Decision-making in regular alcohol consumers and people who have cut-down (#53789)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
The primary aim of this study is to apply a behavioural economics framework to characterise the differences between people who currently drink heavily and people who used to drink heavily but now drink in moderation. Our core hypotheses are that compared to current heavy drinkers, moderated (former heavy) drinkers will have:

1. Reduced alcohol drift
2. Increased soft-drink drift
3. Reduced alcohol demand
4. Increased substance-free reinforcement

A secondary aim is to follow-up a subsection of heavy drinkers who report intentions to cut down their drinking in January 2021 to gather preliminary data on any characteristics (e.g. alcohol demand and substance-free reinforcement) that predict short-term reductions in alcohol consumption.

3) Describe the key dependent variable(s) specifying how they will be measured.
A two-alternative forced choice (2AFC) task will present two alcohol images (on alcohol blocks), or two soft-drink images (on soft-drink blocks), and participants will be asked to use one of two keys to select the image that depicts the drink image they would rather consume. During their decision-making, evidence accumulation processes will be measured through the application of a drift-diffusion model (DDM) to the behavioural data from this task (reaction time and choice data). Our key dependent variables from this will be drift rates for alcohol and soft-drinks.

A brief version of the Hypothetical Alcohol Purchase Task (Murphy & MacKillop, 2006) will be used to measure alcohol demand, and a modified version of the Activity Level Questionnaire (Meshesha et al., 2020) will be used to measure substance-free reinforcement. These will be our key self-reported dependent variables.

4) How many and which conditions will participants be assigned to?
This study will use a case-control design to explore differences between a group of heavy drinkers and a group of former heavy drinkers who have been able to cut down in the absence of formal treatment.

It will also use a prospective design to follow-up a subsection of the heavy drinkers who have intentions to cut down.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
Independent-samples t-tests will be used to analyse whether there are any significant between-subject differences in alcohol and soft-drink drift rates (hypotheses 1 and 2), and alcohol demand and substance-free reinforcement (hypotheses 3 and 4), between heavy drinkers and moderated (former heavy) drinkers.

Within-subjects t-tests will be used to analyse whether there are any within-subject differences in the observed variables. Regression analyses will be used to explore predictors of change in alcohol consumption at follow-up (i.e. after an attempt to cut down).

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
There will be 8 attention checks in total (4 in the 2AFC task and 4 in the questionnaire battery). Only participants who pass at least 75% of these checks (6/8) will be included in the analyses.

In 2AFC task, we will exclude responses slower than 4000ms as previous value-based decision-making studies have utilised 4 seconds as a response threshold for making decisions (Polania et al., 2014; Tusche & Hutcherson, 2018). We will also exclude responses faster than 300ms, as research suggests that these are likely to be fast guesses (Ratcliff, Thapar & McKoon, 2006). If a participant always gives the same answer (such as always responding with the left image, or always responding with the right image) they will be excluded from the analysis.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We aim to collect data from at least 102 participants based upon a power calculation (51 heavy drinkers and 51 moderated (former heavy) drinkers). In order to reach this target, we will open recruitment to 120 participants to account for any potential technical problems that may occur with online research. Out of the 51 heavy drinkers, we aim to invite 30 of these to complete the brief follow-up assessment.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
This will be an online study whereby participants are recruited via Prolific. They will complete a battery of questionnaires on Qualtrics and the 2AFC task on Pavlovia.

We are unsure how many heavy drinkers will self-report an intention to cut down their drinking in January 2021. For this reason, we propose that we will invite anyone who responds “Yes” to the question about participating in Dry January, and scores at least 5 on a 10-item scale of intentions to cut down more generally in the New Year. However, if there are not 30 people who meet these criteria, we may relax this (for example, including people who respond “Not sure yet” and score at least 3).

We will conduct exploratory analyses on ‘frequency’ and ‘enjoyment’ scores from the Activity Level Questionnaire separately as previous research suggests that enjoyment may be a more important subscale of substance-free reinforcement than frequency in predicting declines in alcohol problems and consumption (Magidson et al., 2017).

On the 2AFC task, we are interested in establishing whether there is a ‘difficulty effect’, such that on trials where the difference between the value ratings for the images is large (easier trials), the drift rate is increased compared to when the difference between the value ratings for the images is minimal (difficult trials).

We will also use correlations to explore the associations between our observed variables (such as drift rates and response thresholds for alcohol and soft-drinks, self-reported demand for alcohol, substance-free reinforcement, AUDIT scores, drinking refusal self-efficacy, self-control, and alcohol problem recognition, for example).