

## Voluntary temporary abstinence from alcohol during “Dry January” and subsequent alcohol use

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### **Abstract**

**Objective:** Temporary abstinence from alcohol may convey physiological benefits and enhance well-being. The aim of this study was to address a lack of information about: (1) correlates of successful completion of a planned period of abstinence, and (2) how success or failure in planned abstinence affects subsequent alcohol consumption. **Methods:** 857 British adults (249 men, 608 women) participating in the “Dry January” alcohol abstinence challenge completed a baseline questionnaire, a one-month follow-up questionnaire, and a 6-month follow-up questionnaire. Key variables assessed at baseline included measures of alcohol consumption and drink refusal self-efficacy (DRSE). **Results:** In bivariate analysis, success during Dry January was predicted by measures of more moderate alcohol consumption and greater social DRSE. Multivariate analyses revealed that success during Dry January was best predicted by a lower frequency of drunkenness in the month prior to Dry January. Structural Equation Modelling revealed that participation in Dry January was related to reductions in alcohol consumption and increases in DRSE among all respondents at 6-month follow-up, regardless of success, but these changes were more likely among people who successfully completed the challenge. **Conclusions:** The findings suggest that participation in abstinence challenges such as “Dry January” may be associated with changes toward healthier drinking and greater DRSE, and is unlikely to result in undesirable “rebound effects”: very few people reported increased alcohol consumption following a period of voluntary abstinence.

In recent years, various organizations in different countries have established campaigns in which people are challenged to give up alcohol for one month. Some are designed as sponsored fundraising events (e.g., [au.dryjuly.com](http://au.dryjuly.com), [nz.dryjuly.com](http://nz.dryjuly.com)). Others such as “Dry January” ([www.dryjanuary.org.uk](http://www.dryjanuary.org.uk)) are simply presented as a challenge to be undertaken in cultures in which alcohol consumption is a common feature of social life (Babor et al., 2010). Anecdotal evidence suggests that some people make use of such challenges to initiate reductions in alcohol consumption or to quit drinking altogether. The latter goal is a key motivation behind campaigns such as Stoptober ([stoptober.smokfree.nhs.uk](http://stoptober.smokfree.nhs.uk)), in which smokers are challenged to stop smoking for one month (Brown et al., 2014), because smokers who can give up for one month are significantly more likely to quit (West & Stapleton, 2008).

Whereas “Stoptober” is underpinned by a desire to encourage smoking cessation (Brown et al., 2014), temporary alcohol abstinence challenges do not aim for permanent abstinence. For example, the goal of the UK charity Alcohol Concern is to improve people’s lives by reducing the harm caused by alcohol, with a long term aim of changing the drinking culture ([www.alcoholconcern.org.uk](http://www.alcoholconcern.org.uk)). Alcohol Concern first ran its abstinence challenge “Dry January” in 2013 to encourage people to think about the way they drink and to talk about alcohol: this reflects theorizing around “social contagion”, and a hope that healthy changes in beliefs and behavior among a sub-group of people will spread through the population (Christakis & Fowler, 2013; Einstein & Epstein, 1980). Alcohol Concern also allows people to opt in to fundraising via sponsorship of their attempt to complete Dry January.

One small-scale study of the effects of a month of abstinence found marked reductions in liver fat and blood glucose, moderate reductions in blood cholesterol, and marked increases in self-reported sleep quality, concentration, and work performance (Coghlan, 2014). These benefits are impressive, but it has been suggested that they may be lost if people subsequently return to previous levels of drinking or experience “rebound effects” whereby their alcohol use increases following a period of abstinence (New Scientist, 2014).

### **Correlates and consequences of temporary abstinence**

There is a need for more information about the correlates and consequences of participation in alcohol abstinence challenges. Little is known about how many people successfully complete the Dry January challenge, or about characteristics that distinguish those who succeed from those who fail. Furthermore, there has been no evaluation of the longer-term effects of voluntarily undertaking a period of abstinence from alcohol. It is important to address these knowledge gaps to determine the potential utility of abstinence

challenges within health psychology.

Characteristics of drinkers are likely to explain success in abstinence challenges and/or subsequent alcohol consumption. Drink Refusal Self-Efficacy (DRSE: Young et al., 1991) is an individual's self-perceived capacity to refuse alcohol in three domains: social settings when others are drinking, for emotion regulation, and opportunistic drinking. Greater DRSE correlates with less harmful alcohol consumption (Atwell, Abraham & Duka, 2011; de Visser et al., 2014; Gilles, Turk & Fresco, 2006; Oei & Jardim 2007). One might, therefore, expect people with greater DRSE to be more likely to complete abstinence challenges. One might also expect those who have completed a month of abstinence in the past to be more likely to complete a new abstinence challenge because they have demonstrated their DRSE.

