STUDY PROTOCOL

Alcohol health warning messages: the impact of self-affirmation, message content and message severity

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Background

Alcohol abuse causes more than 3.3 million deaths every year, accounting for almost 6% of all death around the world (WHO, 2014). Moreover, alcohol is the third leading cause of morbidity and mortality in the European Union (EU), and Europe is the world’s heaviest drinking region (Eurocare, 2012).

Health warning labels have been present on tobacco products in the UK since 1971, with pictures added to these warnings in 2008. Given that tobacco warnings have been shown to have an effect on consumer behaviour (Hammond, 2011) and in communicating risk (Noar et al., 2015), it has been suggested that similar warnings be placed on alcohol products (Al-hamdani, 2014; Eurocare, 2012; Thomson, Vandenberg, & Fitzgerald, 2012), particularly given low costs of implementation (Stockwell, 2006). High levels of support for health warnings on alcohol products have been observed in Australia (Thomson et al., 2012) and Italy (Annunziata, Pomarici, Vecchio, & Mariani, 2016). A recent EU survey found that 78% of the UK sample supported the idea of including pregnancy and drink-driving warnings on alcohol containers (Eurobarometer, 2010). This is consistent with our own online survey, which found that after viewing example health warning messages, 86% of participants agreed that they would find it acceptable to see these messages on alcohol products (Attwood et al., in preparation).

In 2011, alcohol companies in the UK pledged to put warning labels on 80% of alcohol containers as part of the Responsibility Deal, although this pledge has not been fully met (Petticrew et al., 2016). Research by Kersbergen & Field, (2017) using eye-tracking technology demonstrates that consumers pay minimal attention to these voluntary warning labels and they have no impact on drinking behaviour. We have observed similar avoidance of tobacco warnings among daily smokers (Maynard et al., 2014). Similar results were also observed in an Australian online survey which found that individuals have low awareness of the current voluntary health warnings labels on alcohol containers (Coomber, Martino, Barbour, Mayshak, & Miller, 2015). Furthermore, in an online survey we found that over a quarter of alcohol
consumers said they would try and avoid health warnings on alcohol containers. Students and harmful drinkers reported even higher levels of avoidance (Attwood et al., in preparation).

To improve the efficacy of alcohol warnings they should be graphic, incorporating images as well as text (Eurocare, 2012; Wilkinson & Room, 2009). It has been suggested that they should have a serious tone, with simple, clear and unambiguous language (Thomson et al., 2012). To increase their salience, they should be in a standard location parallel to the base of the container, separate from other label information (Eurocare, 2012), should cover a set minimum size of the product label (Anderson et al., 2013) and they should feature a message that uses a range of saliency features to draw attention (Eurocare, 2012).

Previous research on pictorial tobacco health warnings has reached different conclusions regarding the impact of health warning severity. Indeed, it has been observed that highly severe health warnings increase intention to quit (Kees, Burton, Andrews, & Kozup, 2010) and are perceived as more effective than moderately severe warnings (Wade, Merrill, & Lindsay, 2011). However, Kees et al. (2010) found that in comparison to less severe warnings, more severe health warnings were more poorly recalled. To our knowledge no previous research on alcohol health warnings has examined message severity. Alcohol consumers may perceive themselves at being at less risk of harm as compared with tobacco consumers and as a result, severe alcohol warnings may be less effective in many drinkers. Examining the impact of moderate as compared with severe alcohol warnings is therefore a pressing issue as we may not be able to generalise research from tobacco warnings. By using novel pictorial health warnings, this research will also extend previous eye-tracking studies which have examined visual attention to the voluntary, text-only alcohol labels (Kersbergen & Field, 2017).

