The role of other-affirmation and connectedness in reducing defensive processing

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Abstract

Completing a values based self-affirmation before viewing a high fear anti-alcohol message can reduce defensive processing and increase the effectiveness of the message. This is thought to be because self-affirmation enhances self-integrity. Emerging research has also found that other-affirmation (in which participants affirm that their own personally important values are also important to others) might reduce defensive processing more effectively than self-affirmation. To examine the effectiveness of other-affirmation, a randomised control trial was conducted in which participants were required to complete a control, self-affirmation or other-affirmation intervention before being exposed to a high fear anti-alcohol message. The participants' then completed self-report measures of their intention to reduce alcohol consumption, message evaluation and risk perceptions. There were two samples; an undergraduate student sample (n=48) and a snowball sample (n=153). No significant differences were found, in either sample between the control, self-affirmation and other-affirmation conditions. These findings suggest that self-affirmation and other-affirmation may not reduce defensive processing in response to high fear messaging. Future research should seek to clarify the effectiveness of affirmations in non-laboratory settings and examine whether affirmations are less effective when viewed before an anti-alcohol message when compared to smoking related messages.

Declaration

This thesis contains no material which has been accepted for the award of any other degree of diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

Jae-Marie Jaensch

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

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In Australia, the misuse of alcohol is a significant cause of chronic illness and mortality. It also causes, and exacerbates other social problems such as violence and family disruption (Australian Institute of Health and Welfare [AIHW], 2019; National Centre for Education and Training on Addiction [NCETA] Consortium, 2004; Roche et al., 2007). The World Health Organisation (WHO) reported that 4.4% of Australians have an alcohol use disorder, with 1.5% classified as being dependent on alcohol (World Health Organisation [WHO], 2018). In 2017, misuse of alcohol resulted in 157,000 hospitalisations, and 1,366 people died as a direct result of alcohol consumption. In a further 4,186 deaths, alcohol was found to be a contributing factor (Australian Bureau of Statistics [ABS], 2018). These deaths and hospitalisations do not only affect those drinking excessively. In 2016, one in five people experienced violence where the perpetrator had been drinking (AIHW, 2019).

Although there are guidelines for safe drinking, it is evident they are not always adhered to. The National Guidelines for Alcohol Consumption outline levels of safe alcohol consumption, recommending a person should consume no more than two standard drinks per day, and no more than four standard drinks on a single occasion (National Health and Medical Research Council, 2009). However, according to the Australian Bureau of Statistics, one in six adults consumed more than two standard drinks per day, and 42% of adults had consumed more than four standard drinks in one sitting, during the past year (ABS, 2018). Furthermore, population studies have shown that young people are more likely to binge drink than their older counterparts, and that university students are particularly vulnerable to binge drinking (Reavley, Jorm, McCann, & Lubman, 2011). This vulnerability to binge drinking and alcohol misuse is exacerbated in residential colleges or when students are living together, most likely as a result of peer pressure (Leontini et al., 2015).

The primary goal of this thesis is to explore potential ways to increase the effectiveness of public health messages relating to alcohol misuse. Public health messages

that use fear can be ineffective because people react to the threat they pose, by using defensive processing as a coping mechanism. Currently there is evidence to suggest that completing a self-affirmation before viewing these high fear messages, decreases defensive processing. There is also emerging evidence that other-affirmation, (in which participants explain why their values are important to others) may be more effective at decreasing defensive processing, although there is a gap in the current literature exploring why this might be the case. This thesis will seek to add to the literature on the effectiveness of both self-affirmation and other-affirmation in decreasing defensive processing by asking participants to complete a self or other-affirmation activity prior to being exposed to high fear anti-alcohol messages. It will also explore whether feelings of connectedness impact this effect, and by doing so, may be beneficial for improving government health campaigns aimed at reducing alcohol consumption.

Public Health Response

To decrease the mortality rates and adverse effects of health-endangering behaviours, public health bodies use persuasive messages to encourage large numbers of people to change their behaviour. As these messages are intended to reach a large audience they are circulated on television, the internet or in print media (Emery, Szczypka, Powell, & Chaloupka, 2007). Although most of the decision making literature focuses on decisions as being made rationally, and as a consequence of utility, it is evident that emotion is a key determinant of health decision making and subsequent behaviour (Loewenstein, Weber, Hsee, & Welch, 2001; Raghunathan, & Trope, 2002; Slovic, Finucane, Peters, & MacGregor, 2004). Loewenstein, et, al. (2001) theorise that emotions effecting decision making fall into two categories; anticipated and immediate emotions. Anticipated emotions are the feelings that a person expects to experience when a decision is made, and immediate emotions are those that

are felt in the moment that the decision is being made. Both of these types of feelings have been shown to effect decision making.

As a result, public health bodies use a range of emotion-based strategies. One such strategy frequently used in health interventions for minimising alcohol misuse, is fear-based messaging (Slater, 1999). Fear-based messaging involves the use of fear as a primary communication strategy. The aim of this messaging is to maximise attention to the message and increase the viewer's perceived risk of a negative outcome and the salience of this risk, which in turn is seen to motivate behaviour change (Brown & Locker, 2009).

Fear-based messaging strategies have been shown to be effective. A meta-analysis of media campaign outcomes by Tannenbaum et al. (2015) found that emotively-presented threat messages can be effective in reducing population incidence of unhealthy behaviours such as smoking, alcohol use, and caffeine consumption. Similar results have been found in a review of health promotion messages by Wakefield, Loken, and Hornik (2010), who found that emotive messages instigated greater smoking reduction and cessation, than less emotive messages. These messages elicit a negative emotional response, that increases attention to, recall, and salience of, the message (Baron, Logan, Lilly, Inman, & Brennan, 1994; De Hoog, Stroebe, & De Wit, 2005; Hill, Chapman, & Donovan, 1998; Witte, & Allen, 2000). The current study will use emotive messages, in particular those designed to incite fear, to explore the impact these campaigns have on alcohol related behavioural intentions, risk perception and message evaluation.

Defensive Processing of Emotive Health Messages

Despite the evidence that they are effective, fear-based messages are not always maximally effective, however, because they can induce defensive processing, which limits their persuasiveness (Ruiter, Abraham, & Kok, 2001; Ruiter, Kessels, Peters, & Kok, 2014;

van 't Riet, & Ruiter, 2013). Defensive processing involves cognitive processes that occur when a person is "motivated to dismiss or disregard the information" because they find it threatening (van 't Riet & Ruiter 2013, p. 104). Research suggests that defensive processing reduces the effectiveness of emotive advertising in changing behaviour (Brown, & Smith, 2007; Kessels, Ruiter, Wouters, & Jansma, 2010; Ruiter et al., 2014). In light of these findings, it may be beneficial to decrease defensive processing to make emotive messages work more effectively. To do so, it is essential to understand the four subcategories of defensive processing; avoidance, denial, cognitive reappraisal, and suppression.

Avoidance. Avoidance occurs when attention is diverted away from the distressing stimuli, and is thought to be an unconscious and automated defensive process (Mendolia, 1999). Avoidance is also a primary defence mechanism because it occurs almost immediately after threatening messages are presented, and precedes other defensive processes (Blumberg, 2000). In a lab-based study measuring eye movements, Brown and Richardson (2012) found that participants exposed to high-fear messaging, did not look at the message for as long as those who were exposed to low-fear messaging. This difference was most apparent in those who were most likely to consume high levels of alcohol, possibly because they are more vulnerable to alcohol-related harm, and those who were likely to use defensive coping mechanisms to deal with stress. Path analysis showed that not looking at the message was correlated with lower intentions to reduce alcohol consumption, suggesting that avoidance decreases the persuasiveness of the message.

Denial. Denial involves strategies that erode the validity of the message. There does not appear to be any research to date, exploring denial in the context of messaging aimed at alcohol use. However, Liberman and Chaiken (1992) conducted a study with individuals who drank coffee and those who did not. They found that those exposed to high-threat messages as opposed to low threat-messages, were more likely to criticise and dismiss the information

presented. Participants with greater vulnerability to the threat were more likely to do this, suggesting that this effect is moderated by higher personal relevance to the message. Sherman Nelson, and Steele (2000) replicated this study and found similar results. They also included a measure of intention and found that those who reacted more defensively had lower intentions to reduce their caffeine consumption. These findings are likely to be generalisable to other health behaviours such as alcohol consumption.

Cognitive reappraisal. Cognitive reappraisal is when people accept that the information is accurate, but process the information in such a way that it is no longer threatening. To do this, a person may use disengagement or self-exempting beliefs (Brown & Cotton, 2003). For example, a person who drinks an unsafe amount may think "yes, I drink too much, but life is too short not to have fun". Although there is limited alcohol related research on this defensive process, a field-experiment examining smokers' intentions to quit, found that those who showed high levels of disengagement beliefs, were significantly less likely to quit smoking at both two and eight-month follow-up points (Dijkstra, 2009).

Suppression. Suppression involves the inhibition of thoughts about the message and the fear associated with it. In a lab-based study by Nielsen and Shapiro (2009), participants were shown either a high fear or low fear anti drink driving message, and then asked to spend three minutes writing about what they had seen. After this they were asked to identify whether the words on a computer screen were real or fake. Those exposed to high fear messaging before this activity showed slower reaction times to alcohol related words, which suggests participants had suppressed the threatening information. Although these results could be simply interpreted as more evidence for avoidance, it does appear that Nielsen and Shapiro's (2009) study shows evidence of suppression because if participants had been avoidant they would be equally as fast or slow to respond to all the real words shown in the advertisement, as they would have most likely avoided looking at the entire message.

However, as participants were slower to identify words semantically related to drinking and driving (i.e. the cause of the threat), this indicates suppression. Further study on this process showed that this effect (ignoring or having slower reaction times to threatening words) is more likely to occur in those with a repressive coping style, in which individuals ignore their strong emotions as a form of self-protection (Newman, & McKinney, 2002). This supports the interpretation that the cognitive process being used is in fact, suppression

Defensive processes are adaptive as they reduce anxiety and the negative emotions elicited by messages, thus, preserving emotional well-being. However in doing so they reduce the persuasiveness of the message (Freeman, Hennessey, & Marzullo, 2001; Harris & Napper, 2005). Research also suggests that objective vulnerability towards the behaviour shown in a public health message causes people to be more defensive, which is problematic, as those more likely to experience an adverse health outcome are the target audience for almost all public health campaigns (Schuz, Schuz, & Eid, 2013; Van Koningsbruggen, Das, Roskos-Ewoldsen, 2009). This study aims to examine the mechanisms that could reduce these defensive processes and increase the effectiveness of public health messages.

Self-Affirmation Theory

Self-affirmation interventions have been shown to reduce the incidence of defensive processing, which suggests they can improve the effectiveness of fear-based messages (Epton, Harris, Kane, van Koningsbruggen, & Sheeran, 2015; Reed, & Aspinwall,1998). Self-Affirmation theory proposes that people are innately driven to maintain their sense of 'self-integrity' or competency within themselves (Steele, 1988). This sense of integrity is threatened by a high fear message, and to cope, people engage in defensive processing, particularly if the message has a high level of self-relevance. Self-affirmation interventions are seen to restore self-integrity.

One method of inducing a sense of self-integrity is to affirm personally-important values. Values constitute core elements of self-perception and definition (Schwartz, 2012). There is consistent support for the proposal that affirming people by recognising and reminding them of their values, minimises defensive processing, which in turn increases the persuasiveness of the message and intention to change behaviour (Cohen, & Sherman, 2014; Klein, & Harris, 2009). A meta-analysis of 134 studies featuring health messaging on a variety of behaviours including smoking, drinking, and unsafe sex, examined the effect of self-affirmation on message acceptance (64 studies; N = 5,564), behavioural intention (34 studies; N = 3,433), and behavioural outcomes (46 studies; N = 2,715). Self-affirmation was positively correlated to all of the outcome variables, albeit with moderate effect sizes (Epton et al., 2015).

