Reductions in alcohol consumption following participation in 'Dry January': An investigation of the psychological and social factors underpinning change

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Abstract

Dry January may help to reduce alcohol consumption and associated harms. Participation is associated with reductions in alcohol consumption six months later. Increased drink refusal self-efficacy (DRSE), belief in one's ability to refuse alcohol, appears to mediate these reductions. Other mechanisms of change are yet to be identified. This thesis aimed to establish the psychological and social changes underlying reductions in alcohol consumption among heavy drinkers following participation in Dry January.

A mixed methods approach was used. First, a prospective observational survey study compared outcomes at six-months for 'official' Dry January participants (registered with access to online supports) with 'unofficial'(unregistered) participants and people not participating (Chapter III). Alcohol consumption and relevant psychosocial constructs were measured. In Chapter IV, semi-structured interviews explored strategy use during and following Dry January. A second prospective study (Chapter V) addressed limitations of the first and incorporated findings from the interviews. Additional constructs were assessed including drinker identity and use of online supports. Finally, analysis of smartphone app data (Chapter VI) examined changes in consumption nine months post-January and investigated the impact of app engagement on these changes.

'Official' Dry January participation was associated with reductions in alcohol consumption six and nine months later. Greater reductions relative to people not participating suggest changes were not entirely attributable to seasonal variation in consumption. Greater reductions relative to 'unofficial' participants suggest access to online supports may enhance outcomes. Increased consumption following January was evident in a substantial minority of 'official' app users. Strategy use was dynamic and evolved post-January: minimal differences in approaches were observed between 'official' and 'unofficial' participants. Among 'official' participants, baseline consumption, motivation, DRSE, drinker identity, abstinence and use of strategies and the app post-January were associated with six-month consumption. Harnessing relevant psychological and social factors may help maximise the benefits of Dry January.

Acronyms and Abbreviations

Abbreviation/Acronym	
ACUK	Alcohol Change UK
AIC	Akaike information criterion
ASC	Alcohol self-concept
ASCS	Alcohol self-concept scale
AUD	Alcohol use disorder
AUDIT	Alcohol use disorder identification test
AUDIT-C	Alcohol use disorder identification test – consumption subscale
AVE	Abstinence violation effect
BCT	Behaviour change technique
BIC	Bayesian information criterion
CFI	Comparative fit index
CI	Confidence interval
DRSE	Drink refusal self-efficacy
IMC	Instructional manipulation check
NRMSE	Normalized root mean squared error
PFC	Proportion of falsely classified
POS	Prospective observational study
RCT	Randomised controlled trial
RMSEA	Root mean squared error
SE	Standard Error
SEM	Structural equation modelling
SET	Self-enactable technique
TAC	Temporary abstinence challenge
TLI	Tucker-Lewis index
VIF	Variance Inflation Factor
WHO	World Health Organization

Chapter I

Temporary Abstinence Challenges: What do we need to know?

Co-authors: Inge Kersbergen, John Holmes & Matt Field

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Abstract

Participation in temporary abstinence challenges (TACs) continues to increase with campaigns established in several countries. Temporarily abstaining from alcohol as part of such challenges is associated with ongoing benefits including reductions to alcohol consumption after the TAC. We identified three research priorities regarding TACs which are outlined in this paper.

First, the role of temporary abstinence itself is unclear with post-TAC reductions in alcohol consumption still apparent among participants who do not remain fully abstinent throughout the challenge. It is necessary to establish to what degree temporary abstinence itself, rather than the combination of abstinence and the additional supports provided by TAC organisers (e.g. mobile applications, online support groups), contributes to changes in consumption after the TAC.

Second, little is known about the psychological changes underlying these changes in alcohol consumption, with conflicting evidence as to whether increases in someone's belief in their ability to avoid drinking mediates the association between participation in a TAC and reductions in consumption afterwards. Other potential psychological and social mechanisms of change have been subjected to little, if any, scrutiny.