Health warnings may also be avoided because they are seen as damaging to consumers’ self-view (Sherman & Cohen, 2006). By restoring one’s global positive self-image from threats, self-affirmation manipulations (i.e., tasks which increase an individual’s self-image) may be a method of reducing the psychological discomfort experienced as a result of health warnings, thereby reducing defensive reactions to them (Steele, 1988). Previous research has found that self-affirmation manipulations encourages less defensive responses to tobacco health warnings (Harris et al., 2007), especially among heavy smokers (Memish et al., 2016). Furthermore, self-affirmation has also been shown to increase message acceptance, intentions to change and encourage healthier behaviour (Epton et al., 2015) and increase levels of control, self-efficacy and intentions to quit (Harris et al., 2007). Kessels et al. (2016) found a positive effect of self-affirmation on visual attention such that self-affirmed smokers made more fixations to cigarettes packets (including the health warnings) than non-self-affirmed smokers, regardless of message type and how threatening the image was. Arpan, et al. (2017) found that affirmed participants reported more positive attitudes, higher self-efficacy levels and greater intention to reduce risky behaviour; although their findings regarding the perceptions of the consequences of the risky behaviour (perceived severity) and the perceived susceptibility to the problems described in the message were not clear.

With respect to alcohol, self-affirmation manipulations have been shown to increase intentions to reduce alcohol consumption (Scott et al., 2013), influence attention to threatening messages in moderately heavy drinkers (Klein & Harris, 2009), reduce defensive responses after enhancing susceptibility to suffer cancer as consequence of drinking alcohol (Harris & Napper, 2005). Klein et al. (2011) demonstrated that self-affirmed participants feel more vulnerable to messages reporting the link between alcohol and cancer.
Here we will examine whether manipulating self-affirmation among a population of drinkers, prior to viewing alcohol health warnings reduces defensive reactions to these health warnings and promotes positive reactions. We will examine self-reported avoidance and reactance as possible defensive reactions. As positive reactions we will examine: overall self-efficacy to drink less, perceived susceptibility to the health risk presented on the health warning, perceived effectiveness of the health warnings and intentions to reduce alcohol consumption. Visual attention to the health warnings (or lack thereof) will also be measured and this can be considered either a positive or defensive reaction. We will also examine how the severity of the message (i.e. moderately severe versus highly severe warnings) and health warning content (i.e., the health impacts presented) influence these defensive and positive reactions.

**Study Objective and Hypotheses**

The primary objective of this study is to understand how self-affirmation, health warning severity and health warning content influence defensive and positive reactions to health warnings (see above for outcomes measured).

Specifically, we will examine the following research questions:

1. *Is self-affirmation an effective strategy for reducing defensive reactions towards alcohol-related health warnings and for promoting positive reactions?*

   - We hypothesise that self-affirmation, compared to a control condition, will reduce defensive reactions to health warnings and will promote positive reactions.

2. *Does health warning severity influence defensive reactions and positive reactions to health warnings and how does self-affirmation interact with this?*

   - We hypothesise that highly severe health warnings will increase defensive reactions to health warnings and will reduce positive reactions.
   - We also hypothesise an interaction between self-affirmation and severity, such that participants in the self-affirmation condition as compared with the control condition will have less defensive reactions and more positive reactions to severe health warnings. Responses to the moderately severe warnings will be similar across participants in the two conditions.

3. *Does health warning message content (i.e., which disease it presents) influence defensive reactions and positive reactions, and how does the severity of the health-warning influence this?*

   - We hypothesise that there will be differences in defensive and positive reactions depending on warning content (cirrhosis, cancer, brain damage, mental illness, road accidents and pregnancy) and message severity (highly severe vs moderately severe).

Finally, we will explore whether there is a positive relationship between health warning avoidance, as measured using eye-tracking, and self-reported questionnaire measures of health warning avoidance and reactance.
Study Design

Using an experimental design, we will first manipulate self-affirmation among participants using the value essay technique (Kessels et al., 2016). Participants will then view six highly severe health warnings and six moderately severe health warnings (two times each), presented on the ten most popular beer brands in the United Kingdom.

We will use a 2 (self-affirmation manipulation group vs control group) × 2 (moderately severe warnings vs highly severe warnings) mixed model design to assess defensive and positive responses to health warnings.