Although the relationship between self-affirmation and alcohol use has not been extensively explored, Armitage, Harris and Arden's (2011) study examined this relationship. They found that the participants (n = 278) who completed a self-affirmation reportedly read more of the message, believed they would be able to recall more of it if asked, showed higher levels of subjective risk, and were less likely to deny the validity of the facts presented to them, compared to those who did not perform a self-affirmation. More importantly, participants in the self-affirmation groups decreased their alcohol consumption by a mean of over one standard drink per week, whereas the control group showed no behaviour change.

The most prominent theory of how self-affirmation increases feelings of self-integrity, and therefore, reduces defensive processing, was introduced by Sherman, & Cohen (2006). They theorised that when participants are asked about their core values and how they enact them, it affirms a persons' self-integrity in a non-threatened aspect of their life, making it more salient. This maximises a sense of global competence and is effective regardless of whether the value and message are connected (Critcher, & Dunning, 2015).

The theoretical focus on self-integrity, however, ignores extensive research showing that social support and interpersonal relationships significantly improve well-being and are an essential resource for coping with a threat (Cohen, & Janicki-Deverts, 2009). It has been shown that being asked to write about social belonging, reduces feelings that a persons' core identity is being threatened (Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013). It follows that being made aware of support systems and connectedness to others, it might allow individuals to cope with the high fear messages. Indeed, Crocker, Niiya and Mischkowski, (2008), found that the success of self-affirmation in reducing defensive processing depended, not upon self-referent variables, but on other-directed feelings, such as connectedness to others.

Although it is relatively new and under-researched, the importance of affirming social relationships in reducing defensive processing has been examined through other-affirmation manipulations. Other-affirmation is a values-affirmation manipulation whereby, participants write about a value that important to them and how others may enact it in their day lives, thus imposing an interpersonal dimension onto personally important values such as; honesty, forgiveness, loyalty etc. Attachment theory proposes that people are innately drawn to others for comfort and support, this need is especially prevalent when a person feels threatened (Bowlby, 1988). Furthermore, affirming that peoples' values are similar to those around them has been shown to increase wellbeing and allow them to feel more connected to others (Sorthiex & Lönnqvist, 2015).

Emerging research suggests that other-affirmation may also decrease defensive processing when viewing a high fear, anti-alcohol message. In their initial study of other-affirmation, Brown et al. (2019) found that those who completed an other-affirmation, showed less attentional avoidance (measured by reading time), more favourable evaluations of an anti-alcohol message, increased risk perceptions, and increased intentions to reduce

alcohol consumption, when compared to both the control and self-affirmation conditions. The current study will explore the effect of both self- and other-affirmations on reducing defensive processing when looking at high fear imagery.

Connectedness to Others

The question as to whether other-affirmation is more effective than self-affirmation in reducing defensive processing is an important one because it may lead to more effective public health campaigns and interventions.   It was also suggested that possible mediators for the effect of other-affirmation on defensive processing be explored to clarify why these effects might occur. (Brown et al., 2019). Connectedness has been found to mediate self-affirmation effects (Crocker et al., 2008), and it is reasonable to hypothesise other-affirmation would lead to greater feelings of connectedness, thus, connectedness could mediate other-affirmation effects. If connectedness is important in reducing defensive processing, two important questions are likely to be, with whom do people feel connected, and do effects depend upon the closeness of those connections. Other-affirmation research has not yet tested whether there is a difference in how effective other-affirmation interventions are depending on how close a person is to the individual or group they are thinking about.

Interpersonal closeness has been widely studied and measured in a variety of ways including; the 6-item Closeness subscale of the Revised Adult Attachment Scale-Close Relationship, the 20-item UCLA Loneliness Scale Version 3 and the 12 item Unidimensional Relationship Closeness Scale (Collins & Read, 1990; Dibble, Levine, & Park, 2011; Russell, Peplau & Cutrona 1980). In this study, the Perceived Interpersonal Connectedness Scale was used. This scale was chosen because, although early research focused on interpersonal closeness in the context of romantic partners, current research suggests that platonic

friendships and familial relationships can have similar levels of closeness and benefits (Ainsworth, 2002; Holland, Reynolds, & Weller, 2007).

The Perceived Interpersonal Connectedness Scale allows for the measurement of the closeness of non-romantic relationships. Research has shown that feelings of interpersonal closeness are important to social and cognitive development, a protective factor against developing mental illnesses throughout the lifespan and is associated with increased feelings of security and stability (Hawkley, & Cacioppo, 2010; Lakey, Orehek 2011; Lindon, 2012). In relation to self- and other-affirmation, those who feel a higher level of closeness, are believed to also feel as though they have more resources to deal with the perceived threat of high-fear messaging.

The Current Study

Aim and Hypotheses. The aim of the current study is to determine the effectiveness of self and other-affirmation in decreasing defensive processing of high fear anti-alcohol messages and, if an effect is found to explore why it might occur. Specifically, it will ask participants to complete a control, self-affirmation or other-affirmation intervention before exposing them to a high-fear anti-alcohol message. This will provide important evidence for future public health campaigns. The following hypotheses were tested:

(1) Self- and other-affirmation manipulations significantly increase intentions to reduce alcohol consumption and significantly increase perceived risk and message acceptability.

(2) Increased feelings of connectedness mediate the effectiveness of other-affirmation manipulations.

(3) Other-affirmation interventions are more effective when feelings of interpersonal relatedness is higher.

Method

Participants

Forty-eight undergraduate psychology students (28 female, 20 male) and 153 participants from a snowball sample (127 female, 24 male, 2 neither) were recruited for this study. Participants in the student sample were aged between 18 to 46 (M =19.96, SD = 4.14) and the participants in the snowball sample were aged between 16 to 65 (M = 31.01, SD = 11.42). A score of five and above on the AUDIT-5 (A five-item version of the Alcohol Use Disorders Identification Test) indicates hazardous consumption of alcohol which both samples reached. The student sample and snowball sample had AUDIT-5 scores of 6.83 and 5.40 respectively. In the snowball sample, current country of residence was also collected with all participants residing in Australia.

Procedure

Following ethics approval from the School of Psychology Human Research Ethics Committee at the University of Adelaide (approval number 19/36; see Appendix A), potential participants were recruited from the Psychology 1A course at The University of Adelaide. Eligibility requirements included being over 18 years of age, and consumption of alcoholic drinks at least once a month. As the initial recruitment strategy via the first-year student research participation pool did not result in sufficient participants, a snowball sampling strategy was also conducted. This second round of recruiting was done by posting a flyer to various Facebook pages (see Appendix B), and participants were then encouraged to share this with their networks.

All potential participants were directed to a link with further information about the study (see Appendix C), consent was inferred when the participant clicked "next" (see Appendix C). The participants were not told the aim of the study was to measure defensive

processing but instead told that the study was interested in the effect of persuasive messages and their effect in either reducing or eliminating risky behaviours such as drinking alcohol or smoking. This initial omission was to mitigate the potential effects of demand characteristics. Once consent was provided, participants were presented with demographic questions and an eligibility question which was, "How often do you have a drink containing alcohol?". Those who indicated they never consumed alcohol were directed to a disqualification page.

Those participants who passed the eligibility question were then presented with the AUDIT-5 questionnaire and the Coping Orientation to Problems Experienced Inventory (COPE) questionnaire (behavioural disengagement, mental disengagement and denial subscales). Participants were then randomly assigned them to one of the three conditions; either the control, self-affirmation or other-affirmation groups. Participants read the "Menace of Alcohol" booklet and then, depending on the condition they were assigned to them they completed the self-affirmation, other-affirmation or the control manipulation. Immediately after the manipulation participants were asked to complete the Feelings Scale. This questionnaire was administered directly after the intervention to decrease the presence of extraneous variables when examining the potential mediation effect.

Finally, all participants were then required to complete measures on intentions to reduce drinking, evaluations of the message, and their perceived risk from their current drinking habits. Those in the other-affirmation condition then completed a measure of relational closeness towards the individual or group they had thought about while completing intervention questions, those participants in the control and self-affirmation groups did not do this because they were not instructed to think about another individual or group. All participants were debriefed as to the true intent of the study when they had completed it.

Materials

      Demographic questions. Participants were required to respond to items relating to gender and age.

      Alcohol Use. A five-item version of the Alcohol Use Disorders Identification Test (AUDIT-5; Kim et al., 2013, see Appendix D) was used. Participants were required to respond to items asking about the frequency of alcohol consumption, the amount of alcohol consumed on those occasions, the frequency over the last year that they were; 'not able to stop drinking once you had started' and 'failed to do what others have expected of you because of your drinking' and finally whether or not a friend, relative or health professional had been concerned the participant's drinking or suggested they reduce drinking. An additional question was also included asking, "How often do you have this many (four or five depending on gender) or more standard drinks on one occasion?". Response options for the first question were;

      "Never", "Monthly or less", "2 to 4 times a month", "2 or 3 times a week", "4 or more times per week". For the second question they were; "1 or 2", "3 or 4", "5 or 6", "7 to 9", "10 or more". For questions 3, 4 and 6 the answer options were "Never", "Less than monthly", "Monthly", "Weekly", "Daily or almost daily". For question 5 the answer options were; "No", "Yes, but not in the past year", "Yes, during the past year".

      The AUDIT-5 measures two different aspects of drinking to ascertain the level of risk, the frequency of alcohol consumption, and dependence on alcohol. These six questions were used because; they have been shown to be validated in student populations, there are less questions than the AUDIT, reducing survey fatigue, this was the survey used in the study that is being partially replicated (Brown et al., 2019). Question 6 was used to compare the participants drinking to Australian guidelines, this country specific information is not

included in the AUDIT-5. The AUDIT-5 reliably assesses potentially dangerous drinking patterns and dependence risk, in this study Cronbach's Alpha = 0.82, in the current study Cronbach's Alpha = .79.

Defensive processing. To measure base defensive processing, dispositional denial, mental disengagement and behavioural disengagement scales of the Coping Orientation to Problems Experienced Inventory (COPE) were used (Carver, Scheier & Weintraub, 1989; see Appendix E). These subscales were used instead the entire COPE to reduce survey fatigue and increase completion rates (Pecoraro, 2012). This scale required participants to report on their usual behaviour in response to stressful events. Each subscale consists of four questions, including, "I turn to work or other substitute activities to take my mind off things" (behavioural disengagement), "I daydream about things other than this" (mental disengagement), and "I pretend that it hasn't really happened" (denial). Participants are required to respond on a 4-point Likert Scale ranging from 1 "I usually don't do this at all" to 4 "I usually do this a lot". A total score for each subscale is computed, with higher scores indicating higher levels of defensive processing. This scale has been validated extensively in public health contexts (Power et al., 2003) and higher scores have been correlated with a lower likelihood of engaging in positive health behaviours (Carver, Pozo, Harris, Noriega, Scheier & Robinson, 1993). Brown and Locker (2009) have also previously used this scale and found significant correlations between barhavioural intentions. The Cronbach's alpha found in the current study is .78.

Experimental Manipulation: The self-affirmation manipulation used McQueen and Klein's (2006) values essay. This affirmation asks participants to choose their most important value, explain why it is important to them, and how they enact this value in their everyday life. The other-affirmation was presented in a similar format but asked participants to specify their most important value and to describe how others enacted this value. Those in the control

group were simply asked to describe an office and write what it might look like (see Appendix F). To avoid a potential, confound, all of the participants were asked to write a total of 4-5 sentences. Although Brown, et.al (2019) use a kindness affirmation, in the current study a values-based manipulation was chosen because it is a more common manipulation in self-affirmation research (Armitage, & Rowe, 2011) and in using a kindness based manipulation the question may tap into social support, creating a confound.