Third, evidence of increased consumption post-TAC among a minority of participants indicates a need to establish for whom or in what circumstances participation in a TAC may result in unintended negative consequences.

Focussing research in these areas would increase the confidence with which participation could be encouraged. It would also enable campaign messaging and additional supports to be prioritised and tailored to be as effective as possible in facilitating long-term change.

Introduction

Temporary alcohol abstinence challenges (TACs) have increased in popularity over the past decade with campaigns established in Europe, North America, Thailand and Australia (Thai Health Promotion Foundation (ThaiHealth), 2020; kékpont, 2021; Ezy Raise, 2022; Alcohol Change UK, 2024a; Dry July Foundation, 2025; febfast, 2025; IkPas, 2025c; Tournée Minérale, 2025; Fédération Addiction, n.d.). Large numbers of people sign up to these campaigns, with many more participating informally without accessing the additional supports provided by organisers (Bovens et al., 2017; Alcohol Change UK, 2024a). For example, in 2021, 130,000 UK drinkers registered for the official "Dry January" campaign, with an estimated 6.5 million also taking part informally without registering (Alcohol Change UK, 2024a). Participation has been to linked to health benefits which may persist beyond the period of the TAC itself, with some participants reducing their alcohol consumption when they resume drinking after the TAC has ended (de Visser et al., 2016; Bovens et al., 2017; Thienpondt et al., 2017; Bovens et al., 2020; de Visser & Piper, 2020).

Given their extensive reach, popularity, simplicity, and potential for long-term benefits, TACs may provide a low-cost way to reduce alcohol harms at the population-level. It is therefore important to establish *whether*, *how*, *for whom* and *in what contexts* participation in TACs leads to long-term behaviour change. This would enable organisers to tailor campaign messaging and maximise the effectiveness of the supports provided. In this paper we outline the need for well-controlled research to confirm the outcomes of participation, investigate the mechanisms through which they prompt people to change their drinking, and evaluate their potential for unintended adverse effects.

Outcomes of participation

Evaluations of one-month TACs found that participation was associated with an enduring reduction in alcohol consumption (Hillgrove & Thompson, 2012; de Visser et al., 2016; Bovens et al., 2017; Thienpondt et al., 2017; Bovens et al., 2020; de Visser & Piper, 2020). Prospective studies of Dry January in the UK (de Visser et al., 2016; de Visser & Piper, 2020), IkPas in the Netherlands (Bovens et al., 2017; Bovens et al., 2020), and Tournée Minérale in Belgium (Thienpondt et al., 2017) found participation to be associated with a reduction in alcohol consumption 6 months after the challenges were over, with variable effect sizes reported (e.g. $d > .18$ in (de Visser et al., 2016)). Studies of Dry January also identified increases in drink refusal self-efficacy (DRSE, i.e. confidence in the ability to refuse alcohol; Young et al., 1991) at one-month follow-up (de Visser et al., 2016; de Visser & Piper, 2020), alongside improvements in wellbeing, and mental and physical health (de Visser & Lockwood, 2018; Terebessy et al., 2018; de Visser & Nicholls, 2020; de Visser & Piper, 2020).

Outside of organised TACS, temporary abstinence has been associated with improvements in physical health markers (Mehta et al., 2018; Munsterman et al., 2018). However, these improvements were not

maintained following the resumption of drinking (Munsterman et al., 2018) indicating the importance of studying ongoing changes to drinking behaviour post-TAC. Two prospective studies compared TAC participants with drinkers who were not attempting to temporarily abstain. Although drinkers not participating in a TAC did not reduce their drinking over time (Thienpondt et al., 2017; de Visser & Piper, 2020), TAC participants reported significantly higher alcohol consumption at baseline compared to the control group. Therefore, any reduction in consumption at follow-up in TAC participants could be partially attributable to regression to the mean (McCambridge et al., 2014).