In order to assess the defensive and positive reactions to the health warnings we will include the following primary and secondary outcome measures:

Primary measure

Using eye-tracking technology, our primary outcome will be visual attention to (or avoidance of) the health warning. This can be seen as either a positive (attention to) or defensive (avoidance of) reaction to the health warnings. We will measure the number of fixations to the health warnings.

Secondary measures

Visual attention to and avoidance of warnings will also be assessed with the following secondary measures:

- The number of fixations towards branding;
- Fixation durations to the health warnings and branding;
- Location of the first saccade (i.e. health warning or branding).

In order to assess defensive reactions to the warnings we will also include the following self-report measures:

- Avoidance of the health warnings;
- Reactance to the health warnings;

In order to assess positive reactions to the warnings we will include the following self-report measures:

- Susceptibility to the health risk presented on the health warnings;
- Perceived effectiveness of the health warnings;
- Impact of the health warnings on intentions to drink less.

We will also measure the impact of the self-affirmation manipulation on overall self-efficacy to drink less.

Study Site

School of Experimental Psychology, University of Bristol, 12a Priory Road, Bristol BS8 1TU, United Kingdom.
Participants and Recruitment

Study participants ($n = 128$) will be regular alcohol drinkers who have drunk over the weekly guidelines in the week prior to signing up for the experiment. They will be recruited from the staff and students at the University of Bristol, and members of the public, recruited via existing email lists, word of mouth, posters and flyers and online via the Tobacco and Alcohol Research Group (TARG) website, Call for Participants website and online marketplaces (e.g., Gumtree). Participants will be randomly assigned to either the self-affirmation manipulation condition or the control condition, with equal of males and females will assigned to each condition. Participants will be reimbursed £7 on completion of the study. Some participants will receive course credit.

Inclusion criteria

- Regular drinkers who drank over the weekly guideline of 14 units in week preceding study sign up;
- Those who drink beer;
- Those who have English as a first language or, in the view of the experimenter, are fluent to a near-equivalent standard.

Exclusion criteria

- Inability to track eyes (e.g. failure of calibration with the eye tracker).

Sample size determination

Previous studies using a self-affirmation manipulation have observed effect sizes of $d = 0.62$ for differences between those in the self-affirmation versus no affirmation conditions in intentions to cut down on smoking (Harris et al., 2007), $d = 0.50$ for self-efficacy over their ability to do so (Harris et al., 2007) and $d = 0.81$ for fixations to cigarette packs (Kessels et al., 2016). We will power our study to detect an effect size of $d = 0.50$ for our primary outcome measure (visual attention to the health warnings) requiring 128 participants (64 per self-affirmation condition) to achieve 80% power at an alpha level of 5%. Approximately equal numbers of males and females will be recruited into each condition.

Withdrawal of participants

Participants will be informed that they are able to withdraw from the study at any time. Full reimbursement will be provided to participants who experience an adverse event during the experiment. For all other withdrawals (i.e., that are not due to an adverse event), participants will be reimbursed an amount commensurate to the amount of time spent in the study.

Participants for whom eye-tracking is not possible (after approximately 10 minutes of attempting to achieve an accurate eye-tracker calibration), will not continue with the rest of the experiment and will be thanked, debriefed and reimbursed £2 for their time.

Randomisation

We will use a randomly generated list to assign participants to the self-affirmation or control group. An independent researcher will create a randomisation list for 128 participants using
random number generator software (www.randomizer.org) where each participant will be randomly assigned either the number ‘1’ or ‘2’ to indicate either the self-affirmation or control task. Two versions of the values essay (i.e., self-affirmation) task will be created by an independent researcher and the primary researcher will be blind to which task is the self-affirmation task and which the control is.

In the eye-tracking task, stimuli will be shown in a pseudo-randomised order, such that in every block three highly severe health warnings and three moderately severe health warnings will be included. In addition, each of the 12 health warnings will be shown in the two first blocks and again in the final two blocks.

Finally, the questionnaire about the 12 health warnings will be completely randomised: the health warnings will appear in randomised order, as will the questions regarding their susceptibility, health warning effectiveness, avoidance and reactance and the extent to which each health warning encourages them to drink less.

