity and executive functioning. There is a well demonstrated link between deficits in inhibitory control and problem drinking¹, and evidence suggests inhibition may have play a *causal* role in alcohol consumption.

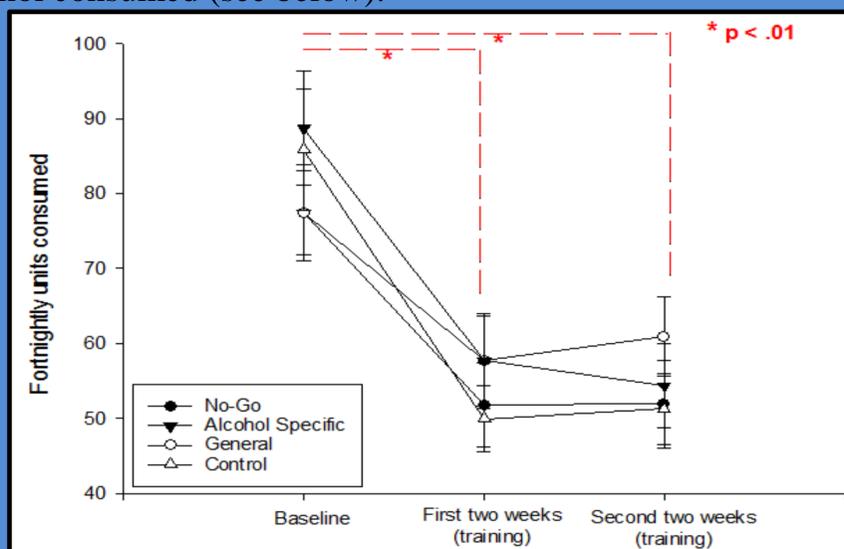
Inhibitory control demonstrates plasticity, which makes it a viable target for clinical interventions². Evidence suggests that following training, improvements in both general inhibitory functioning and inhibitory control specifically to alcohol cues can lead to reductions in alcohol consumption in the laboratory (inhibitory control training: ICT^{3,4}). Furthermore, recent studies have demonstrated effects on weight loss and snacking frequency following repeated ICT online⁵. Here we present the preliminary findings from an ongoing RCT examining three different types of repeated ICT delivered over the internet, for problem drinking. The trial is registered (ISRCTN55671858) and the full design and analysis strategy is published as a study protocol⁶.

Aims: To compare three types of ICT (Alcohol specific, General and No-Go) against no-training (control) on alcohol consumption in a community sample of problem drinkers.

Methods: We recruited heavy drinkers, who expressed an interest in reducing their alcohol consumption. Inclusion criteria: (i) aged 25-65, (ii) alcohol consumption over UK government guidelines for safe drinking (14 units for females, 21 units for males per week). Exclusion criteria (i) any history of treatment for an alcohol use disorder, (ii) a current or previous diagnosis of substance use disorder or ADHD, (iii) regular access to the internet from a desktop or laptop computer.

Participants attended the laboratory and completed a two-week retrospective recall of their alcohol consumption (Timeline Follow-Back; TLFB). They were then administered a brief online intervention (www.downyourdrink.org.uk: DYD) and asked to self-monitor their alcohol consumption for one week before returning to the laboratory. Upon return, participants were then counterbalanced to one of three ICT conditions or a control (see opposite) and sent a link via email to complete an online ICT assessment. There were 14 potential sessions in each condition, with each containing 200 trials. Participants accessed the training through a link sent in an email, with new links sent for each session to improve compliance. During this time participants were asked to continue self-monitoring their alcohol consumption using the DYD website. Following the four week training, participants returned to the lab and completed a retrospective TLFB. TLFB measures at baseline, first two weeks and second two weeks of training were used as our dependent variables of alcohol consumption.