Disentangling the roles of temporary abstinence, commitment and external support

Prospective studies revealed that TAC participation is associated with reduced alcohol consumption at follow-up and improved mental health and wellbeing, even in participants who did not completely abstain (although effects were larger in TAC participants who did so) (de Visser et al., 2016; Terebessy et al., 2018; de Visser & Nicholls, 2020; de Visser & Piper, 2020). This suggests that whilst abstinence is the focal point of campaigns, it is not the only factor contributing to longer-term outcomes. This is unsurprising as many TACs are complex interventions with multiple components which complement as well as facilitate abstinence. These components, including registration, mobile phone applications for goal-setting and progress monitoring, and online peer support groups, may be active ingredients that individually or in combination promote long-term behaviour change.

For example, participants are more likely to remain abstinent throughout a TAC if they commit to doing so by formally registering (Jirarattanasopha et al., 2019; Saengow, 2019; de Visser & Piper, 2020; Witvorapong & Watanapongvanich, 2020). These findings are consistent with the broader literature on commitment and health behaviour change (Nyer & Dellande, 2010; Coupe et al., 2019; Black et al., 2020). People who registered for Dry January but did not remain abstinent were more likely to have improved DRSE and wellbeing scores compared to informal participants who did remain abstinent (de Visser, 2019). This highlights the relative roles of commitment and temporary abstinence and the possibility that registering for a TAC may contribute to long-term change, even if abstinence is not maintained. Future studies should evaluate the association between duration and/or frequency of periods of abstinence and changes to alcohol consumption at follow-up. This would establish if there are particular patterns of abstinence that are associated with long-term benefits; in turn this may enable briefer TACs (e.g. one week) to be introduced, which might increase their acceptability.

The picture is further complicated by the external supports that are sometimes offered to registered participants (e.g. Alcohol Change UK, 2024a; IkPas, 2025c; Tournée Minérale, 2025; Fédération Addiction, n.d.). Engagement with this support may be important: participants who read daily support emails were more likely to remain abstinent during Dry January than those who did not (de Visser &

Nicholls, 2020) . Having access to such supports may also help participants manage challenges associated with temporary abstinence including lack of support, social consequences and the inescapability of alcohol in society (Pennay et al., 2018). Whilst studies have examined the frequency of use of various supports (Thienpondt et al., 2017; de Visser & Lockwood, 2018; de Visser, 2019; Bovens et al., 2020) and begun to explore their role in supporting TAC participants through the abstinence period (Bartram et al., 2018; de Visser & Lockwood, 2018; Yeomans, 2019) it remains unclear how *use of*, rather than *access to*, supports is associated with enduring changes to alcohol consumption.

Temporary abstinence, commitment and external supports may all play a role in the outcomes associated with TAC participation. Disentangling the contributions of these different factors could influence how TACs are framed to prospective participants. For example, if successfully completing the period of abstinence is key to long-term benefits, then a simple message – "try taking a month off alcohol" could be incorporated into public health messaging, brief interventions, health service websites and other population-level campaigns. Alternatively, if commitment or use of supports is more important than temporary abstinence, campaign messaging could encourage people to register and actively engage with the supports available.

Mechanisms of change

We have limited understanding of the psychological and social mechanisms underpinning any longer-term reductions in alcohol consumption after TACs. One candidate mechanism is DRSE, with increased DRSE following participation in Dry January associated with reduced alcohol consumption (de Visser et al., 2016), consistent with the broader literature (Maisto et al., 2000; Voogt et al., 2014; Gause et al., 2016). However, this finding has not been consistently replicated across other TACs (Thienpondt et al., 2017) and should be further scrutinised.