There is a lack of evidence about how patterns of alcohol use affect success in an abstinence challenge. However, evidence from two related domains suggests that moderate drinkers may be more likely than heavier drinkers to complete an abstinence challenge. One study of pregnant women found that lighter drinkers were less likely to intend to drink or to actually drink during pregnancy (Zammit, Skouteris, Wetheim, Paxton & Milgrom, 2008). Studies of alcohol use among university students indicate that more moderate alcohol consumption is related to a lower likelihood of intended and actual heavy episodic drinking (Norman & Conner, 2006; Norman, Conner & Stride, 2012). Furthermore, people who more strongly endorse fun and sociability as reasons for binge drinking are more likely to subsequently engage in binge drinking (Norman et al., 2012). This finding supports the earlier speculation that people with lower social DRSE may be less likely to complete an abstinence challenge. It is also important to note that habitual patterns of alcohol intake exert a strong influence on the subsequent alcohol intake (Norman, 2011).

In addition to considering characteristics of individuals, it is important to consider social contextual influences on behavior change. Social support can help people to adhere to health behavior change (Bauld, Bell, McCullough, Richardson & Greaves, 2010; Olander et al., 2013). Social support can be conceptualized in general terms and/or as a measure of direct support from specific individuals. In the context of Dry January, it could be conceptualized as encouragement from important individuals such as the event organizers and/or support and encouragement from companions in "buddy systems", in which participants pair up to offer mutual support. Buddy systems can increase the likelihood of successful health behavior change across a range of behaviors (Jepson, Harris, Platt & Tannahill, 2010; West & Stapleton, 2008), and there is evidence that supportive friends or partners can help people to

reduce their alcohol intake (Barber & Crisp, 1995; McCrady, 2004). However, it is not known whether undertaking an alcohol abstinence challenge with another person affects success rates. People who engage in fundraising through Dry January may have a greater resolve to complete the challenge after having made a public commitment to it: evidence from social psychological research indicates that people are more likely to enact a behavior after making a public commitment to do so (Cialdini, 2009, p.52; Festinger, 1957, p.11).

The lack of information about rates and correlate of success in abstinence challenges is accompanied by a lack of information about the consequences of a successful or unsuccessful abstinence attempt. One might expect there to be feedback loops between DRSE and alcohol consumption such that successful completion of a dry month could lead to increases in DRSE that result in reduced alcohol consumption (Atwell et al., 2011; de Visser et al., 2014; Gilles et al., 2006; Oei & Jardim 2007). It may also be the case that completing the first part of Dry January demonstrates to participants that they can refuse alcohol, leading to increases in DRSE that make completing a dry month more likely.

It is important to note, however, that failed attempts at temporary abstinence may lead to “rebound effects”, whereby alcohol intake increases above baseline levels following a period of abstinence. Studies of non-human animals suggest that enforced abstinence from alcohol tends to be followed by increases in alcohol consumption (Rodd, Bell, Sable, Murphy & McBride, 2004; Sinclair & Senter, 1967). Although such findings are interesting, it must be noted that alcohol consumption in animals is devoid of the important cultural and psychosocial factors that influence people’s alcohol use (Babor, 2010; de Visser, Wheeler, Abraham & Smith, 2013; Szmigin, Bengry-Howell, Griffin, Hackley & Mistral, 2011). Furthermore, enforced abstinence in animal model studies may not be directly comparable to voluntarily participation in abstinence challenges such as “Dry January”. There is little evidence from studies of humans to conclusively support or rebut the notion that periods of voluntary abstinence will lead to “rebound effects” (Bray et al., 2010; Burish, Maisto, Cooper & Sobell, 1981; Carey, Carey & Maisto, 1988).

To address the issues identified above, a longitudinal study was conducted with data collection at registration for Dry January, at the end of Dry January (one-month follow-up), and 6 months after the end of Dry January. Analyses addressed three hypotheses:

1. Successfully completing Dry January would be predicted by previous completion of a month of abstinence; drinking less at baseline, intending to stop drinking after Dry January,

greater DRSE at baseline, doing Dry January with a companion, and fundraising through Dry January;

2. Successful completion of Dry January would lead to increases in DRSE that would lead to consequent reductions in alcohol intake;

3. “Rebound effects” would be uncommon, but would be most likely among people who failed to complete Dry January.