**Measures and Materials**

**Health warning stimuli and online pilot survey**

Alcohol stimuli will be images of large cans from the most popular beer brands in the United Kingdom based on market share data (The Grocer, 2016). Specifically, the brands will be: Carling, Foster’s, Guinness, Stella Artois, John Smith’s, Heineken, Kronenbourg 1664, Beck’s Vier, Peroni, London Pride and Budweiser.

Six moderately severe and six highly severe health warnings will be presented to participants on the images of branded alcohol containers. Following the recommendations of Thomson et al. (2012) and Eurocare (2012), the health outcomes we will examine are: liver cirrhosis, brain damage, mental illness, cancer, pregnancy and traffic accidents. The images have come from a range of copyright-free sources.

Health warnings were chosen following an online pilot survey, which compared a series of questions regarding the severity, realism and clarity of the warnings. To assess the severity of the health warnings, participants viewed each health warning individually and answered a single question: “To what extent does this look a severe health warning?” on a 9 point scale from “not at all (1)” to “very much so (9)”. To assess the extent to which the health warning looked realistic, participants were asked “To what extent does this look like a real health warning?” and “How understandable is the image in the warning?” Both of these questions were answered using a 9 point scale from “not at all (1)” to “very much so (9)”. To assess the clarity of the messages, a shortened version of the Visual-Verbal Redundancy Scale (Capella et al, 2007) was used and participants were asked to report the degree to which the “visual message (i.e., picture) and the verbal message (i.e., text)” were: 1) saying the same thing as each other, and 2) consistent with each other. These questions were answered on a 1 to 9 scale “strongly disagree (1)” to “strongly agree (9)”.

In this online pilot survey, a total of 25 pictorial health warnings were presented to 20 participants in a randomised order and participants answered each of the five questions about each health warning before being presented with the next health warning. All health warnings had to be scored over five on all the dimensions on average in order to be included in the
experiment, except for severity where moderately severe health warnings had to be scored less than five and highly severe health warnings more than seven.

Final health warnings and their results are presented in Appendix 1. Impotence health warnings, which were included in the online pilot survey, were discarded due to low ratings of severity. The final stimulus-set with warnings alongside the bottles, is shown in Appendix 2.

**Online screening**

All participants will be screened for eligibility based on the inclusion criteria prior to signing up to participate by completing an online screening form in Qualtrics. Screening questions will include the following: name, age, email address (in order to contact them to arrange a testing time) and a retrospective task about how many units of alcohol they have drunk in the last week.

**Self-affirmation manipulation**

The value essay is a standard manipulation for promoting self-affirmation (McQueen & Klein, 2006) although there are a number of different procedures. We will follow the procedure used by Klein and Harris (2009). Participants will be provided with a list of values (see Appendix 3) and those in the self-affirmation group will be asked to select their most important value and write a short essay about why it is important to them. Non-self-affirmed participants (control group) will be asked to choose their least important value and write about why it might be important for someone else.

**Outcome measures**

In order to assess defensive reactions to health warnings we will measure:

*Visual attention to / avoidance of alcohol health warnings*

Eye-movements will be captured with an EyeLink 1000 system and the health warnings will be presented on screen for 10,000 ms. To create the task and record participants’ eye movements we will use EyeLink Experiment Builder software and to extract the data we will use EyeLink Data Viewer software. In order to analyse visual attention / avoidance we will follow our standard procedure which has been used to investigate visual attention to tobacco health warnings (Maynard et al., 2014; Maynard et al., 2013; Munafò et al., 2011). We will record the number of fixations to the health warnings. Moreover, we will obtain secondary outcome measures of number of fixations to branding, fixation duration and the location of the first saccade (i.e., branding or health warning region).