Other potential determinants of change following TAC participation have yet to be examined. Motivation to change is an important modifiable determinant of behaviour, although its role in alcohol-related behaviour change is complex and ambiguous (Apodaca & Longabaugh, 2009; Kuerbis et al., 2013; de Vocht et al., 2018). TAC participants are a self-selected group, many of whom are likely motivated to reduce their alcohol consumption. Indeed, Dry January participants are more concerned about their drinking compared to drinkers who do not participate (de Visser & Piper, 2020). Furthermore, the majority of TAC participants want to make changes to their drinking beyond the TAC itself (Bovens et al., 2017; de Visser & Lockwood, 2018; Bovens et al., 2020). However, not everyone who participates in a TAC does so with the intention of making long-term changes to their drinking. Whilst some TACs are promoted as a way to break habits and change one's relationship with alcohol (kékpont, 2021; e.g. Alcohol Change UK, 2024a; IkPas, 2025c; Tournée Minérale, 2025; Fédération Addiction, n.d.) others are predominantly framed as fundraising challenges (e.g. Dry July

Foundation, 2025; febfast, 2025). The framing of a TAC may influence who participates and whether they aspire to make longer-term changes to their drinking (Hillgrove & Thompson, 2012; de Visser, 2019). For example, around 40% of FebFast 2011 (fundraising focussed) participants reported taking part to initiate an ongoing change (Hillgrove & Thompson, 2012), compared to 97% of registrants surveyed prior to Dry January 2019 (behaviour change focussed) (de Visser, 2019). Therefore, the framing of campaigns might contribute to the probability of participants making ongoing changes to their alcohol intake, suggesting a need for comparative analyses across TACs or between distinct iterations of a single TAC. Overall, the role of motivation to change, both as a determinant of who signs up for TACs and as a potentially enduring consequence of participation, requires further study.

Other notable determinants of health behaviour change include identity change, modification of social routines, and increasing recognition of the health consequences of a behaviour (Michie et al., 2013; Knittle et al., 2020). As applied to TACs, changes to drinker identity (Yeomans, 2019), adjustment of social practices to accommodate ongoing changes to alcohol consumption (Bartram et al., 2017) and experiencing the health benefits of temporary abstinence (de Visser, 2019; de Visser & Piper, 2020; Field et al., 2020) may all contribute to enduring reductions in drinking following TAC participation; all are worthy of further investigation. Understanding the mechanisms through which participation in TACs leads to change would enable organisers to prioritise, develop and refine intervention components to target the relevant determinants and thereby increase the likelihood of participants reducing their drinking over the longer-term.

Potential negative effects

It is important to look beyond the intended outcomes of a behaviour change intervention and consider the potential for it to have unintended negative consequences such as rebound effects and risk compensation (Bonell et al., 2015; Ogden, 2016a). People with alcohol dependence are discouraged from participating in TACs because of the risks associated with abrupt abstinence without medical supervision. Separately, concerns have been raised that some risky drinkers may engage in temporary abstinence to justify hazardous drinking throughout the rest of the year (Hamilton & Gilmore, 2016). This has received little research attention although one previous study indicates it may only apply to a small minority of TAC participants, who report an increase in frequency of drunkenness 6 months later (de Visser et al., 2016). Nonetheless, it is essential to establish whether, for some people, participating in a TAC could discourage them from reducing their drinking longer-term, and whether the way in which TACs are framed, e.g. as a standalone fundraising challenge rather than a way to initiate ongoing change, contributes to this. Characterisation of individual differences that predict negative outcomes during and after participation could enable such individuals to be identified, discouraged from TAC participation and directed to alternative support.

Summary

TACs have become increasingly popular. They offer potential for a relatively low-cost way of tackling alcohol-related harms, but to fulfil this potential it is crucial that we develop a deeper understanding of them. The popularity and longevity of TACs ensures a living laboratory through which we could further our understanding of these complex interventions using sophisticated prospective observational and randomised studies to confirm the apparent benefits of taking part and to clarify the mechanisms through which participation leads to ongoing changes to drinking. We must also attempt to determine the likelihood of unintended negative consequences in order to mitigate them. Establishing the extent to which TACs help people to reduce their drinking, for whom, and how, would ensure that messaging and the external supports provided can be tailored to maximise the potential benefits of participation whilst minimising any harms.