## **Method**

### **Participants**

The baseline sample consisted of 1070 men and 2722 women aged 18 years or older (range = 18-76, median = 41, mean = 40.7, sd = 11.6) who had registered on the Dry January website. Data from an additional 411 people were excluded from analysis: 11 respondents aged under 18 years; 10 people who had not consumed alcohol in the past year; 84 people who did not live in the UK; and 306 who did not complete the baseline questionnaire. One-month follow-up data were provided by 1684 people (479 men, 1205 women; 44.4% of original eligible sample). Six-month follow-up data were provided by 857 people (249 men, 608 women; 22.6% of original eligible sample). Only the 857 respondents who completed all three waves of data collection were included in analyses.

### **Research Design**

The study employed a prospective longitudinal design. The research methods were approved by the host university Research Ethics Committee. All people who registered on the Dry January website were invited to take part via a link to the online survey, which was hosted on a secure server. The home page described the study rationale and methods and outlined consent and data protection procedures. Respondents were informed that by clicking “yes” to begin the survey they were confirming that they were over 18 and gave consent for their data to be used for research purposes, and to be contacted for two follow-up surveys. Upon completing the baseline survey, participants were asked to provide contact details so that they could be sent the URL for each of the follow-up surveys and be entered into a draw to win £100 in store vouchers. The link to the one-month follow-up questionnaire was sent on the first day of February, with reminders sent after 4 days and 8 days. The link to the 6-month follow-up questionnaire was sent in the first week of August (i.e., 6 months after the end of Dry January), with reminders sent after 4 days and 8 days. Data from the three waves of data collection were linked by unique ID codes.

## Materials

**Baseline questionnaire.** In addition to collecting demographic data, the questionnaire assessed the age at which participants first consumed alcohol (“Age first drink”). Participants indicated the longest period of abstinence from alcohol since their first drink (in days, months, and/or years), from which it was possible to create a dichotomous variable (“Dry month in the past”) that identified those who had ever completed a month of abstinence.

Respondents completed the 10-item Alcohol Use Disorders Identification Test (AUDIT: Babor et al., 2001), which addresses three domains of alcohol use: consumption frequency and volume; dependence; and alcohol-related problems. The AUDIT assesses alcohol consumption frequency and volume with reference to usual behavior (with no time frame specified); the questions on alcohol dependence and alcohol-related problems are framed with reference to the last year and/or the lifetime. Scale scores were summed, with higher scores indicating a greater likelihood of harmful or hazardous drinking (“AUDIT score”). Attention was given to items assessing participants’ usual number of drinking days per week (“Drinking days per week”), and the number of drinks consumed on a typical drinking day (“Drinks per drinking day”). Because most of the AUDIT items are framed with reference to at least the last year, AUDIT scale scores were not suitable for use in analyses of change in behavior at 6-month follow-up. Respondents also reported the number of times in the last month that they got drunk (“Drunk episodes last month”).

Drink Refusal Self-Efficacy was assessed via responses to nine items (Young et al., 1991) using 7-point scales (“*very difficult*” - “*very easy*”) introduced with the instruction “Please use the scale below to indicate how easy it would be for you to refuse alcohol in each situation”. The DRSE scale consists of three three-item subscales, each of which assesses a discrete domain of DRSE: social pressure (“DRSE - social”;  $\alpha = .80$ ; e.g., “When my friends are drinking”); emotional relief (“DRSE - emotional”;  $\alpha = .90$ ; e.g., “When I am worried”); and opportunistic drinking (“DRSE - opportunistic”;  $\alpha = .83$ ; e.g., “When I am watching TV”). Scores on these three subscales were significantly correlated, but not so strongly as to suggest collinearity ( $.33 \leq r_s \leq .51$ ,  $p_s < .01$ ).

One dichotomous question assessed whether respondents were attempting Dry January with another person (“Dry January companion”). Respondents also indicated whether they were fundraising during Dry January (“Fundraising”).

Respondents reported whether they intended to stop drinking, to drink less than before Dry

January, to drink as much as before, or to drink more. Responses were used to make a dichotomous variable that identified respondents who intended to stop drinking permanently (“Plan to stop drinking”)

**One-month follow-up questionnaire.** Respondents completed the three measures of DRSE, which were used to determine change in DRSE during Dry January. Changes in DRSE were calculated by subtracting scores at baseline from scores at one-month follow-up: difference scores above zero represented an increase in DRSE, difference scores of zero represented no change, and difference scores below zero represented a decrease in DRSE.