*Avoidance and reactance to health warnings*

Self-reported avoidance of and reactance to each of the health warnings will be assessed at the end of the experiment. A subset of avoidance questions will be taken and adapted from the Population Assessment of Tobacco and Health Study (Population Assessment of Tobacco and Health Study, 2015). Questions will be answered on a five-point scale from ‘not at all likely’ (coded as 1) to ‘extremely likely’ (coded as 5). Participants will be asked the following three questions, preceded by the text “Imagine that all alcohol containers had this warning”:

- “How likely is it that you would try to avoid thinking about the warning?”
• “How likely is it that you would try to avoid looking at the warning on your alcohol can?”
• “How likely is it that you would keep the can out of sight to avoid looking at the warning?”

Self-reported reactance of each health warning will be assessed via the Brief Reactance to Health Warning Scales (Hall et al., 2017) which has been shown to have a strong association with the full-length version (Hall et al., 2016) through a confirmatory factor analysis. Agreement with reactance statements will be scored on a five-point scale from ‘strongly disagree’ (coded as 1) to ‘strongly agree’ (coded as 5).

• “This warning is trying to manipulate me”.
• “The health effect on this warning is overblown”.
• “This warning annoys me”

To assess positive reactions to health warnings we will measure:

**Overall self-efficacy from the subject to drink less**

Perceived self-efficacy to drink less will be measured by the items:

• “Overall, how confident are you that you can stop drinking altogether right now?” (‘not at all’, ‘slightly’, ‘somewhat’, ‘very’, and ‘completely confident’).
• “For me cutting down on the number of alcohol units that I drink in the next week would be...” (‘very difficult – ‘very easy).

This scale is an adaption of one used by Harris et al. (2007). Items will be rated from one to five.

**Susceptibility to the health risk**

Perceived susceptibility to the health risk will be measured using one only item. This item is adapted from Witte (1994) and has been previously used in the literature (Arpan et al., 2017; Napper et al., 2014). Participants will rate the following item: “How likely is it that I will experience the problems described in the message if I do not change my drinking behaviour”. Participants will rate each health warning individually using a numeric scale, where 1 is ‘not at all likely’ and 5 ‘very likely’

**Effectiveness of health warnings**

Perceived health warning effectiveness will be measured using questions originally designed to measure tobacco health warning effectiveness (Hammond et al., 2012 and Mutti et al., 2016). Participants will be asked an overall effectiveness question for each of the health warnings: “How effective is this health warning?” Participants will be asked to rate each health warning individually using a numeric scale, where 1 is ‘not at all’ and 5 ‘extremely’.

**Impact of health warning on intentions**

The impact of each of the health warnings on intentions to drink less will be assessed using the following question adapted from Fataterahman et al., (2010) and Noar et al. (2015): “To what extent would this warning motivate you to drink less?” rated from ‘not at all’ (1) to ‘a lot’ (5).
Other measures

All participants will complete the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993).

Procedures

Participants who register interest in taking part will be sent the full information sheet and a link to an online screening questionnaire via Qualtrics. If participants meet the inclusion criteria, they will be invited to attend a testing session. Data from individuals who are ineligible will be stored on Qualtrics until testing is complete, at which point their data will be deleted.

On the day of the testing session, participants will be required to re-read the information sheet and be given the opportunity to ask any questions; they will then read and sign the consent form. Participants will complete the self-affirmation task or control task on the Qualtrics Platform privately (the researcher will leave for the room for 10 minutes). Participants will not be explicitly aware that this is a self-affirmation manipulation and instead this task will be presented as a questionnaire of their values.

Participants will then complete the eye-tracking task. They will be provided with the instructions for the eye-tracking task and the calibration process. All participants will be sat a standard distance from the computer screen and eye makeup will be removed if necessary. Participants will then complete a task calibrating the eye-tracker, using a 9-point calibration procedure. In order to measure participants’ gaze with an accuracy of at least 4 mm, validation of the calibration value (mean of the error score for each point measured in degrees of visual angle) must be less or equal than 0.4.

Across four blocks, participants will view 24 alcohol stimuli with health warnings. Each block will include six cans of beer, which will contain the six health warnings that will be combined with the 11 popular beer brands in the United Kingdom. Each image will be presented individually on screen for 10,000 ms. Between trials, a gaze-contingent fixation point will be presented, where the trial will start only once the participant has fixated the point. Fixation points will be presented in one of two locations on the screen, either to the left or right of the centre of the screen, such that the location of the first saccade on the package and first saccade latency can be meaningfully analysed.