Chapter II

General Introduction

Co-authors: Inge Kersbergen, John Holmes & Matt Field

Contributions: All coauthors contributed to planning the PhD. I wrote the original draft of the chapter. MF and IK reviewed and provided feedback.

Dry January

Alcohol is a harmful commodity**.** It is responsible for 5.1% of the global burden of disease and, in 2016, over three million deaths worldwide were attributable to its use (World Health Organization, 2018; Shield et al., 2020). Alcohol has a causal role in over 200 communicable and noncommunicable diseases and injuries and is a risk factor for seven types of cancer (Rehm et al., 2010; Rehm et al., 2017). The risk for many alcohol-related diseases increases with greater consumption (Rehm et al., 2010; Rehm et al., 2017). Further to the risks to the individual, alcohol consumption is also associated with harm to others, including from crime, violence, negative effects on wellbeing and mental health, and alcohol-related traffic incidents (Anderson et al., 2009; Casswell et al., 2011). Whilst alcohol consumption in some regions, including Europe, has reduced, globally it continues to increase (World Health Organization, 2018) and is anticipated to do so until 2030 (Manthey et al., 2019). Europe still has the highest per capita consumption (World Health Organization, 2018) suggesting that, despite a downward trend in alcohol consumption, alcohol harm remains a major concern. In the 2022 Health Survey for England, 32% of men and 15% of women reported drinking at levels placing them at increasing or higher risk of alcohol harm (NHS England, 2024). Substantial increases in alcohol-specific deaths over the last few years further demonstrates that more needs to be done to address alcohol harm (Oldham et al., 2025). A potentially effective way of addressing alcohol consumption and harm at the population level is through public health campaigns such as Dry January.

Beginning the New Year by resolving to make positive changes to one's life is a well-established tradition. Commitment to health-related behaviour change is common with people pledging to stop smoking, increase physical activity, lose weight and reduce alcohol intake (Marlatt & Kaplan, 1972; Norcross & Vangarelli, 1988; Norcross et al., 1989). Whilst Dry January capitalises on this longstanding practice, it is itself a relatively recent concept. The 'official' UK Dry January campaign is organised by the charity Alcohol Change UK (ACUK, previously Alcohol concern) and first took place in 2013 (Alcohol Change UK, 2024a). During Dry January people are encouraged to avoid drinking for the month and to 'reset their relationship' with alcohol. Since the inaugural campaign, participation has increased annually with 215,000 people registering for the 2024 iteration (Alcohol Change UK, 2024a). Many more people undertake an independent, alcohol-free January, with up to 15.5 million expected to attempt an alcohol-free January in 2025 without registering for the 'official'

campaign (Alcohol Change UK, 2024b). People who elect to register can do so via the ACUK website or by downloading ACUK's Try Dry smartphone app. In addition to their alcohol reduction app, registrants can also choose to receive daily motivational emails or join (ACUK moderated) Dry January Facebook groups.

Participation in temporary abstinence challenges (TACs) such as Dry January may also confer lasting health benefits, i.e. extending beyond the month of January. Several prospective observational studies have found participation in Dry January to be associated with a reduction in alcohol consumption six months later (de Visser et al., 2016; de Visser & Lockwood, 2018; de Visser, 2019; de Visser & Piper, 2020). Reductions in the frequency and quantity of alcohol consumption and frequency of heavy drinking occasions (> 6 units consumed) have been observed with small to medium effect sizes reported (e.g. d= 0.18 - 0.53, de Visser et al., 2016). An increase in drink refusal self-efficacy (DRSE), belief in the ability to refuse alcohol if offered (Young et al., 1991), during Dry January has been suggested to mediate these reductions (de Visser et al., 2016). Whilst this suggests participation in Dry January is associated with ongoing changes to alcohol consumption, conflicting findings have also been reported. A population-level study found that among the general public, across a three year period, an increase in Dry January participation was not accompanied by a reduction in alcohol consumption (Case et al., 2021). Collecting further evidence regarding mid-term, i.e. up to six to months after Dry January, changes in alcohol consumption would help resolve this inconsistency.