**Six-month follow-up questionnaire.** In response to the question “How many days after registering for Dry January did you have your first alcohol-containing drink?”, participants indicated the number of days from the start of Dry January until they first consumed alcohol (in days, weeks, and/or months). Their responses were used to create a dichotomous variable that indicated whether they had successfully completed Dry January “completed Dry January”. They also completed the measures of alcohol consumption presented in the baseline questionnaire. Changes in alcohol consumption and DRSE were calculated by subtracting scores at baseline from scores at the 6-month follow-up questionnaire: difference scores above zero represented an increase in intake, difference scores of zero represented no change, and difference scores below zero represented a decrease in intake.

### **Analytic plan**

Unless stated otherwise, all analyses were conducted in SPSS version 21.0 (IBM Corp., 2012). Preliminary analyses revealed that compared to people who did not complete the 6-month follow-up, those who did: were older, were more likely to have competed a dry month in the past, drank fewer drinks per drinking day, reported less frequent drunkenness, had lower AUDIT scores, and had greater social DRSE (details available from the first author). Propensity scores (Austin, 2011; Rosenbaum & Rubin, 1983) were calculated to indicate the probability of completing the 6-month follow-up conditional on the variables listed in Table 1. All analyses were conducted using survey weights calculated as the inverse of the propensity scores. Weighting on the basis of propensity scores was preferred to imputation of missing data given that most of the baseline sample were lost to follow-up and because data were not missing-at-random.

The first hypothesis was tested by conducting analyses to identify variables measured at baseline that were bivariate correlates of successful completion of Dry January: t-tests for



continuous independent variables,  $\chi^2$ -tests for dichotomous variables. Those variables were then entered into linear regression to identify significant multivariate correlates of successful completion of Dry January.

Hypothesis 2 was tested in two steps. First, repeated measures t-tests were conducted to assess within-subjects changes in DRSE between baseline and one-month follow-up, and within-subjects changes in alcohol intake between baseline and 6-month follow-up. Structural equation modelling (SEM) was then conducted to test whether participation in Dry January was related to changes in DRSE at one-month follow-up that affected alcohol intake at 6-month follow-up. The SEM was conducted in order to simultaneously assess whether completion of Dry January had direct effects on subsequent alcohol use, and/or indirect effects mediated by changes in DRSE arising as a result of taking part in Dry January. The SEM was conducted using Mplus Version 7.3 (Muthén & Muthén, 2012). The distributions of “Drunk episodes last month” at both baseline and at 6-month follow-up were not symmetrical, with a modal frequency of zero at both time points. These two variables were treated these as count variables with negative binomial distributions, and the model estimated robust standard errors.

The third hypothesis was assessed by comparing people who completed Dry January and those who did not in terms of the proportions of respondents who reported decreases, no change, or increases in the three alcohol intake variables between baseline and six-month follow-up. Because weighted data were used, the Rao-Scott  $\chi^2$  was employed with between-cell differences identified by examining standardized residuals

## **Results**

### **Correlates of Successful completion of Dry January**

Overall, 64.1% of respondents successfully completed Dry January, with similar proportions of men and women reporting success (Table 1). Compared to other participants, those who successfully completed Dry January consumed fewer drinks per typical drinking day, had a lower frequency of drunkenness, and had lower AUDIT scores. They also had significantly greater social and emotional DRSE. Logistic regression was conducted using forward selection of variables correlated with success at  $p < .10$ . This was replicated using backward deletion of variables. This process identified one significant independent predictor of likelihood of success which correctly classified 65% of participants as successful or not successful ( $\chi^2_{(1)} = 18.10, p < .01$ ). Success was significantly predicted by a lower frequency of drunkenness (OR = 0.93; 95% CI = 0.90 – 0.96).

### **Participation in Dry January and subsequent behavior**

Within-subjects tests revealed that participation in Dry January was related to significant increases in “DRSE - social” ( $t_{(856)} = 10.11, p < .01$ ), “DRSE - emotional” ( $t_{(856)} = 8.60, p < .01$ ), and “DRSE - opportunistic” ( $t_{(856)} = 4.11, p < .01$ ) at one-month follow-up. Participation in Dry January was also associated with significant reductions in drinking days per week ( $t_{(856)} = 19.09, p < .01$ ), drinks per typical drinking day ( $t_{(856)} = 5.78, p < .01$ ), and frequency of drunkenness ( $t_{(856)} = 11.98, p < .01$ ) at 6-month follow-up.