After each of the four blocks, participants will complete a recall phase, where they will be required to determine whether the images presented to them were shown in the previous block by pressing one of two buttons on a keyboard. Participants will have to recall the image as a whole, that is, the health warning accompanied with the brand on the beer can. The recall phase will comprise four images, two selected at random from the six images presented in the previous block and two selected at random from the images not presented in the experiment. This recall phase will be primarily used to promote engagement from participants.

Once the eye-tracking task is finished, all participants will complete a series of questionnaires presented via Qualtrics. Participants will report their self-efficacy to drink less, then they will view the 12 health warnings again, individually on the computer screen, and for each health warning will be asked the questions regarding susceptibility to the health risk, health warning effectiveness, their avoidance and reactance to the warnings and the extent to which each health warning encourages them to drink less. Finally, participants will complete the AUDIT.
Following completion of these tasks, participants will be debriefed and given the opportunity to ask questions. Participants will be reimbursed £7 for their time and expenses.

**Statistical Plan**

In order to examine the first and second research questions regarding whether self-affirmation is an effective strategy to reduce defensive reactions and promote positive reactions towards health warnings, two main statistical analysis will be conducted. First, a one-way ANOVA will examine whether overall self-efficacy to drink less is different among those in the self-affirmation condition as compared with the control condition. Second, a 2 (self-affirmation condition: self-affirmed vs control) × 2 (health warning severity: moderate vs high) mixed model MANOVA of the following primary and secondary outcome measures for defensive reactions and positive reactions will be conducted: visual attention to / avoidance of alcohol health warnings, avoidance and reactance to health warnings, susceptibility to the health risk, effectiveness of health warnings and impact of the health warning on drinking intentions. We will examine the main effects and interactions of this MANOVA.

To examine the third research question regarding the influence of the health warning message content on defensive and positive reactions toward them, we will use an exploratory analysis. This will include means and standard deviations as descriptive statistics for each of the primary and secondary outcomes (visual attention to / avoidance of alcohol health warnings, avoidance and reactance to health warnings, susceptibility to the health risk, effectiveness of health warnings and impact of the health warning on drinking intentions). Furthermore, to assess the possible differences of the health warning message content and the severity of them, we will conduct a within-subjects 6 (content of the health warning: cirrhosis, cancer, brain damage, mental illness, road accidents and pregnancy) × 2 (health warning severity: moderate vs high) MANOVA on our outcome measures. We will conduct Bonferroni corrected post hoc analyses to explore any differences.

Linear regression will be used to explore the relationship between health warning avoidance, as measured using eye-tracking, and self-reported questionnaire measures of health warning avoidance and reactance.

**Ethical Considerations and Informed Consent**

Ethics approval has been obtained from the Faculty of Science Research Ethics Committee at the University of Bristol (Approval Code: 50761). The study will be conducted according to the revised Declaration of Helsinki (2013) and the 1996 ICH Guidelines for Good Clinical Practice E6(R1). The investigator will explain the nature, purpose and risks of the study to the participant. The participant will receive the information sheet in advance of the study session, specifically via email once the researcher has obtained the interest from the participant. There will be no time restriction on how long participants take to respond, with the exception that participants who respond after all study places have been filled will not be offered a place on the study. Therefore, participants will be given sufficient time to read the information, consider any implications, and raise any questions with the investigators prior to making a decision to participate. On arrival at the study session participants will be given the opportunity to read the information sheet again and ask the investigator questions. Written consent will then be obtained. Participants will be informed that they are free to withdraw at any time.
Adverse Event Reporting

Adverse events or adverse reactions will be documented at the end of the relevant session using an adverse event report, and will be recorded in the CRFs. The adverse event reports will be anonymised by unique study identifier and stored in the master file. Adverse events or adverse reactions will be followed up until resolved if possible. At the end of the study a safety report will be compiled and sent to the Principal Investigator (PI) listing all adverse events and adverse reactions. All procedures related to adverse events will follow the University of Bristol adverse events policies and procedures.