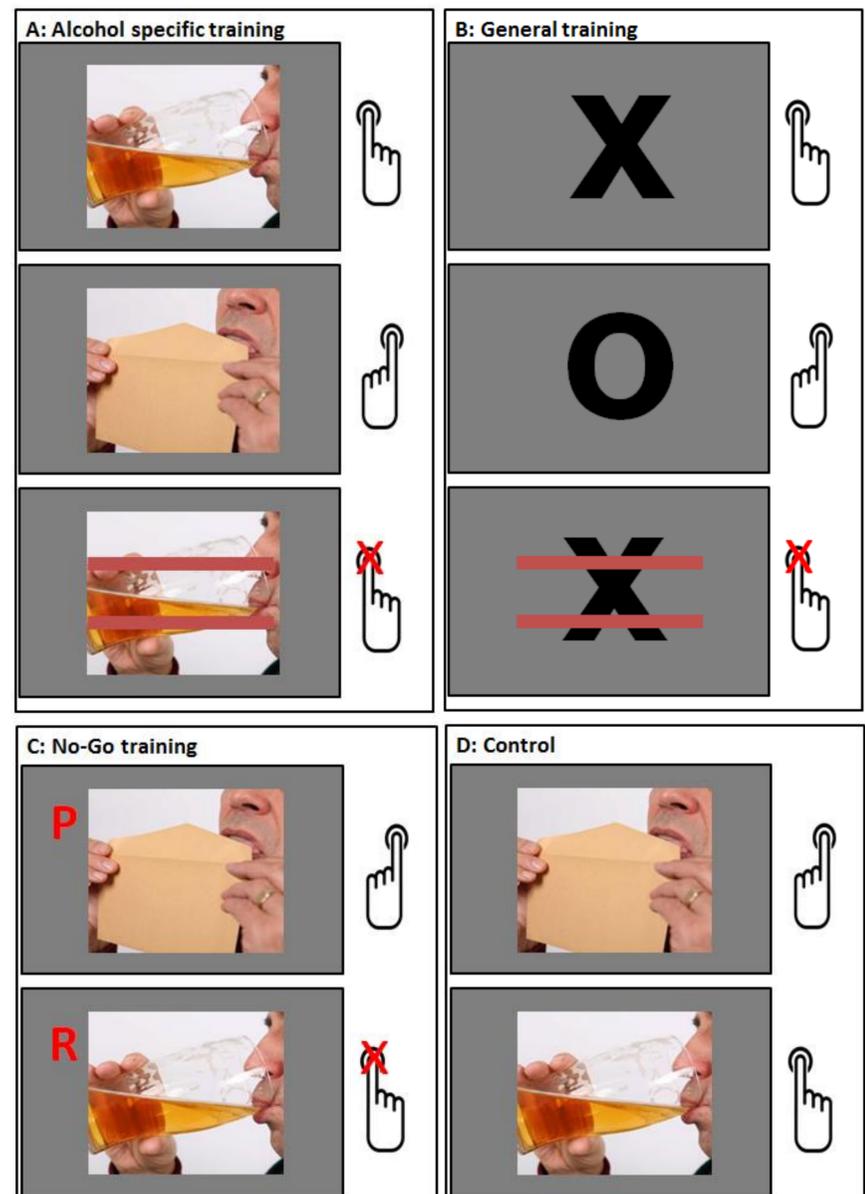
Results: 197 individuals (94 Male), with a mean age of 41.63 (\pm 11.76) completed at least 8 training sessions (minimum required). A 4 (training: Alcohol specific, General, No-Go, control) x 3 (time: baseline, first two weeks of training, second two weeks of training) mixed ANOVA was performed on units of alcohol consumed (see below).



Main effect of time ($F(2,6) = 83.75, p < .01$).

Time x Condition interaction ($F(6,366) = 1.59, p > .10$).

References: 1. Smith et al (2014). *Drug and Alc Dep*, 145, 1-33. 2. Jones et al (2013). *Front Psychiatry*, 4, 140. 3. Allom et al (2015). *Health Psychol Rev*, in press. 4. Jones et al (under review). 5. Lawrence et al (2015). *Appetite*, 95, 17-28. 6. Jones et al (2014). *BMC Public Health*, 5, 14:796. 7. Jenkins et al (2009). *Drug and Alc Dep*, 100, 107-114.



Alcohol specific training – participants had to respond as fast as possible to alcohol and neutral images but inhibit a response on 50% of alcohol images. Inhibition success of > 50% increased the difficulty on the following training session.
General training – participants had to respond as fast as possible to letters 'X' and 'O' but inhibit a response on 50% of 'X' letters. Inhibition success of > 50% increased the difficulty on the following training session.
No-Go training – participants had to respond when a letter 'P' was presented with an image, but inhibit when the letter 'R' was presented. The letter R was always presented over alcohol images.
Control – participants had to respond to both alcohol and neutral images, with no inhibition.

Discussion: Our analysis demonstrated no evidence of repeated ICT training leading to a reduction in alcohol use, in a sample of problem drinkers. The reduction in alcohol consumption across all groups is most likely attributable to self-monitoring of alcohol consumption and non-specific intervention effects⁷. These findings are preliminary until study completion. Planned analyses as set out in the published protocol include the stratification of individuals by response to the brief alcohol intervention as well as the examination of compliance to training and motivation to reduce consumption. These analyses will help us to understand whether repeated ICT training may have a beneficial effect on alcohol consumption in problem drinkers.