The data in Table 2 show that among respondents who completed Dry January, there were significant increases in all three DRSE domains at one-month follow-up, and significant reductions in all three measures of alcohol intake at 6-month follow-up. Among participants who did not complete Dry January, there were significant increases in social and emotional DRSE at one-month follow-up, and significant reductions in drinking days per week, drinks per typical drinking day, and frequency of drunkenness at 6-month follow-up.

Figure 1 shows the results of structural equation modelling of change in DRSE at one-month follow-up and change in alcohol consumption at 6-month follow-up relative to baseline. The SEM revealed significant paths from baseline to one-month follow-up measures of all three domains of DRSE. It also revealed significant paths from baseline and 6-month follow-up measures of all three measures of alcohol intake. There were significant paths indicating that successful completion of Dry January led to increases in all three domains of DRSE. Success in Dry January was related to significant reductions in drinking days per week, drinks per drinking day, and frequency of drunkenness. In addition, increases in emotional DRSE during Dry January were related to significant reductions in frequency of drunkenness, and increases in opportunistic DRSE during Dry January were related to significant reductions in drinking days per week. Tests of the indirect effect of completing Dry January on the three measures of alcohol consumption via the three measures of DRSE revealed that none were significant ( $ps$  all  $> .09$ ).

### **“Rebound effects” among people who did not successfully complete Dry January**

The data in Table 3 show that a minority of participants experienced “rebound effects”. Completion of Dry January was not significantly related to the likelihood of rebound effects for drinking days per week or drinks per drinking day, but it was related to frequency of drunkenness. Examination of standardized residuals revealed that compared to participants who were successful in completing Dry January, those who were not successful were significantly less likely to report no change, and significantly more likely to report an

increase in frequency of drunkenness at 6-month follow-up. When considering these significant differences, it should be noted that among the whole sample, only 11% had an increased frequency of drunkenness.

### **Discussion**

The study reported here was the first large scale follow-up study of voluntary abstinence from alcohol. The findings identified key correlates of successful completion of a month of voluntary abstinence from alcohol as part of Alcohol Concern's "Dry January" campaign, and described the consequences of a successful or unsuccessful attempt. A key finding was that even a failed attempt at Dry January led to many of the positive changes in behavior and DRSE observed in people who successfully completed Dry January.

There was partial support for the first hypothesis. Successfully completing Dry January was predicted by more moderate alcohol consumption at baseline, and greater social DRSE at baseline. However, the predicted links between success and previous completion of a month of abstinence and doing Dry January with a companion were not found. The only significant independent multivariate predictor of success was a lower frequency of drunkenness at baseline. As expected, in bivariate analysis, success was also predicted by other measures of more moderate alcohol consumption at baseline (Norman, 2011; Norman & Conner, 2006; Norman et al., 2012; Zammit et al., 2008). As hypothesized, greater baseline DRSE predicted success in Dry January (Atwell et al., 2011; de Visser et al., 2014; Gilles et al., 2006; Oei & Jardim, 2007). However, this effect was only found for social DRSE, a finding that is perhaps not surprising given the important role of alcohol for social life in the UK (Babor, 2010; de Visser et al., 2013; Szmigin et al., 2011). The observed significant differences generally reflected small effect sizes. Contrary to expectations, social support in the form of a companion or "buddy" was not a significant predictor of success (Bauld et al., 2009; Olander et al., 2013). Nor was fundraising during Dry January, a finding that may perhaps be explained by the fact that all Dry January participants had already made a public commitment to behavior change by registering on the Dry January website (Cialdini, 2009; Festinger, 1957).

There was partial support for the second hypothesis: successful completion of Dry January was associated with increases in DRSE at one-month follow-up and reductions in alcohol intake at 6-month follow-up. The SEM suggested that successful completion of Dry January was related to increases in DRSE, and that increases in DRSE were related to lower alcohol consumption at 6-month follow-up. For people who successfully completed Dry January,

there were significant reductions in all three measures of alcohol intake, and in all three DRSE domains. Among those who were unsuccessful, there were significant reductions in all three measures of alcohol intake, and in emotional DRSE. The SEM revealed significant direct paths from completion of Dry January to lower scores on all three measures of alcohol consumption at 6-month follow-up. This indicates that although alcohol consumption was reduced among all participants in Dry January, the reduction was greater among those who successfully completed the abstinence challenge. However, the Sobel tests of indirect paths from completion of Dry January to alcohol consumption via DRSE revealed that none were significant. For both successful and unsuccessful people, the observed significant differences generally reflected small-medium effect sizes. It therefore appears that successful completion of one month of abstinence may have lasting effects on drinking behavior and beliefs, and that increases in DRSE arising from abstinence attempts may be an important influence on subsequent patterns of alcohol use (Atwell et al., 2011; de Visser et al., 2014; Gilles et al., 2006; Oei & Jardim 2007; Young et al., 1991). However, it is also important to note that even a failed attempt at Dry January led to many of the positive changes observed in people who successfully complete Dry January.