Safety

We do not anticipate that there will be any risks associated with participating in this experiment. Insurance will be provided by the University of Bristol.

Data Management

All aspects of the Data Protection Act will be adhered to. Consent forms will be retained by the School of Experimental Psychology for a period of 10 years after study completion. In the event that a participant revokes authorisation to collect or use personal health information, the investigator retains the ability to use all information collected prior to the revocation of participant authorisation.

Anonymised study data

Case report forms (CRFs) and electronic data will be anonymised by a unique numeric identifier. CRFs will be stored in a locked office. All data requested on the CRF will be recorded. All missing data will be explained. If any entry errors are made, a single straight line will be drawn through the incorrect entry and the correct data entered above it; to correct such an error. All such changes will be initialled and dated. Once data from CRFs have been inputted into a data spreadsheet they will undergo a reliability check (20% check by independent researcher). If an error rate greater than 1% is obtained the data will be re-inputted in full and assessed again. After the data have been positively assessed, the CRFs will be destroyed in the School’s confidential waste facility. All participant questionnaire data will be collected via Qualtrics. Data will be deleted from Qualtrics at the end of testing and once relevant data has been entered into a data spreadsheet. The same way, eye-tracking data from participants will be deleted from the eye-tracker computer once it has been entered into the main data spreadsheet.

Original computer data files will be backed up on a secured University of Bristol network drive. At the end of the study, electronic study data (including finalised data sheet) will be transferred to a designated University of Bristol Research Data Storage Facility for long-term archiving. Study data will be kept for a minimum of 15 years. At the appropriate time the data sheet will be locked and made open using the University of Bristol Research Data Repository

Screening documents and participant contact details

Screening documents and participant names and contact details will be stored separately in a locked data sheet on a secure server and kept confidential. Failed screenings will be deleted at the end of the study in order to check that new sign ups to the experiment have not previously
been marked as ineligible. Screening information will be kept for one year post study completion or until data are made open (whichever comes first), after which these documents will be deleted.

Revoked data

If a participant decides that they do not want their data used after their participation they have the right to request that the data are withdrawn. They can request this up to one year post study completion or until the data are made open (whichever comes first).

Quality Control and Quality Assurance

The investigators will be responsible for data quality. After approximately 10% of data collection has been completed, the study will undergo an in-house quality assessment. During this monitoring process all CRFs and study documents will be assessed as well as the investigators’ laboratory management and participant engagement, and corrected where necessary.

Post-study checks will be conducted on data entry by an independent researcher. This researcher will re-enter 20% of computer data files and 20% of the eye-tracking task data. A threshold of 1% will be used, whereby error rates greater than 1% will require the data to be re-entered.

Insurance

This study will be sponsored by the University of Bristol. The University has Clinical Research Insurance to cover the liability of the University to research participants. In the event that something goes wrong and a participant is harmed during the research study there are no special compensation arrangements. If a participant is harmed and this is due to someone's negligence then they may have grounds for a legal action for compensation against Bristol University or one of the other parties to the research, but they may have to pay their own legal costs.

Publication Policy

The findings from this research study may be published in an appropriate scientific journal (and made available open access), and/or presented at an appropriate meeting. Study data will be collected and held by the study investigators. The data will be made available for sharing via a University of Bristol online data repository.