Notwithstanding the potential benefits of participation, concerns have been raised that, as participation is self-selected, the campaign may attract low risk drinkers (Hamilton & Gilmore, 2016). With the World Health Organisation (WHO) announcing that there is no safe level of alcohol consumption (Anderson et al., 2023) and evidence of associations between alcohol harm and more moderate consumption (e.g. Rumgay et al., 2021) lower risk drinkers further reducing their alcohol consumption is by no means a bad thing. Indeed research indicates that drinkers across all levels of risk (from lower risk to possible dependence) (Babor et al., 2001; Public Health England, 2017) participate in, and potentially benefit from, Dry January (de Visser & Lockwood, 2018; de Visser, 2019). However, with the risk of harm increasing with increased alcohol consumption (Rehm et al., 2003; Rehm et al., 2017), supporting heavier drinkers to reduce their consumption should be prioritised. Establishing the specific impact of Dry January participation for heavy drinkers would contribute to this and potentially assuage concerns that Dry January only benefits low-risk drinkers.

Dry January participation has also been associated with benefits including improved wellbeing, increased general self-efficacy, and physical health benefits such as better sleep, concentration, and energy levels (de Visser & Lockwood, 2018; de Visser, 2019; de Visser & Piper, 2020). Evidence of physical health improvements comes primarily from self-report, although a small number of studies have examined physiological outcomes associated with temporary abstinence more generally. One

prospective observational study found that, relative to a control group of drinkers not abstaining from alcohol, those who abstained for one month experienced reductions in weight and blood pressure and improvements in cancer-related growth factors and insulin resistance (Mehta et al., 2018). Additionally, Munsterman and colleagues (2018) observed improvements in markers of liver function among moderate alcohol consumers who abstained for 28 days. However, these improvements were not maintained following resumption of alcohol consumption. Therefore, whilst there are indicative findings of the physiological benefits of temporary abstinence, it is unclear to what extent, if any, these are maintained when alcohol consumption resumes.

Whilst participation in Dry January appears to be associated with positive outcomes it is less clear to what extent these benefits are directly attributable to Dry January participation and to what extent other factors might contribute. A previous prospective observational study attempted to provide further insight by comparing outcomes at six months for Dry January participants and people who drank alcohol but did not take part in Dry January (de Visser & Piper, 2020). De Visser and Piper (2020) found that reductions in consumption observed among Dry January participants were not seen in the control group. This indicates that reductions in alcohol consumption are not attributable to a general seasonal variation in alcohol consumption (de Vocht et al., 2016) which would have occurred notwithstanding Dry January participation. However, this study was limited by differences in baseline levels of consumption with the Dry January group reporting significantly greater alcohol consumption (Mean AUDIT-C = 8.47) compared to the control group (Mean AUDIT-C =5.74) (de Visser & Piper, 2020). Whilst this appears to refute suggestions that Dry January is more likely to attract lighter drinkers, it also influences our interpretation of the results. There is evidence of regression to the mean when alcohol consumption is measured over time, such that people reporting higher levels of consumption initially are more likely to report a reduction six months later even in the absence of any intervention (McCambridge et al., 2014). We might, therefore, expect that, given their higher baseline consumption, people who self-select into Dry January would report a reduction in consumption at follow-up even if they had not participated in Dry January. As such it remains unclear to what extent, if at all, seasonal variation in consumption contributes to reductions in alcohol consumption following participation in Dry January.