Anti-Alcohol Message. The alcohol messaging was contained in a booklet called "The Menace of Alcohol" (see Appendix G). This booklet was created by Brown and Locker (2009) and has been used to measure defensive processing in previous research (Brown & Richardson, 2012; Brown & West, 2015). The message contained 889 words and consisted of; alcohol guidelines, the consequences of alcohol misuse, and the risky behaviours associated with consuming alcohol, emphasising the cause and effect relationship. It included high fear, graphic images accompanying the information (e.g., a diseased liver, a drink driving victim).

At the end of the message, it stated that the negative outcomes could be avoided by drinking less and that "most young people find it easier to reduce drinking than they think". There were eight recommendations on how to change behaviours to facilitate less drinking, such as "only take a set amount to spend on alcohol". The booklet is suitable for those at a 13-15 year old reading level, so the information was likely to be understood by everyone in the current sample (Brown et al., 2019). As each participant looked at the survey on their personal device, it cannot be guaranteed that all the pictures were at the same resolution, but great care was taken to ensure that they were visible and not distorted.

Intention to Reduce Alcohol Consumption. Intention to reduce alcohol consumption was measured by asking participants the following questions; "To what extent

are you willing to reduce your alcohol consumption?", "To what extent do you intend to reduce your alcohol consumption?" and "To what extent are you planning to reduce your alcohol consumption?" (see Appendix H). Participants were required to respond on a seven point Likert scale ranging from "not at all" to "completely" Higher scores indicated higher intention to change behaviour. The Cronbach's Alpha for this scale was .92.

Message Evaluation. The message was evaluated on four different dimensions; persuasiveness, whether it was good or bad, effectiveness, and cleverness. These dimensions were measured on a Likert scale between 1 and 7 with 1 being labelled; "not persuasive", "bad", "stupid" and "not effective" and 7 being labelled "persuasive", "good", "clever" and "effective". (see Appendix I) Brown and Locker (2009) reported Cronbach's Alpha of 0.96 and in the current study a Cronbach's Alpha of .89 was found.

Risk. Subjective risk to the negative impacts of alcohol consumption were measured on a seven point Likert Scale ranging from "no chance" to "certain". Before each question the following qualifier was stated- if you continue to drink the way you do (Brown & Locker, 2009; see Appendix J). The questions included estimated risk of alcohol making their interpersonal relationships more difficult, becoming addicted to alcohol, becoming sick or injured as a result of alcohol consumption, and experiencing withdrawal symptoms if they were to stop drinking. A total score was computed, with higher scores indicating higher perceptions of risk. Previous research has found a Cronbach's Alpha of 0.85 for this scale (Brown & Morley, 2007) and the Cronbach's Alpha found in the current study was .94.

Feelings Items. To measure which feelings were induced by the intervention 18 different emotions were presented, and participants were asked to rate the extent to which they felt these emotions. These responses were measured on a five point Likert scale ranging from 1 "not at all: to 5 "extremely". These were the same emotions measured by Crocker et

al. (2008) they included; loving, connected to others, proud, strong, admirable, powerful, in

control, humble, empathic, vulnerable, superior, fallible, victimized, weak, out of control,

inferior, ashamed and powerless (see Appendix K).

Interpersonal Closeness. In the other-affirmation condition the participants were

asked to identify the 'target person/group' they thought of when being asked about how

another person enacted their important values. They were then asked to rate their level of

closeness to this person or group on the Perceived Interpersonal Closeness Scale (PICS). This

required participants to choose the picture that more accurately represents their relationship.

There were six variants of this picture to choose from, each with a number attached to them.

The first picture is of two separate circles, indicating a low level of closeness, the two circles

become progressively closer together until the last two are almost completely overlapping.

Higher scores indicate a higher level of closeness (see Appendix L).

Ethical Considerations

Participation in this study was voluntary and all participants were informed they were free to

withdraw during any stage of the study. Participation in this study was anonymous with only

the aggregate data being presented in the findings.

Using emotive messages in this study was deemed necessary, as these are the most widely

used images in health promotion campaigns and the most likely to trigger a defensive

response (Durkin, Beiner & Wakefield, 2009). Care was taken to ensure that the images and

text used were comparable to current health promotion campaigns. This both preserved

external validity and meant that participation in this study did not expose participants to

greater hazard than would be caused by exposure to health promotion advertising. Although

using an online survey meant that the researchers could not assess potential distress at the

time of completion, the participants were reminded that images could be aversive at the

beginning of the survey and immediately before the images were shown, and they were instructed to close the survey if they became distressed. The data indicated that 91 people dropped out in total, 21 in the control group, 24 in the self-affirmation group and 36 in the other-affirmation group. The most common question to drop out at was before the intervention with 44.44% dropping out at this point. This does not indicate distress because they had not seen the images. However, it could indicate survey fatigue and boredom

Participants were also provided with resources and support services at the beginning and end of the survey (see Appendix C). These included the student counselling service, a crisis support line, and alcohol support counselling. Participants were also encouraged to contact the researchers should they have any questions or concerns, or should they experience any distress.

Data Analysis Plan

SPSS Version 25 was used to analyse the data

Preliminary analysis.

The student and snowball samples were compared using a multivariate analysis of co-variance (MANOVA), to check whether the samples differed on demographic or outcome variables.

A factor analysis was performed on the Feelings Scale. This reduced the number of potential mediators from 18 to 3. Oblique rotation allowed factors to be correlated and the factors that were theoretically interesting were used as mediators (connectedness). This was done because a methodological limitation of Crocker et al.'s (2008) original study was that they examined each items individual which increases the likelihood of a type 1 error.

Hypothesis 1. Overall means were computed, and a MANOVA examined the of the condition on the outcome variables of, intention to reduce alcohol consumption, message evaluation and risk perception (Good & Abraham, 2007). An ANOVA then run identify specific effects on variables.

Hypothesis 2. To test the indirect effects of connectedness on other-affirmation, self-affirmation, and defensive processing (measured by message evaluation, risk perception, intentions to reduce drinking) a mediation analysis using PROCESS, version 3.1, model 4 for parallel mediation was done. Bootstrapping was performed with 5000 resamples to estimate the 95% confidence intervals.

Hypothesis 3. This hypothesis predicts that other-affirmation effects will be magnified when interpersonal relatedness is higher. This was tested by examining Pearson correlations between interpersonal relatedness and the message evaluation, risk perception and intention to reduce alcohol consumption for participants receiving the other-affirmation manipulation.

Results

A post hoc power analysis was conducted and indicated that 105 participants were needed in each condition to have 80% power for detecting a small sized effect when the criterion for statistical significance is set at 0.05 (see appendix M).

Differences Between Student and Snowball Samples

A MANOVA revealed that the general population sample and student sample were not homogenous (Hotellings T=.33, $F(6, 147) = 10.61$, $p < .001$, $\eta^2_{partial} = .25$). A series of ANOVAs were run and found significant differences, with large effect sizes, in total AUDIT score, $F(1, 199) = 4.68$, $p < .05$ $\eta^2 = .02$; mean age, $F(1, 199) = 43.10$, $p < .001$, $\eta^2 = .18$; total COPE scores, $F(1, 199) = 15.84$, $p < .001$, $\eta^2 = .07$; intention to reduce alcohol consumption,

$F(1,199) = 8.51$, $p < .001$, $\eta^2 = .04$; and risk perception, $F(1, 199) = 12.86$, $p < .001$, $\eta^2 = .06$ (See Table 1). The only variable that did not show a significant difference was message evaluation, $F(1, 199) = 2.23$, $p = .13$ $\eta^2 = .01$.

Due to the significant differences in these samples when examining hypothesis one both the student and snowball samples were analysed separately. In the subsequent analyses including, the factor analysis, hypotheses two and hypothesis three, only the snowball sample was analysed as the student sample was considered too small (n = 48).

Table 1

Participant Age, AUDIT Score, COPE Score and Outcome Variables Means by Population

	Snowball Sample (n = 153)	Student Sample (n = 48)
	M (*SD*)	*M* (*SD*)
Age**	31.01 (11.42)	19.96 (4.14)
AUDIT*	5.40 (4.05)	6.83 (3.85)
COPE**	1.73 (.34)	2.00 (.44)
Intention to Reduce alcohol consumption **	3.06 (1.61)	3.84 (1.66)
Risk Perception**	2.04 (1.19)	2.81 (1.57)
Message Evaluation	4.58 (1.25)	4.88 (1.01)

Note. *p < .05, **p < .01. AUDIT-5 = Alcohol Use Disorders Identification Test (5 item version), COPE = Coping Orientation to Problems Experienced Inventory.

Factor Analysis

A principal components factor analysis was used to reduce the 18 items to a smaller number of factors. As items were likely to be strongly intercorrelated, oblique rotation was used to provide a solution that provided maximum differentiation of factors (Russell, 2002). Initial analyses showed that negatively-worded items (i.e. fallible, victimized, weak, out of control, inferior, ashamed and powerless), loaded onto a single factor that was not associated with other factors. These items were then eliminated.

A three factor solution was obtained with eigenvalues of 4.182, 1.397 and 1.075 respectively, accounting for a total 51.94% of the variance. The pattern matrix is shown in Table 2. Factor 1 was characterised with higher loadings on strong, admirable, powerful, in control and pride. Factor 1 was interpreted as referring to a strong sense of individual worth and labelled 'self-worth'. Factor 2 was characterised with higher negative loadings on loving, connected to others and to a lesser extent proud, and was interpreted as referring to an inverse sense of 'connectedness'. Factor 3 was characterised with higher loadings on humble and empathic, and was interpreted as referring to 'other orientation'.

Table 2

Pattern Matrix for Feelings

Feeling	Factor 1	Factor 2	Factor 3
Loving	.03	**-.81**	.06
Connected to others	.28	**-.63**	-.05
Proud	**.59**	**-.36**	.10
Strong	**.74**	-.13	-.02
Admirable	**.67**	-.21	.13
Powerful	**.77**	-.01	.06
In control	**.60**	-.01	.09
Humble	.30	.12	**.43**
Empathetic	-.12	**-.27**	**.65**
Superior	.37	.02	**-.25**

Relationship Between; Control Self and Other-Affirmation, and Intention to Reduce Alcohol Consumption, Message Evaluation and Risk Perception

Snowball sample. There were no significant differences between the self-affirmation, other-affirmation and control conditions, $F(6,294) = .83$, $p = .55$. Follow-up ANOVAs revealed no effects on the participants' intention to reduce alcohol consumption, $F(2, 150) = .20$, $p = .82$, perceived risk associated with alcohol consumption, $F(2,150) = 2.09$, $p = .13$, and evaluation of the message, $F(2,150) = .32$, $p = .730$ (see Table 3).

Student Sample. The MANOVA revealed no significant differences between the self-affirmation, other-affirmation and control conditions, $F(6, 84)=1.77$, $p = .12$. Follow-up ANOVAs showed no effects on the participant's intention to reduce alcohol consumption,

$F(2,45) = .03$, $p = .97$); perceived risk associated with alcohol consumption, $F(2,45) = 1.08$, p

$= .35$, and evaluation of the message, $F(2,45) = 2.47$, $p = .10$ (see Table 4).

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Table 3

Means (SDs) or n (%) of Study Variables for the Snowball sample and Each Condition

	Control (n = 59)	Self-Affirmation (n = 50)	Other-Affirmation (n = 44)
Age	31.09 (11.09)	31.36 (11.26)	30.52 (12.26)
Gender	Females = 45 (76.27%)	Females = 46 (92%)	Females = 36 (81.82%)
	Males = 13 (22.03%)	Males = 4 (8)	Males = 7 (15.91%)
	Other = 1 (1.69%)		Other = 1 (2.27%)
AUDIT-5	5.93 (4.47)	5.24 (3.94)	4.86 (3.59)
COPE	20.76 (4.16)	21.12 (5.45)	20.32 (4.86)
Intention to Reduce Alcohol Consumption	3.12 (.21)	2.94 (.23)	3.11 (.24)
Risk Perception	2.29 (.15)	1.85 (.17)	1.94 (.18)
Message Evaluation	4.51 (.16)	4.57 (.18)	4.71 (.19)

Note.