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**Conflicts of Interest**

There are no conflicts of interest.
References


### Appendix 1: Health warning images

<table>
<thead>
<tr>
<th>Severity</th>
<th>Pilot</th>
<th>n</th>
<th>Cirrhosis</th>
<th>M (SD)</th>
<th>Brain Damage</th>
<th>M (SD)</th>
<th>Mental Illness</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>Severity</td>
<td>20</td>
<td></td>
<td>4.50 (2.19)</td>
<td>4.05 (2.40)</td>
<td>4.95 (1.94)</td>
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<td>6.48 (1.41)</td>
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<td>6.10 (2.02)</td>
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<td>Severe</td>
<td>Severity</td>
<td>20</td>
<td>Alcohol causes liver cirrhosis</td>
<td>7.50 (1.19)</td>
<td>7.30 (1.72)</td>
<td>7.55 (1.23)</td>
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<td></td>
<td>Realistic</td>
<td>20</td>
<td></td>
<td>7.53 (1.17)</td>
<td>7.15 (1.67)</td>
<td>6.83 (1.65)</td>
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<tr>
<td></td>
<td>Consistency</td>
<td>20</td>
<td></td>
<td>7.48 (1.43)</td>
<td>6.83 (1.78)</td>
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<tr>
<td>Moderate</td>
<td>Severity</td>
<td>20</td>
<td>Alcohol damages your brain</td>
<td>4.65 (2.72)</td>
<td>4.05 (1.57)</td>
<td>4.90 (1.67)</td>
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<td></td>
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<td>20</td>
<td></td>
<td>6.25 (1.79)</td>
<td>6.03 (1.76)</td>
<td>6.55 (1.72)</td>
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<tr>
<td></td>
<td>Consistency</td>
<td>20</td>
<td>Alcohol causes your unborn baby</td>
<td>6.28 (2.01)</td>
<td>6.10 (1.78)</td>
<td>6.53 (1.90)</td>
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<tr>
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<td>Severity</td>
<td>20</td>
<td>Drinking alcohol causes road accidents</td>
<td>8.10 (1.07)</td>
<td>7.85 (0.99)</td>
<td>7.60 (1.97)</td>
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<tr>
<td></td>
<td>Realistic</td>
<td>20</td>
<td></td>
<td>7.75 (0.95)</td>
<td>7.98 (0.89)</td>
<td>7.65 (1.17)</td>
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<tr>
<td></td>
<td>Consistency</td>
<td>20</td>
<td>Alcohol causes your unborn baby</td>
<td>7.70 (1.67)</td>
<td>7.60 (1.56)</td>
<td>7.58 (1.68)</td>
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</table>

Study Protocol (Version 1.0)  
30th March 2017
Appendix 2: Stimuli examples


**Appendix 3: Self-Affirmation manipulation**

**VALUES QUESTIONNAIRE**

In the present study we are interested in investigating people’s values. By values we mean the moral principles and standards by which people try to live their lives. For example, honesty might be a core value for some students. That is, they may try to be honest in all they do – whether in dealing with other people or when studying or working outside university. Following are some personal values that other students have described as important to them.

- Conscientious
- Friendliness
- Spirituality / Religiousness
- Compassion
- Intelligence
- Generosity
- Trustworthiness
- Kindness
- Creativity
- Spontaneity
- Hedonism (the pursuit of pleasure/happiness)

You are going to be asked to choose a value and write a short statement about it. **Before starting the task, just be aware of all your data will be kept strictly confidential.**

**Non-Self-affirmed participants**

Please select the value that is **least important to you**, and write it in the space provided. (This value does not have to appear on list on the previous page.)

Value:………………………………………………

On the sheet provided please write a short statement (around 2-3 paragraphs) about **why this principle or standard could be important to another person**. Take a couple of minutes to think about how this value may influence their behaviours or attitudes. Please write about how they may use this value in their everyday life – at University, at home, amongst friends or in dealing with strangers. Only think about why this value might be important to another person, and not why it is unimportant to you.

**Self-affirmed participants**

Please select the value that is **most important to you**, and write it in the space provided. (This value does not have to appear on list on the previous page.) If more than one value is equally important to you then please select just one to write about.

Value:……………………………………………..
On the sheet provided please write a short statement (around 2-3 paragraphs) about **why this principle or standard is important to you**. Take a couple of minutes to think about this value and how this value has influenced your past behaviours or attitudes. Please write about how you use this value in your everyday life – at University, at home, amongst friends or in dealing with strangers. If you can, try to recall and write about specific occasions on which this value determined what you did.