The third hypothesis was supported: very few Dry January participants experienced “rebound effects” (Bray et al., 2010; Burish et al., 1981; Carey et al., 1988), and the proportions reporting increases in alcohol consumption were small: most participants reported decreases in all measures of alcohol consumption. Respondents whose attempt at Dry January was unsuccessful were more likely to report an increase in their frequency of drunkenness - the observed significant difference reflected a small-medium effect size. Whether in the context of temporary abstinence or longer term behavior change, there may be value in helping people to identify and manage tempting situations (de Visser et al., 2015; Hajek, Stead, West, Jarvis & Lancaster, 2009).

Although this study has provided some valuable insights into correlates and consequences of completion of a month of abstinence from alcohol, it does have some limitations. The first is that people register for Dry January voluntarily, resulting in a self-selected sample that may not be representative of the general population. Indeed, the baseline sample contained a greater proportion of people with AUDIT scores indicative of harmful or hazardous drinking than the general population (McManus, Meltzer, Brugha, Bebbington & Jenkins, 2009). However, this apparent limitation may not be problematic if we only want to apply the findings to people like the study participants: i.e., heavier drinkers who are already in the

“planning” and “action” phases of behavior change (Ansker, Helgason & Ahacic, 2014; Cadigan, Martens, Arterberry, Smith & Murphy, 2013; Prochaska, DiClemente & Norcross, 1992). The final follow-up sample of 857 was less than one-quarter of the 3791 at baseline, and there were some important differences in alcohol intake between those who did and those who did not complete the 6-month follow-up: these issues were addressed by weighting the data for likelihood of completion of the 6-month follow-up survey. However, a lower attrition rate would have boosted confidence that the weighted analyses applied to the whole baseline sample. Another limitation is that the recruitment methods meant that it was not possible to compare Dry January participants who completed the baseline questionnaire to those who did not complete the baseline survey.

The study was also limited by the absence of a control group. This meant that it was not possible to determine whether the observed reductions in alcohol consumption also occurred among people who did not register for Dry January. However, it should be noted that changes toward healthier behavior were greatest in people who successfully completed Dry January, suggesting that success in Dry January added to any population-level changes. It should also be noted that significant changes in DRSE would be unlikely to occur in the general population in the absence of an intervention. Indeed, the SEM provided some evidence that increases in DRSE during Dry January helped to explain subsequent reductions in alcohol intake. Nevertheless, a study with a control group would provide more robust evidence of any effects related to successful and unsuccessful attempts at Dry January. A further limitation was the reliance on self-report and recall of alcohol use (Del Boca & Darkes, 2003). However, any recall biases would have affected all participants equally, and would not have been a source of bias in within-subjects analyses

This study of participants in the “Dry January” alcohol abstinence challenge revealed that successful completion of Dry January was best predicted by more moderate drinking at baseline. Participation in Dry January was related to reductions in alcohol consumption and increases in DRSE among all respondents, regardless of success, but these changes were larger among people who successfully completed the challenge. Rebound effects were uncommon, but were more likely among those who did not complete Dry January. Taken together, these findings suggest that abstinence challenges such as Dry January can lead to changes toward healthier drinking and health-enhancing beliefs about alcohol, and are unlikely to result in undesirable rebound effects.

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**Table 1** Associations between variables measured at baseline and successful completion of Dry January