AUDIT-5 = Alcohol Use Disorders Identification Test (5 item version), COPE = Coping Orientation to Problems Experienced Inventory.

Table 4

Means (SDs) of Study Variables for the Student Sample and Each Condition

	Control (n = 15)	Self-Affirmation (n = 16)	Other-Affirmation (n = 17)
Age	19.40 (1.40)	20.56 (6.89)	19.88 (1.87)
Gender	Females = 9 (60%)	Females = 10 (62.5%)	Females =9 (52.94%)
	Males = 6 (40%)	Males = 6 (37.5%)	Males = 8 (47.06%)
AUDIT-5	7.40 (4.88)	7.06 (3.19)	6.12 (3.50)
COPE	1.94 (.51)	1.85 (.36)	2.18 (.39)
Intention to Reduce Alcohol Consumption	3.76 (1.64)	3.88 (1.81)	3.88 (1.63)
Risk Perception	2.48 (1.69)	2.65 (1.26)	3.25 (1.71)
Message Evaluation	5.15 (.93)	4.44 (1.12)	5.06 (.89)

Note.

AUDIT-5 = Alcohol Use Disorders Identification Test (5 item version), COPE = Coping Orientation to Problems Experienced Inventory.

Mediation Analysis

The hypothesis that increased feelings of connectedness mediate the effectiveness of self- and other-affirmation manipulations was tested using the mediation model described by Hayes (2017), using the PROCESS macro for SPSS (Model 4). The three level manipulation of self- and other-affirmation and control cannot be used as a variable in correlational analysis. Thus, it was recoded into two separate variables; self-affirmation manipulation, which compared the self-affirmation condition to the control condition (values were self-affirmation = 1, control = 0), and other-affirmation manipulation comparing other-affirmation condition to the control condition (values were other-affirmation = 1, control = 0).

Six mediation analyses were performed, predicting intention, risk and message evaluation from self-and other-affirmation manipulations. The three factors obtained from the factor analysis; self-worth, connectedness and other orientation were used as simultaneous mediators. Indirect effects were estimated through bias-corrected bootstrapping of 5,000 resamples with replacement, with 95% lower and upper confidence limits.

As shown in Table 5, the 95% bias corrected confidence intervals for the indirect effect included 0 for intention to reduce alcohol consumption, risk perception and message evaluation. This indicated that there was no mediation between self-worth , connectedness and other orientation and self-affirmation (See figures 1, 2 and 3). As shown in table 7 the 95% bias corrected confidence intervals for the indirect effect included 0 for intention to reduce alcohol consumption, risk perception and message evaluation. This indicates that there was no mediation between self -worth, connectedness and other orientation and other-affirmation (Figures 4, 5, 6). The direct effects for both meditations are shown in tables 6 and 9 respectively.

Table 5

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Partially Standardised Bootstrapping Estimates of the Indirect Effect of the Self-Affirmation

Condition on Outcome Variables Mediated by the Connectedness Factor

	Corrected Estimate	SE	Lower 95%	Higher 95%
Intention				
Total indirect effect	.04	.08	-.09	.22
Self-Worth	-.01	.05	-.12	.09
Connectedness	.07	.07	-.02	.24
Other Orientation	-.02	.03	-.10	.03
Risk				
Total indirect effect	.01	.06	-.10	.14
Self-Worth	-.00	.04	-.08	.08
Connectedness	.02	.05	-.08	.14
Other Orientation	-.00	.02	-.06	.04
Evaluation				
Total indirect effect	.03	.06	-.09	.16
Self-Worth	.00	.03	-.05	.06
Connectedness	.02	.05	-.09	.13
Other Orientation	.01	.03	-.04	.07

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Table 6

Non-Standardised Outcomes of Bootstrapping Estimates of the Direct Effect of the Self-Affirmation Condition on Outcome Variables Mediated by the Connectedness Factor

	Corrected Estimate	SE	Lower 95%	Higher 95%
Intention	-.25	.30	-.85	.35
Risk	-.45	.23	-.90	.00
Evaluation	.03	.24	-.44	.51

Table 7

Partially Standardised Outcomes of Bootstrapping Estimates of the Indirect Effect of the Other-Affirmation Condition on Outcome Variables Mediated by the Connectedness Factor

	Corrected Estimate	SE	Lower 95%	Higher 95%
Intention				
Total	.02	.06	-.09	.16
Self-Worth	.00	.04	-.06	.11
Connectedness	.01	.06	-.11	.13
Other Orientation	.00	.03	-.05	.07
Risk				
Total	.00	.04	-.07	.09
Self-Worth	-.00	.02	-.05	.05
Connectedness	.00	.02	-.05	.05
Other Orientation	.00	.02	-.04	.06
Evaluation				
Total	.02	.07	-.12	.16
Self-Worth	.00	.03	-.05	.07
Connectedness	.02	.07	-.14	.14
Other Orientation	.00	.03	-.03	.08

Table 8

Non-Standardised Outcomes of Bootstrapping Estimates of the Direct Effect of the Other-

Affirmation Condition on Outcome Variables Mediated by the Connectedness Factor

	Corrected Estimate	SE	Lower 95%	Higher 95%
Intention	-.05	.32	-.69	.58
Risk	-.34	.26	-.85	.16
Evaluation	.17	.24	-.31	.65

Figure 1. Path diagrams showing total indirect and direct effects as standardised coefficients

of self-affirmation on intention to reduce alcohol consumption.

Figure 2. Path diagrams showing total indirect and direct effects as standardised coefficients of self-affirmation on risk perception

Figure 3. Path diagrams showing total indirect and direct effects as standardised coefficients of self-affirmation on message evaluation.
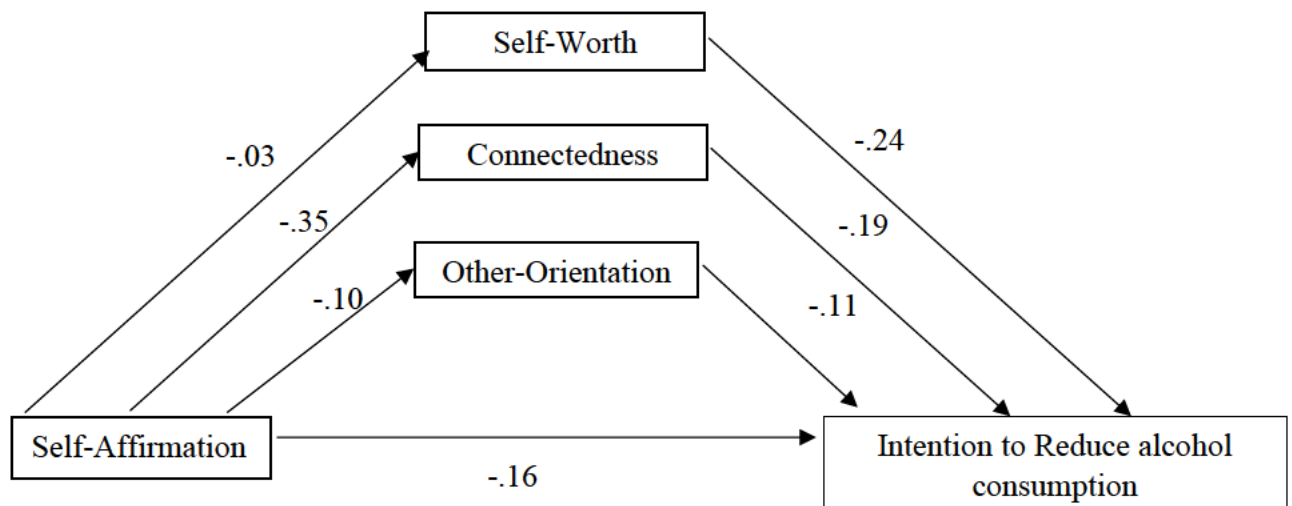
Figure 4. Path diagrams showing total indirect and direct effects as standardised coefficients of other-affirmation on intention to reduce alcohol consumption
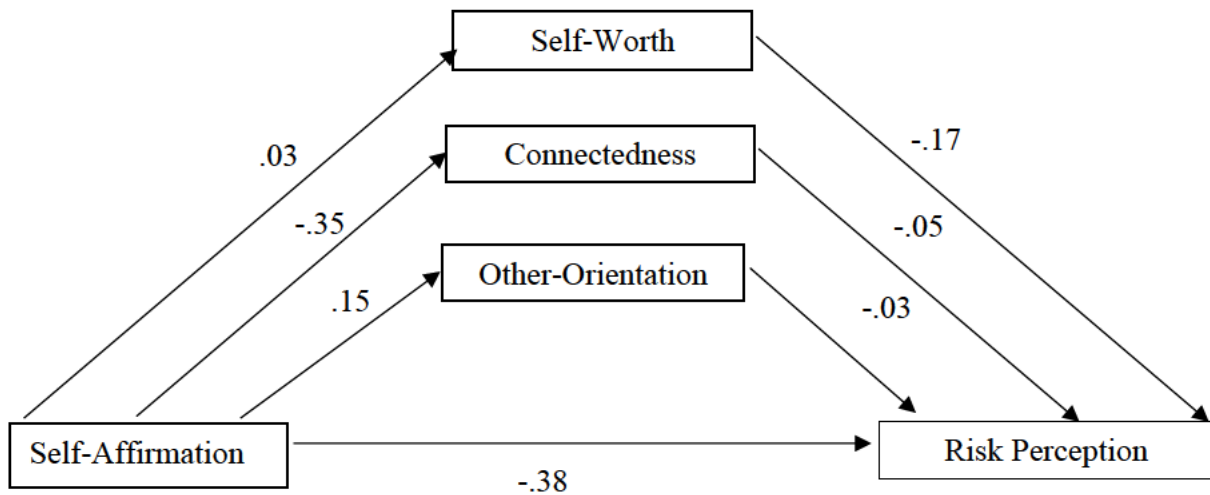