Both level of abstinence during January, and mid-term outcomes of Dry January participation have been found to differ between those who participate ‘officially’ and those attempting an independent, ‘unofficial’, Dry January (de Visser, 2019; de Visser & Piper, 2020). Whilst ‘official’ participants are more likely to report total abstinence during January (de Visser & Piper, 2020) similar proportions of ‘official’ and ‘unofficial’ participants who were fully abstinent report reduced consumption at six months (de Visser, 2019). Additionally, ‘official’ participants who remain partially abstinent were more likely to report improvements to physical health, wellbeing and DRSE than fully abstinent ‘unofficial’ participants (de Visser, 2019). Overall, this suggests that registering for Dry January and

having access to the online supports provided by campaign organisers may contribute to the likelihood of complete abstinence. However, it also indicates that total abstinence is neither necessary nor sufficient for enduring positive changes following participating in Dry January. 'Official' participation, whether through the act of registration or the access to structured supports this permits, may be an important predictor of both a successful Dry January and of experiencing lasting benefits.

These speculative interpretations are, however, offered cautiously as comparisons between 'official' and 'unofficial' participants were limited by differences in alcohol consumption at baseline. Again 'official' participants had substantially greater levels of consumption compared to a comparison group of 'unofficial' Dry January participants (de Visser, 2019). Further differences between groups were evident across sociodemographic factors including education, income, and gender. This may indicate genuine disparities between people who elect to register for Dry January and those who participate 'unofficially' or do not take part at all. However, the current evidence does not allow us to definitively conclude that this is the case. Employing better-matched comparison groups, particularly with respect to baseline alcohol consumption, would enable more robust evaluation of the influence of 'official' registration and access to online supports on beneficial changes following participation in Dry January.

Observation of reductions in alcohol consumption following Dry January may be confounded or partially explained by the seasonality of the TAC, i.e. the time of year at which it occurs. In previous prospective studies, baseline measures of alcohol consumption were obtained either at time of registration or late December (de Visser et al., 2016; de Visser & Lockwood, 2018; de Visser, 2019; de Visser & Piper, 2020). With a sizeable proportion of participants only deciding to participate, and consequently register for, Dry January in the preceding month (de Visser, 2019) baseline measures for the majority of participants are, therefore, likely to be captured in December coinciding with increased alcohol consumption over Christmas/New Year (Lemmens & Knibbe, 1993; Uitenbroek, 1996; Cho et al., 2001). Thus the reductions in consumption observed may actually reflect, at least in part, individuals returning to their typical alcohol consumption following increased drinking over the festive period. Obtaining a baseline measure of consumption prior to this period would help to determine the role of seasonality on the reductions in consumption associated with Dry January participation.

Whilst abstaining from alcohol is the main premise of Dry January it remains unclear to what degree abstinence itself is a causal factor for enduring changes in alcohol consumption. The extent to which participants remain abstinent during Dry January varies with more moderate consumption at baseline associated with increased likelihood of total abstinence (de Visser et al., 2016; de Visser & Lockwood, 2018). Many of the benefits associated with Dry January are evident, albeit to a lesser extent, even when abstinence is only partial (de Visser et al., 2016; de Visser & Piper, 2020). Some

outcomes, including increased general self-efficacy following January, are only associated with total abstinence (de Visser & Nicholls, 2020) . This may reflect stronger associations between abstinence and some outcomes. Alternatively it may imply that *attempting* rather than achieving abstinence is what counts. Increased attention towards one's consumption/non-consumption and cravings for alcohol whilst attempting to abstain may be the underlying expounding factor. Comparison of Dry January participants with individuals attempting to reduce, but not abstain from, alcohol consumption could offer insight into this. Considering degree of abstinence in addition to total versus partial abstinence would further clarify the role of abstinence.