Correlate	Completed Dry January?		Difference	Effect size	
	No (n = 308)	Yes (n = 549)			
Sex	male	33.3%	66.7%	$\chi^2_{(1)} = 1.11, p = .29$	$\phi = .04$
	female	37.1%	62.9%		
Age		44.7 (11.9)	46.2 (11.6)	$t_{(855)} = 1.72, p = .09$	$d = 0.12$
Age first drink		16.3 (2.4)	16.6 (2.8)	$t_{(855)} = 1.07, p = .29$	$d = 0.08$
Dry month in the past?	yes	34.2%	65.8%	$\chi^2_{(1)} = 3.48, p = .06$	$\phi = .06$
	no	41.3%	58.7%		
Drinking days per week		4.96 (1.93)	4.78 (2.03)	$t_{(855)} = 1.29, p = .20$	$d = 0.09$
Drinks per drinking day <sup>a</sup>		4.21 (2.59)	3.78 (2.20)	$t_{(555)} = 2.46, p = .01$	$d = 0.21$
Drunk episodes last month <sup>a</sup>		3.84 (4.92)	2.55 (3.65)	$t_{(499)} = 4.02, p < .01$	$d = 0.36$
AUDIT score <sup>a</sup>		12.56 (7.14)	11.09 (6.08)	$t_{(557)} = 3.06, p < .01$	$d = 0.26$
DRSE - social		3.23 (1.62)	3.61 (1.75)	$t_{(855)} = 3.15, p < .01$	$d = 0.23$
DRSE - emotional		4.05 (1.89)	4.35 (1.82)	$t_{(855)} = 2.30, p = .02$	$d = 0.16$
DRSE - opportunistic		5.63 (1.38)	5.73 (1.39)	$t_{(855)} = 0.96, p = .34$	$d = 0.07$
Dry January companion?	yes	38.5%	61.5%	$\chi^2_{(1)} = 2.76, p = .10$	$\phi = .06$
	no	33.0%	67.0%		
Fundraising ?	yes	32.9%	67.1%	$\chi^2_{(1)} = 0.72, p = .40$	$\phi = .03$
	no	36.6%	63.4%		
Plan to stop drinking?	yes	30.1%	66.9%	$\chi^2_{(1)} = 1.54, p = .21$	$\phi = .04$
	no	36.6%	63.4%		

**note** - table presents row percentages

a - smaller degrees of freedom because assumption of equality of variances was not met

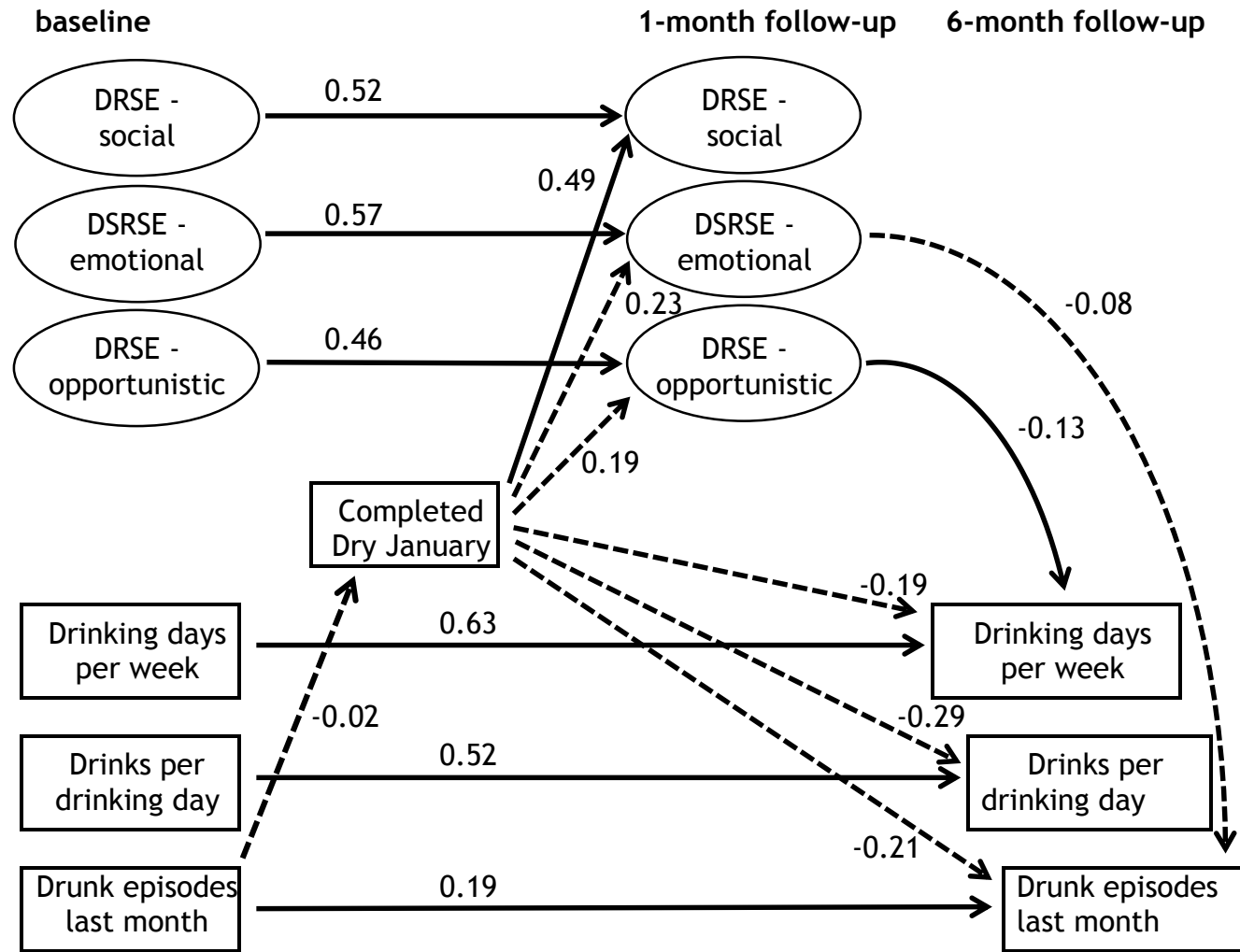
**Table 2** Within-subjects analyses of changes in DRSE and alcohol use following participation in Dry January