Figure 5. Path diagrams showing total indirect and direct effects as standardised coefficients of other-affirmation on risk perception.
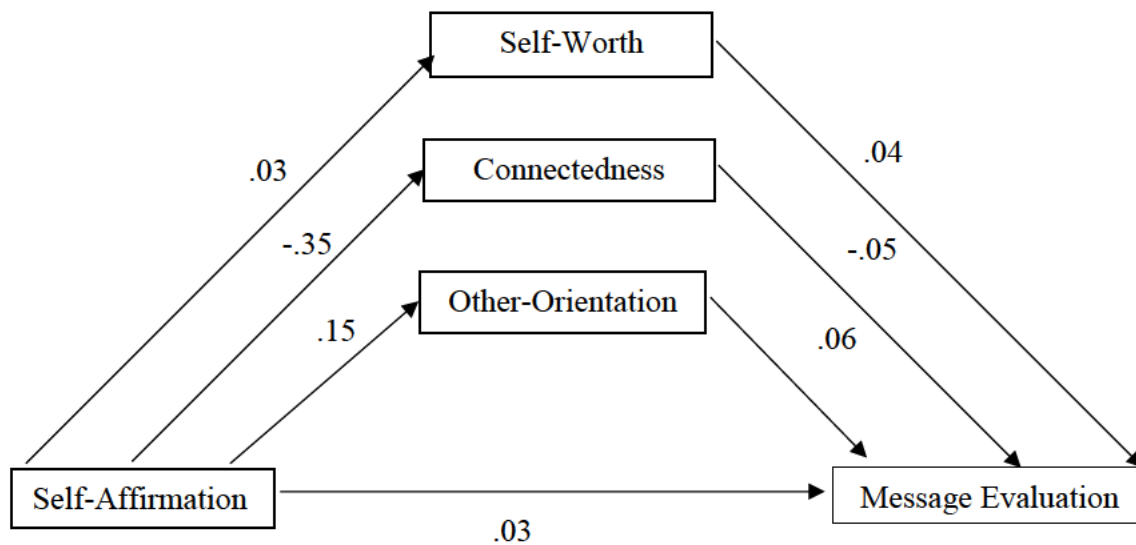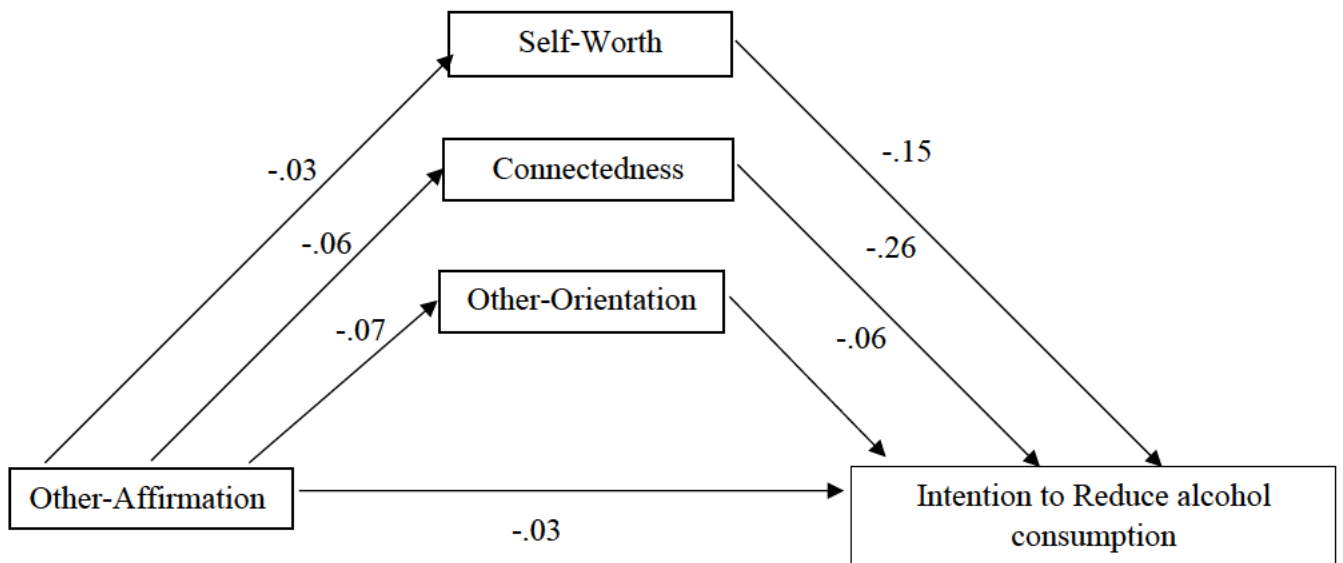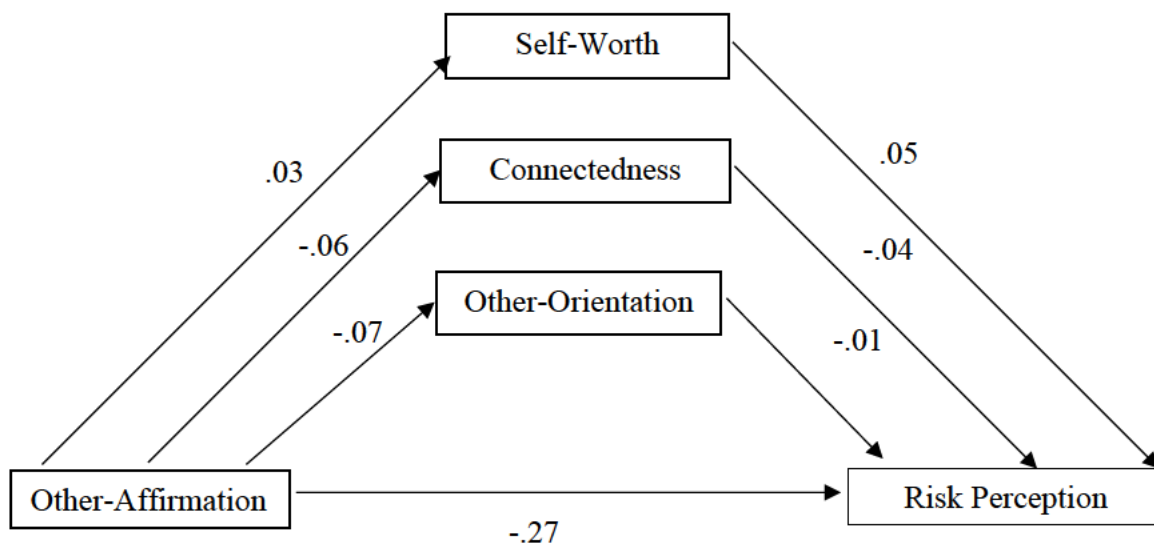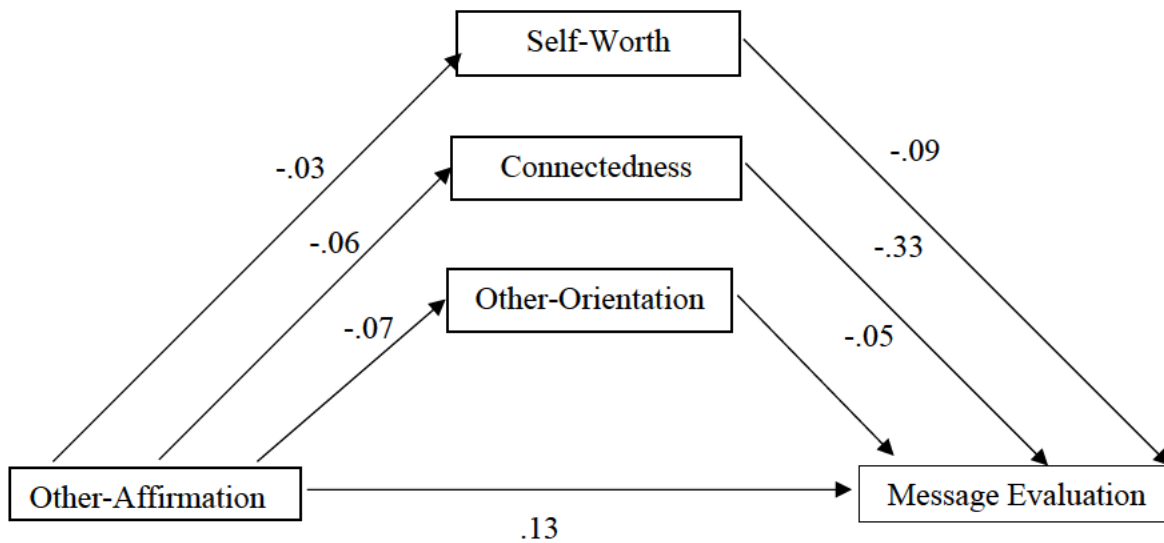
Figure 6. Path diagrams showing total indirect and direct effects as standardised coefficients of other-affirmation on message evaluation.

Correlation Between Other-Affirmation and Interpersonal Closeness

The hypothesis that other-affirmation will be positively correlated with interpersonal relatedness was tested using Pearson's correlations. This test indicated that intention to reduce alcohol consumption, $r(42) = .23$ $p = .14$, message evaluation, $r(42) = .26$, $p = .09$, and perceived risk, $r(42) = -.04$, $p = .88$ were not significantly correlated with the level of closeness of the chosen target person.

Post-Hoc Analysis: Engagement with the Affirmation Tasks

To explore one plausible explanation for null findings in hypotheses one, two and three post hoc analysis was completed on the number of words each participants wrote. Predicted effects are contingent upon participant's engagement in the affirmation task. Thus, an effect of the manipulation might be suppressed by participants who engage less with the task. This post hoc analysis was examined by creating a variable that measured the total numbers of words that participants used to describe their favoured values in the self, other-

affirmation and office furniture in the control task. Number of words is assumed to be an indicator of engagement. This analysis was conducted on the snowball sample only as it was decided the student sample was too small. Participants wrote a mean of 44.41 words (SD = 27.70). To test this, PROCESS moderation analyses (Model 1) were used to examine any moderating or facilitating role of the number of words used. Table 9 shows the amount of variance explained by each of the proposed moderation effects.

Table 9

Total Number of Words Moderation Effects

Independent Variable	Dependent Variable	R^2 Ch	F	df	*p*
Self-affirmation	Intention to Reduce Alcohol Consumption	.03	4.14	1,136	.04
Self-affirmation	Message Evaluation	.01	1.91	1,136	.17
Self-affirmation	Risk Perception	.00	.15	1,136	.70
Other-affirmation	Intention to Reduce Alcohol Consumption	.00	.00	1,131	.95
Other-affirmation	Message Evaluation	.00	.38	1,131	.54
Other-affirmation	Risk Perception	.01	1.00	1,131	.32

The total number of words interacted with the self-affirmation manipulation to significantly predict intention to reduce alcohol consumption. Figure 7 shows an interaction plot generated from PROCESS estimates of most likely intention score for the number of words used for self-affirmation and control conditions. The plot shows a cross-over effect whereby fewer words written in the self-affirmation condition predicted lower intentions to

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reduce. The opposite relationship existed in the control. This is not consistent with the idea

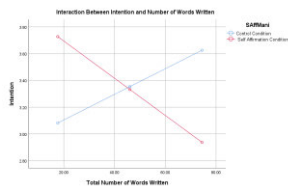that greater task involvement facilitates affirmation effects.

Figure 7. Interaction between intention to reduce alcohol consumption and the number of

words written in the Self-Affirmation condition.

Discussion

The present study examined the effect that high-fear messaging has on the effectiveness of anti-alcohol related public health messages. High-fear messaging has been shown to elicit defensive processing to cope with the stress it induces (Ruiter et al., 2014; van 't Riet, & Ruiter, 2013). The current study sought to examine whether receiving a self- or other-affirmation intervention before viewing anti-alcohol messages, would help to mitigate this defensive reaction, and thereby increase the effectiveness of these messages.

The results of the current study did not support the first hypothesis, revealing neither self- and other-affirmation were effective at reducing the defensive processing that occurs in response to anti-alcohol high-fear messaging. There was no significant difference found between the conditions, however, suppression effects may have occurred. This is where direct effects and indirect effects cancel each other out, so mediation analysis was conducted as planned. Finally, it was found that other-affirmation effects were not positively correlated interpersonal closeness between participants and the target person. This hypothesis was based on the theory that those who feel they have greater closeness, will feel as though they have more resources to deal with the perceived threat, and feel as though they are more capable of changing their behaviour.

One possible explanation for these null finding is that the theory itself may be inadequate. While previous research has shown that self-affirmation decreases levels of defensive processing when viewing a high fear message (Epton et al., 2015), it has also been found that self-affirmation is less efficacious in reducing defensive processing relating to social behaviours such as drinking (Knight & Norman, 2016). These alcohol specific findings have not been explored as most of the studies examining self-affirmation use smoking as their target behaviour (Dibello, Neighbors, & Ammar, 2015). While this may be an explanation for

the findings in the self-affirmation condition it does not explain the null findings for other-affirmation in the current study.

Although other-affirmation has not been studied as extensively as self-affirmation, it is reasonable to speculate that affirming one's values in relation to other people in one's life, would have a greater impact on social behaviour than affirming one's values without reinforcement of this social context. Initial research into other-affirmation did find an effect that was shown to be separate from self-affirmation, however the current research did not support these findings (Brown et al., 2019).

Results revealed that connectedness did not mediate the relationship between other-affirmation and intention to reduce alcohol consumption, message evaluation, and risk perception. This was contrary to previous findings showing that self-affirmation is mediated by connectedness (Crocker et al. 2008). This research used a single question to measure connectedness, which is not sufficient to measure a multi-dimensional construct. Crocker et al. (2008) also tested each feeling separately, increasing the likelihood of a type 1 error, which may indicate that the effect was either non-existent or not very strong. With a limited number of existing studies exploring this relationship it is difficult to draw a likely conclusion, however, the present findings suggest that neither self- or other- affirmations decrease defensive processing to a anti-alcohol message, for which there are several possible explanations.

A post-hoc analysis was conducted to examine whether the number of words written in response to the intervention questions would moderate the effectiveness of the intervention. The rationale for this hypothesis was that, despite explicit instructions, the number of words written by each participant varied substantially (i.e. ranging from three to one hundred and sixty-two). It was hypothesised that different lengths of responses were

indicative of the level of engagement with the intervention (i.e. less words would suggest a decrease in intention to reduce alcohol consumption, message evaluation and risk perception). The analysis found that words did not have a moderating effect on the intention to reduce alcohol consumption, message evaluation, or risk perception, in either the control and other-affirmation groups. It also showed no effect in the self-affirmation group for message evaluation and risk perception. Interestingly, results did reveal a significant relationship between self-affirmation and intention to reduce alcohol consumption. This relationship, however, did not go in the hypothesised direction, but instead, a greater number of words was shown to decrease intention to reduce alcohol consumption in the self-affirmation condition. It is unclear why this interaction occurred, however, it seems that the number of words written is unlikely to have contributed to the null findings in the current study.

Further explanations for the null findings come from methodological differences between previous studies and the current study. In the current study, the measures of defensive processing were subjective and indirect, meaning they could be influenced by the participants' own biases and as a result may not serve as valid measures of defensive processing. Brown and Richardson (2012) utilised eye movement to measure defensive processing, which was objective and quantifiable, and although lack of attention on a booklet can result from other factors, it is reasonable to assume that, in a controlled laboratory setting, it measured attentional avoidance. This may highlight the need for the various types of defensive processing to be considered separately, as this allows them to be measured directly and objectively, compared to a more general concept of defensive processing.

The current study also delivered the intervention in more naturalistic settings, at the choice of the participant. This unique methodology is a strength, however, it it may also have contributed to the difference in findings between this study and previous literature. This

methodology limits internal validity, as the sampling frame can no longer be controlled and participants may be distracted, with no way to ensure they attend to the study. The online methodology does however increase ecological validity. First it would be important to clarify the effects of other-affirmation in a laboratory, but following this, results of an ecologically valid method would provide a stronger argument for the effect of affirmation on real-world anti-alcohol public health initiatives. In practice, these interventions would most likely be shown before Internet or television advertisements, so future research may be most beneficial if conducted online. This is especially important, if younger viewers are the target audience of public health messages, as they spend a considerable amount of time online (Giménez, Luengo, & Bartrina, 2017).

Strengths of the Current Study

Interestingly, many of the methodological differences previously discussed, could also be considered the main strengths of this research. Student populations are often used in psychological research because they are easy to recruit and incentivise (Henrich, Heine, & Norenzayan (2010). However, limited research has been conducted on young people who are not students, and on middle-aged adults. Even though students do drink more than their non-student counterparts and older populations (Reavley, Jorm, McCann, & Lubman, 2011), they are not the only population that may show defensive reactions to anti-alcohol messages. As public health messages are designed to have mass appeal, it is important for studies evaluating these interventions to be more representative of the wider population.

Most crucially, the current study extended the potential methodology of affirmation research. It is possible that affirmations do not work outside of a laboratory context or that some of the previous research has returned a positive effect, in part, due to the Hawthorne Effect. This is where a participant alters their behaviour because they know they are being

watched *(*McCarney et al., 2007*).* Although an online methodology does come with its own biases and potential confounds, having this research conducted in a variety of settings will substantially add to the current evidence base. Conducting public health research online is more important than ever, because the Internet is increasingly becoming the most-utilised source of health information (Kivits, 2006; Pehora et al., 2015; Tan & Goonawardene, 2017; Zhang, Lu, Wu, & Shang Liu, 2018). Research has shown that more people use the Internet over their doctors, as a source of health information, with the three largest sources of online information coming from search engines, health portals and social media (Kahn, 2008). Considering the role the Internet plays in providing health-related information, it is important for public health bodies to prioritise online health messaging. Although the spreading of misinformation via social media channels is a concern, there are ways in which public health bodies can take control of false narratives and spread accurate health information (Bode & Vraga, 2017). Therefore, it is imperative to examine how defensive processing to public health messaging can be reduced in an online context.

Limitations of the Current Study

The findings from the current study must be interpreted in light of limitations regarding the affirmation manipulation, limited sample size/power, measurement of defensive processing, and self-report biases. Firstly, in terms of the affirmation manipulation, each participant was asked to write four to five sentences about their chosen value, however many did not. This may mean that each participant did not spend an adequate amount of time thinking about the affirmation and therefore it was not effective. This is a limitation to conducting this study online. However, future research could design online surveys so that participants cannot move on to the next question, before they have written the required amount. Although, post hoc analyses in the current study revealed the number of words did

not have an effect on scores on intention to reduce alcohol consumption, message evaluation or risk perception.

Secondly, the current study was limited in its statistical power, with a power analysis showing that to achieve an effect of .03, a total of 315 participants were needed, or 105 per group (see Appendix M). As the sample consisted of student and community members, and analyses revealed group differences, all subsequent analyses were conducted on each population separately. This reduced statistical power and may have resulted in a type 2 error. Although previous research had typically demonstrated small effect sizes for the impact of self-affirmation (Epton et al., 2015), it is worth noting that Brown et al. (2019) did find an effect with 195 participants. So although the current study's power limitations may have contributed to the null finding, it is unlikely to be the sole explanation for this outcome. Regardless, future research should ensure adequate sample sizes of both student and community populations are recruited and compared.

A final limitation to acknowledge is the use of self-report measures. As the current study relied on self-report, the results were subject to socially desirable responding. However, the potential for this effect to occur was mitigated, as participants were not told the true purpose of the study. Subjective measures of alcohol consumption were also used. However, these have shown to be fairly effective and correspond well to objective measures (Good, & Abraham, 2007). This is particularly true when responses are anonymous, and they are in a relaxed setting (Sobell, & Sobell, 2004).

Future Research Directions

The current study highlights a wider issue within defensive processing research, on the complexity of operationalising this multifaceted concept. Previous research using objective measures of defensive processing have primarily focused on attention, and as a

result have measured attentional avoidance, which is only one type of defensive processing. By defining defensive processing as a single concept, the present study sought to measure the effect that affirmations have on defensive processing as a whole. However, it may be more useful for future research to consider the four types of defensive processing separately, as affirmation may affect some defensive strategies over others.

In addition to defensive processing measures, future research should explore the long-term impacts of any such intervention. Very few studies have examined the affirmation's effect on participants' drinking behaviour at any point, post intervention. Although it has been shown that attitude changes can predict behavioural changes, the importance of understanding the longer-term impacts cannot be underestimated (Webb & Sheeran, 2006).

Extending on the current study, future research should investigate the impact of self- and other-affirmations on non-student samples, which up until this study have been under researched. One unexpected finding of the current study was that the student sample and the snowball sample significantly differed in their intention to reduce alcohol consumption and risk perception. It is possible that this is a pre-existing group difference, with repeated exposure to anti-alcohol messages over a lifetime having a dilution effect, whereby repeated exposure reduces the effectiveness of the messaging. Research has shown that young people drink more on single occasions but drink less on a daily basis (AIHW, 2019), so it would be interesting to explore the effects of affirmations on different drinking patterns. Further research should examine whether defensive reactions strengthen over time, reducing the effectiveness of affirmation interventions.

Future research should include wider demographics as a part of a more holistic approach to understanding the best way to communicate on public health issues, understanding the interplay of emotive messaging and its effects on different demographics

(i.e. what type of messaging is most effective for alcoholics, what is more effective for adolescents, what is most effective for older adults). It is important to better understand which strategies (i.e. affirmation, or otherwise) are most effective at reducing defensive processing, and thereby increasing message effectiveness, in these different demographic groups. Specifically, it may be interesting to see whether there is an effect in more collectivist cultures, and whether other-affirmation may be more effective in this context.

Lastly, it may also be useful to replicate the methodology of the current study with a student sample but examine two health conditions simultaneously (i.e. drinking alcohol and smoking), to explore whether strategies differ based on different health behaviours. This would build on the work of Knight and Norman (2016), who found that in a student sample, affirmations had less of an effect when used before alcohol related messaging. Understanding whether this effect is the same for smoking or if these results only occur for alcohol consumption, would extend the current literature. It may help to clarify the current findings if the efficacy of the intervention was compared for these two behaviours.

Concluding Remarks

This study has demonstrated that the showing of a self- or other-affirmation before an anti-alcohol public health message, may not have an effect on the viewer's intention to reduce alcohol consumption, their message evaluation, or their risk perception. The results also suggest that connectedness has no effect on other-affirmation and that there is no positive correlation between other-affirmation and the interpersonal closeness of the participant and their target person or group. Overall these results highlight the need for further study on the efficacy and mechanisms of other-affirmation, and the need for the methodology of affirmation research to incorporate more naturalistic settings. Doing so will allow affirmation research to be better practically applied to public health interventions.

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Appendix A: Ethics Approval

Paul Delfabbro <paul.delfabbro@adelaide.edu.au>
to jae-marie.jaensch@student.adelaide.edu.au ▾

No, that's all good.

Approved

Paul

Professor Paul Delfabbro
School of Psychology
The University of Adelaide, AUSTRALIA 5005
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Minor Ethics Amendment: Facebook Flyer

Paul Delfabbro <paul.delfabbro@adelaide.edu.au>
to Diana, jae-marie.jaensch@student.adelaide.edu.au ▾

Hi Jae-Marie

Looks quite well done. I don't have any objections.

regards

Paul

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Appendix B: Facebook Flyer

Appendix C: Information and Consent Form

THE UNIVERSITY
of ADELAIDE

PARTICIPANT INFORMATION SHEET

PROJECT TITLE: The role of other-affirmation and connectedness in reducing Defensive processing

HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER:

PRINCIPAL INVESTIGATOR: Lynn Ward

STUDENT RESEARCHER: Jae-Marie Jaensch

STUDENT'S DEGREE: Bachelor of Psychological Science (Honours)

Dear Participant,

You are invited to participate in the research project described below. Please note your participation is entirely voluntary.

What is the project about?

This research project is about the effect of persuasive messages in either reducing or eliminating risky behaviours such as drinking alcohol or smoking. Findings from this research will be used to increase our understanding of why some manipulations are more effective than others in helping people reduce risky behaviour

Who is undertaking the project?

This research will form the basis for the degree of a Bachelor of Psychological Science (Honours) at the University of Adelaide being undertaken by Jae-Marie Jaensch under the supervision of Stephen Brown and Lynn Ward.

Why am I being invited to participate?

You are being invited as you are a first year Psychology student at the University of Adelaide

What am I being invited to do?

You will be asked to complete a brief online survey that includes some questions about your background (e.g. age, gender), alcohol consumption and your values and beliefs. Following this, you will be provided information on the risks of alcohol consumption and strategies to reduce consumption. You will then answer some additional questions about how this information may have influenced your thinking and knowledge about alcohol use.

You will also be asked if you would like to be contacted to answer two follow up questions via email.