<b>Dependent variable</b>	<b>Baseline</b>	<b>Follow-up</b>	<b>Difference</b>	<b>effect size</b>
<b>Completed Dry January (n = 549)</b>				
One-month follow-up				
DRSE - social	3.61 (1.75)	4.30 (1.78)	$t_{(548)} = 9.71, p < .01$	$d = 0.39$
DRSE - emotional	4.35 (1.82)	4.88 (1.77)	$t_{(548)} = 7.37, p < .01$	$d = 0.30$
DRSE - opportunistic	5.73 (1.39)	6.03 (1.27)	$t_{(548)} = 5.50, p < .01$	$d = 0.23$
Six-month follow-up				
Drinking days per week	4.78 (2.03)	3.73 (1.90)	$t_{(548)} = 15.87, p < .01$	$d = 0.53$
Drinks per drinking day	3.78 (2.20)	3.11 (3.07)	$t_{(548)} = 4.82, p < .01$	$d = 0.25$
Drunk episodes last month	2.55 (3.65)	1.21 (2.93)	$t_{(548)} = 9.34, p < .01$	$d = 0.40$
<b>Did not completed Dry January (n = 308)</b>				
One-month follow-up				
DRSE - social	3.23 (1.62)	3.41 (1.72)	$t_{(307)} = 2.24, p = .03$	$d = 0.11$
DRSE - emotional	4.05 (1.89)	4.47 (1.84)	$t_{(307)} = 5.26, p < .01$	$d = 0.23$
DRSE - opportunistic	5.63 (1.38)	5.73 (1.35)	$t_{(307)} = 1.27, p = .21$	$d = 0.07$
Six-month follow-up				
Drinking days per week	4.96 (1.93)	4.10 (1.86)	$t_{(307)} = 10.66, p < .01$	$d = 0.45$
Drinks per drinking day	4.21 (2.59)	3.70 (3.01)	$t_{(307)} = 3.19, p < .01$	$d = 0.18$
Drunk episodes last month	3.84 (4.92)	2.15 (3.59)	$t_{(548)} = 7.53, p < .01$	$d = 0.39$

**Table 3** Changes in drinking behavior according to completion of Dry January

Measure of alcohol intake		Completed Dry January?		Difference	effect size
		No (n = 308)	Yes (n = 549)		
Drinking days per week	decrease	56.2%	58.4%	$\chi^2_{(2)} = 1.32, p = .52$	Cramer's V = .03
	no change	31.5%	31.9%		
	increase	12.3%	9.7%		
Drinks per drinking day	decrease	45.5%	48.4%	$\chi^2_{(2)} = 0.96, p = .62$	Cramer's V = .02
	no change	37.3%	36.9%		
	increase	17.2%	14.8%		
Drunk episodes last month	decrease	55.0%	48.6%	$\chi^2_{(2)} = 17.50, p < .01$	Cramer's V = .10
	no change	30.4%	43.3%		
	increase	14.6%	8.0%		

**note:** Rao-Scott  $\chi^2$  for weighted data



**Figure 1** Structural Equation Modelling of change in DRSE at one-month follow-up and change in alcohol intake at 6-month follow-up. Only significant paths are shown: solid lines indicate paths significant at  $p < .01$ , dotted lines indicate paths significant at  $p < .05$