How much time will my involvement in the project take?

This project is not expected to take more than 30 minutes.

Are there any risks associated with participating in this project? Some of the images associated with the message are designed to elicit mild negative emotion. You may

experience mild distress from the anti-alcohol message. Images portray the effects of alcohol consumption,

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and are similar to those you might have seen in health promotion advertising. If these images are too distressing, please do not continue the study:

What are the potential benefits of the research project? Apart from receive course credit there will be no immediate benefits for the participants beyond that of the insights and interest gained from participation in psychological research. However, the research may indirectly benefit participants as members of the wider community by helping to create more effective health promotion campaigns in the future.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time. It will not be possible to withdraw from this study after the data have been submitted.

What will happen to my information?

Confidentiality and privacy: All data collected are anonymous. Storage: The data will be kept for five years and will be only accessed by the researchers listed on this sheet. The information will be stored in password protected files. Publishing: This data will be used as part of an Honours thesis and may be published in a journal article. However, participants will not be identified in publications, only summary data will be published. Sharing: After the analysis of the results a summary of the results will be made available to the participants. The aggregate anonymised data may be used in a future study on a similar topic.

Who do I contact if I have questions about the project? Lynn Ward

Phone: ▮▮▮▮▮▮▮▮

Email: lynn.ward@adelaide.edu.au

Steven Brown

Email: stephen.l.brown@adelaide.edu.uk

Jae-Marie Jaensch

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number ▮▮▮▮▮▮▮▮). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on:

Phone: +61 8 8313 6028

Email: hrec@adelaide.edu.au

Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000

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Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

Support Services If you are negatively affected by any of the content in this study, please consider contacting any of the following services:

Lifeline

Phone: 13 11 14

Student Counselling

Phone 8313 5663

Email: counselling.centre@adelaide.edu.au

Alcohol and Drug Information Service (ADIS)

Phone: 1300 13 1340

Drug and Alcohol Helplines:

https://knowyouroptions.sa.gov.au

If I want to participate, what do I do?

You will need to complete this survey

Yours sincerely,

Jae-Marie Jaensch, Dr Stephen Brown and Dr Lynn Ward

Appendix D: Alcohol Use Disorders Identification Test

How often do you have a drink containing alcohol?

Never   Monthly or less   2 to 4 times a month   2 or 3 times a week   4 or more

times per week

About how many standard drinks containing alcohol do you have on a typical occasion when

you are drinking?

1 or 2   3 or 4   5 or 6   7 to 9   10 or more

How often during the past year have you found that you were not able to stop drinking once

you had started?

Never   Less than monthly   Monthly   Weekly   Daily or almost daily

How often during the past year have you failed to do what others have expected of you

because of your drinking?

Never   Less than monthly   Monthly   Weekly   Daily or almost daily

Has a relative, friend, or doctor or other health professional been concerned about your

drinking or suggested that you cut down?

No   Yes, but not in past year   Yes, during the past year

(For **males**, please think about how often you have five standard drinks, for **females**, please think about four) How often do you have this many or more standard drinks on one occasion?

Never   Monthly or less   2 to 4 times a month   2 or 3 times a week   4 or more times per week

Appendix E: Coping Orientation to Problems Experienced Inventory

The following questions ask you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

There are no "right" or "wrong" answers, so choose the most accurate answer for YOU--not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

1. I turn to work or other substitute activities to take my mind off things.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

2. I say to myself "this isn't real."

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

3. I admit to myself that I can't deal with it, and quit trying.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

4. I daydream about things other than this.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

5. I just give up trying to reach my goal.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

6. I refuse to believe that it has happened.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

7. I sleep more than usual.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

8. I give up the attempt to get what I want.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

9. I pretend that it hasn't really happened.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

10. I go to movies or watch TV, to think about it less.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

11. I reduce the amount of effort I'm putting into solving the problem.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

12. I act as though it hasn't even happened.

I usually don't do this at all

I usually do this a little bit

I usually do this a medium amount

I usually do this a lot

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix F: Control, Self and Other-Affirmation Instructions

Control Group:

This is a list of common office furniture.

Desk

Filing cabinet

Coat hanger

Computer

Shelves

Rubbish bin

Chair

Telephone

Clock

Kettle

Other _____

Could you please write down the furniture that is most important to the office

We would like you to think of a typical office. Could you please write done 4-5 sentences on

what this office looks like.

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Self-Affirmation

This is a list of common values.

Honesty

Forgiveness

Loyalty

Goodness

Equality

Independence

Sincerity

Reliability

Kindness

Commitment

Any other value _____

Could you please write down the value that you consider to be the most important to you. It could be one of these or it could be another.

_____

We would now like you to write two or three sentences explaining why this value is important to you

We would now like you to write two or three sentences explaining how you use this value in your everyday life.

Other-Affirmation

This is a list of common values.

Honesty

Forgiveness

Loyalty

Goodness

Equality

Independence

Sincerity

Reliability

Kindness

Commitment

Any other value _____

Could you please write down the value that you consider to be the most important to you. It

could be one of these or it could be another.

_____

We would now like you to write two or three sentences explaining why this value is

important to other people

We would now like you to write two or three sentences explaining how other people use this

value in their everyday lives.

Appendix G: The Menace of Alcohol Booklet

[PLEASE READ THE 'MENACE OF ALCOHOL' MESSAGE.]

The Menace of Alcohol

This report has been designed so that you consider the effects of excessive drinking. It has been compiled from a series of websites from around the world, all of which are reputable public health agencies, backed up by other reliable sources.

The History of Alcohol:

Taverns were first established in the 8th century. In 1688 William III licensed distilleries to make gin and between 1684 and 1727 spirit consumption rose from 0.5 to 3.5 million gallons per year. In 1734 this figure rose even further to 13.5 million and furthermore to 19 million in 1742, with licensing laws being introduced in 1729. In 1742 the government closed all distilleries until 1759, nevertheless beer consumption during the 18th and 19th century was very high, it rose from 1.5 to 2.3 pints per person per day.

Now:

About 70% of the population drink at least occasionally, a further 10% can be regarded as 'heavy drinkers. Anyone at any age can have a drinking problem, meaning that their alcohol consumption is causing them harm. Alcohol slows down brain activity, affecting alertness and judgment, therefore increasing the risk of falls and accidents, however long-term drinking increases the risk for many serious health problems as it affects nearly every organ in the body.

Some problems can occur after just a short period of drinking. However other problems often develop much more gradually and sometimes only become evident after years of heavy drinking. Additionally, women may develop alcohol- related health problems earlier than men even when drinking less alcohol. Long term heavy drinking increases the risk for many serious health problems, like the ones described below.

Figure 1: Enlarged liver from an alcoholic.

Liver Disease: Alcohol related liver disease affects thousands of people; some develop alcoholic hepatitis with symptoms inclusive of fever, jaundice and abdominal pain, causing death if drinking does not discontinue but is reversible if drinking stops. Alcoholic cirrhosis or scarring of the liver occurs in ten to twenty percent of heavy drinkers, and if it does occur, they are recommended to stop drinking immediately or they will die. Treatment is available with some severe cases requiring a transplant. However, the damage is usually irreversible. A further percentage of heavy drinkers become infected with hepatitis C virus (HCV) which could cause liver cirrhosis and liver cancer.

Vascular Disease: There is an increased risk of heart disease. Heavy drinking over a long period of time increases the blood pressure and leads to an increased risk of some kinds of stroke. Drinking more than three drinks a day has a direct toxic effect on several organs including the heart.

Cancer: Long-term heavy drinking increases the risk of some forms of cancer, particularly cancer of the oesophagus, mouth, throat, and larynx, (voice box). Research has suggested that as little as one drink a day for women can raise the risk of breast cancer. Additionally, drinking can increase the risk for developing cancer of the colon or rectum.

Figure 2: Mouth and throat cancer

Pancreas: The pancreas is involved with regulating the bodies blood sugar levels with the production of insulin, furthermore it is involved in the digestion of food. Long-term heavy drinking can lead to pancreatitis (an inflammation of the pancreas), acute forms of which could cause severe abdominal pains and be fatal. Additionally, it is associated with diarrhoea and weight loss.

Figure 3: Chronic pancreatitis.

As well as the health problems described above, excessive drinking can also have adverse social effects.

Traffic Hazard: Alcohol remains in a woman's body for longer than a man's, and older people are less efficient at metabolising alcohol. Due to this drink drunk- driving laws have been revised and women, especially those with a small structure and limit their intake accordingly as drink-driving could have devastating consequences. It has been suggested that 50% of drivers and 65% of pedestrians killed on the road had been drinking. Alcohol is a factor in almost 50% of deaths according to the National Institute on Alcohol Abuse and Alcoholism. At least 700 driving accidents a year involve spinal injuries to the neck, half of which involved alcohol to some effect, the alcohol in just a couple of drinks can impair one's performance enough to create a significant risk of paralytic injury. More than 4 out of 10 traffic fatalities involve alcohol and at night the traffic deaths are four times higher than during the day.

Figure 4: Drink driving can have fatal consequences, not only to the driver but others around them too.

Antisocial Behaviour: Drinking can cause people to behave in ways they usually wouldn't. It has been reported that 50% of all violent crimes are committed when the offender is drunk, for murders and domestic violence this figure raises to 80%. Other consequences are less serious. Alcohol can make you appear to others as rude or an embarrassment and upset important social relationships.

Figure 5: An advertisement against drink driving.

A serious drinking epidemic occurs within the student community with every year 1,400 students between 18 and 24 dying from alcohol related injuries and many more are injured. More assault, sexual abuse, unsafe sex, academic problems, health problems, suicide attempts, drink driving, vandalism, property damage occur due to excessive drinking in students.

Finally, this also leads to the fact that drinking at a young age, like students, is more likely to lead into a downward spiral, leading to very excessive drinking at an older age and therefore all the health problems associated with this.

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

In summary, heavy alcohol use increases the:

• Risk of Accidents,

• Risk of Liver disease,

• Risk of Heart disease,

• Risk of Cancer,

• Risk of Stroke,

• Risk of Physical and Sexual victimisation,

• Risk of Family and Relationship Issues

• Risk of reducing Sexual functioning and Academic or Job Performance.

 And now …. the good news

High levels of alcohol use can cause many health and social problems. However, the really good news is that reducing alcohol consumption will greatly reduce or eliminate almost every excess risk attributable to alcohol consumption in young people.

The other good news is that most young people find it much easier to reduce consumption than they think. Research indicates that young people who want to reduce consumption usually do so. You probably have experience in reducing your own consumption when you have other priorities, such as exams or social or sporting commitments.

Just remember that you are the one who is in control.

To reduce alcohol consumption, you could try:

• Switching to lower alcohol concentration drinks: just look at the alcohol concentration or the number of units on the bottle or download the 'drinkware' phone app.

• Avoid getting involved in drinking games

• Avoid drinking in rounds

• Make a plan: Before you start drinking, set a limit on how much you're going

to drink.

• Set a budget: Only take a fixed amount of money to spend on alcohol.

• Drink smaller sizes: You can still enjoy a drink but go for smaller sizes. Try bottled beer instead of pints, or a small glass of wine instead of a large one.

• Stay hydrated: Drink a pint of water before you start drinking, and don't use alcohol to quench your thirst. Have a soft drink instead.

• Take a break: Have the odd day each week when you don't have an alcoholic drink

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix H: Intention to Reduce Alcohol Consumption Items

To what extent are you willing to reduce your alcohol consumption?

Not at all   1   2   3   4   5   6   7   Completely willing

To what extent do you intend to reduce your alcohol consumption?

Not at all   1   2   3   4   5   6   7   Absolutely

To what extent are you planning to reduce your alcohol consumption?

Not at all   1   2   3   4   5   6   7   Absolutely

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix I: Message Evaluation

Could you please rate what you thought of the booklet on the following dimensions?

Not Persuasive – Persuasive:

Not Persuasive 1   2   3   4   5   6   7   Persuasive

Bad – Good:

Bad   1   2   3   4   5   6   7   Good

Stupid – Clever:

Stupid 1   2   3   4   5   6   7   Clever

Not effective – Effective

Not effective   1   2   3   4   5   6   7   Effective

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix J: Risk Items

If you continue drinking the way you do, rate the probability of the following happening to

you…

Alcohol creating serious difficulties in an intimate relationship

No chance   1   2   3   4   5   6   7   Completely Certain

Becoming addicted to alcohol

No chance   1   2   3   4   5   6   7   Completely Certain

Developing a serious liver disease

No chance   1   2   3   4   5   6   7   Completely Certain

Alcohol making you insult or be rude to people

No chance   1   2   3   4   5   6   7   Completely Certain

Alcohol causing serious trouble with family relationships

No chance   1   2   3   4   5   6   7   Completely Certain

Serious injuries in a fall whilst intoxicated

No chance   1   2   3   4   5   6   7   Completely Certain

Having conflict or difficulties with friends due to alcohol

No chance   1   2   3   4   5   6   7   Completely Certain

Experiencing withdrawal symptoms if you stop drinking

No chance   1   2   3   4   5   6   7   Completely Certain

Appendix K: Feelings Items

Please circle the number on the 1-to-5 scale that best indicates how you much you feel these feelings at this moment.

1 not at all; 5=extremely

1.	Loving	Not at all	1	2	3	4	5	Extremely
2.	Connected to others	Not at all	1	2	3	4	5	Extremely
3.	Proud	Not at all	1	2	3	4	5	Extremely
4.	Strong	Not at all	1	2	3	4	5	Extremely
5.	Admirable	Not at all	1	2	3	4	5	Extremely
6.	Powerful	Not at all	1	2	3	4	5	Extremely
7.	In control	Not at all	1	2	3	4	5	Extremely
8.	Humble	Not at all	1	2	3	4	5	Extremely
9.	Empathic	Not at all	1	2	3	4	5	Extremely
10.	Vulnerable	Not at all	1	2	3	4	5	Extremely
11.	Superior	Not at all	1	2	3	4	5	Extremely
12.	Fallible	Not at all	1	2	3	4	5	Extremely
13.	Victimized	Not at all	1	2	3	4	5	Extremely
14.	Weak	Not at all	1	2	3	4	5	Extremely
15.	Out of control	Not at all	1	2	3	4	5	Extremely
16.	Inferior	Not at all	1	2	3	4	5	Extremely
17.	Ashamed	Not at all	1	2	3	4	5	Extremely
18.	Powerless	Not at all	1	2	3	4	5	Extremely

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix L:

When you wrote a few sentences about other people's values, can you tell me who you were thinking about? (you can nominate more than one)

Your partner ☐

Your best friend ☐

Your parents ☐

Your siblings ☐

Your immediate friends ☐

Other university students ☐

Society in general ☐

Specific groups in society ☐

If specific groups in society, who? _____

In the following figure we ask you to consider which of these pairs of circles best describes your relationship you with the individual or groups you referred to when thinking about values in questionnaire 3. In this figure 'X' serves as a placeholder for the individual or group. By selecting the appropriate number please indicate to what extent you and 'X' are connected.

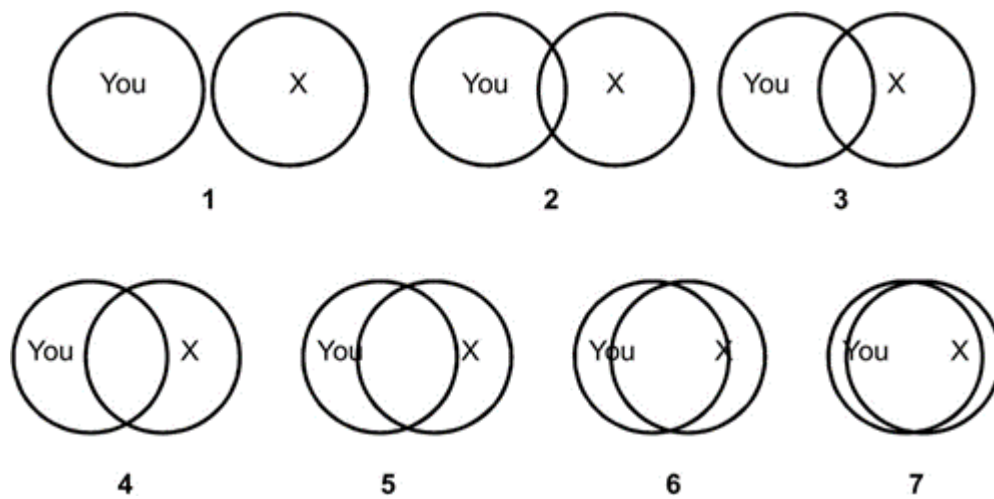1= Not close at all; 7= Extremely close.

If you only thought about one person then you only need to fill in one set of circles

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING
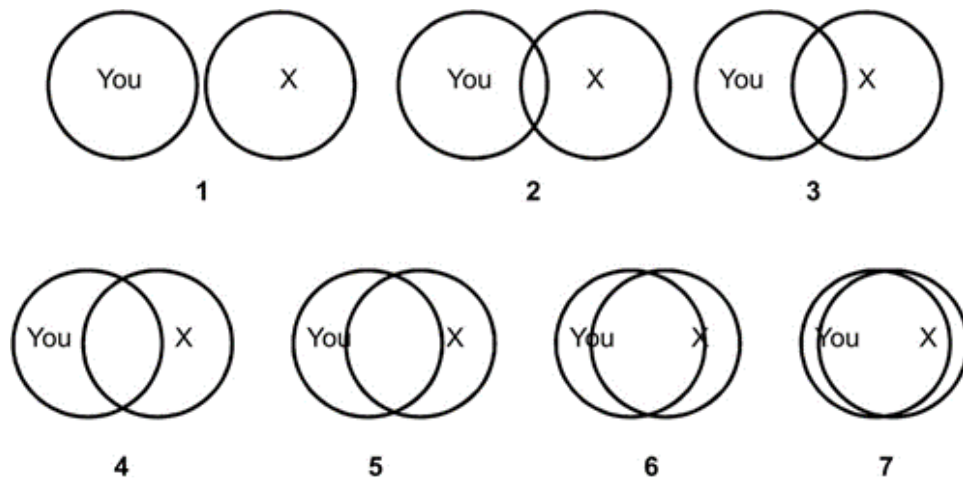
1. First person or group you nominated
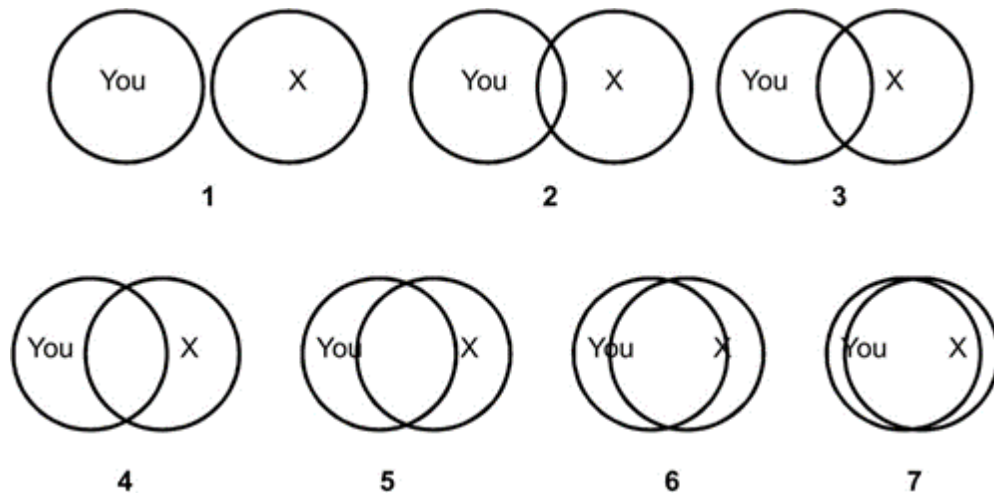
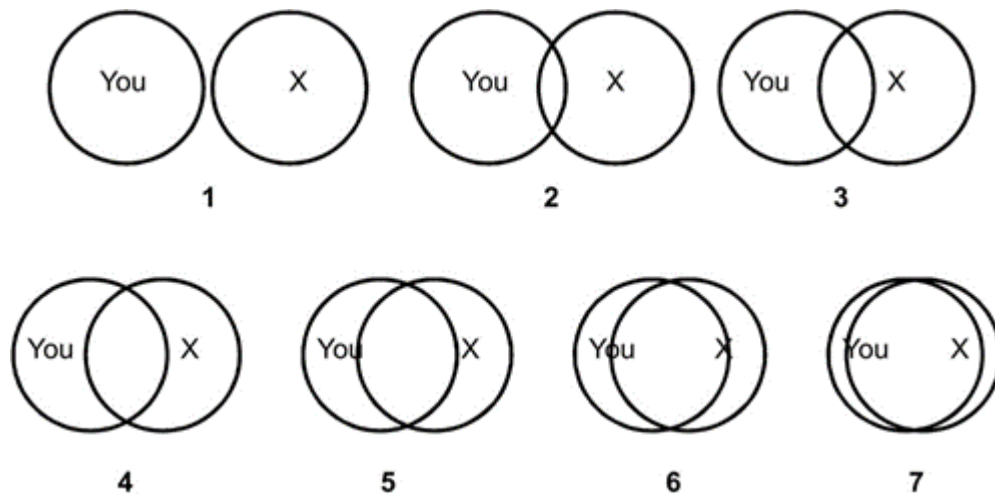1. Second person or group you nominated
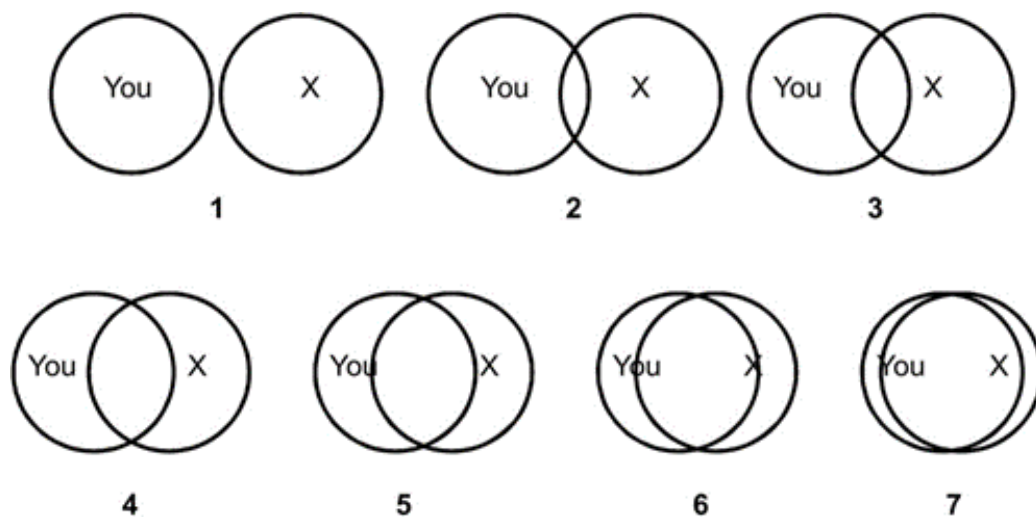

Third person or group you nominated

2. Fourth person or group you nominated

5. Fifth person or group you nominated

OTHER-AFFIRMATION AND DEFENSIVE PROCESSING

Appendix M: Power Analysis