Concerns have been expressed that abstinence during Dry January may be used by participants as justification for subsequent heavy drinking (Hamilton & Gilmore, 2016). Self-licensing, whereby one's positive past behaviour is used to justify future indulgent behaviour, has been suggested to influence consumption (Merritt et al., 2010; de Witt Huberts et al., 2012). In the context of Dry January, having abstained from alcohol for one month may prompt a person to justify (to themself) harmful drinking throughout the rest of the year. Increased consumption or 'rebound effects' following Dry January participation is, of course, contrary to the campaign's aims. However, there is evidence to suggest that these unintended consequences are worthy of further examination. De Visser and colleagues (2016) reported increased consumption at follow-up (frequency, quantity and/or frequency of heavy drinking occasions) among 8% to 14.8% of fully abstinent and 12.3% to 17.2% of partially abstinent Dry January study participants. Another study found that a substantially greater proportion of 'unofficial' participants (41%) relative to 'official' participants (17%) reported 'rebound' effects (de Visser, 2019). Establishing the extent of any increases in consumption and identifying who is most likely to be affected would contribute to minimising any unintended harms resulting from Dry January participation.

In summary, participation in Dry January appears to be associated with benefits including a lasting reduction in alcohol consumption. However, inconsistencies between findings from prospective studies and a population study need to be resolved. Establishing the effectiveness of Dry January for heavy drinkers could demonstrate its usefulness for those at increasing and higher risk of harm and address concerns that only lower risk drinkers benefit from Dry January. Attempts have been made to delineate the roles of seasonal variation in consumption, access to online supports and abstinence on changes in alcohol consumption following Dry January participation. Limitations of previous research mean that ambiguities remain. Comparing outcomes for 'official' participants with well-matched 'unofficial' participants and individuals not attempting any Dry January may help resolve these ambiguities.

Other temporary abstinence campaigns

In the last 20 or so years TACs have been established across Europe, North America, Australia, and Thailand (de Ternay et al., 2022) including Száraz November in Hungary (kékpont, 2021), IkPas (IkPas, 2025c) in the Netherlands, Tournée Minérale in Belgium (Tournée Minérale, 2025), Le défi de Janvier in France (Défi de janvier, 2025) Go Dry in Canada (Go Dry, 2025), Dry July in Australia (Dry July Foundation, 2025) and Buddhist Lent in Thailand (Saengow, 2019; Saengow et al., 2024). Through partnerships with local organisations, ACUK's trademarked Dry January challenge has also expanded and now takes place in France, Switzerland, Germany, Norway, Iceland, parts of Italy and the USA.

Ostensibly the mechanisms of TACs are similar: encourage people who consume alcohol to take a break from drinking for a defined period of time. However, differences in approaches and desired outcomes are apparent depending on the motivation behind a given TAC. Many campaigns support fundraising during the temporary abstinence period. Whilst a minority of campaigns emphasise this component of TACs (e.g. Dry July Foundation, 2025; Go Dry, 2025), others focus on inspiring ongoing changes to drinking behaviour (e.g. IkPas, 2025c; Tournée Minérale, 2025). Evidence regarding the outcomes of participation in TACs beyond Dry January is somewhat limited, although it is beginning to increase. Perhaps unsurprisingly the majority of research is on TACs that promote ongoing behaviour change, this disparity is reflected in the evidence presented below.

The Dutch campaign IkPas ('No Thanks') is, similarly to UK Dry January, motivated by a desire to enhance individuals' understanding of their own relationship with alcohol and enable more conscious alcohol-related decision-making moving forward (IkPas, 2025b). Registered participants have access to a support package including a newsletter, online forum, and IkPas coach chat function (Bovens et al., 2021).Whilst IkPas campaigns are now held across the year to maximise participation (IkPas, 2025b), most evaluation focusses on two longstanding and popular campaigns: Dry January and '40 days without a drop' ('40 days') during the Christian festival of Lent. As with the UK Dry January campaign, IkPas participants are more likely to report high baseline alcohol consumption and exceed recommended drinking guidelines (Bovens et al., 2020; Kools et al., 2024) indicating that those at greater risk of alcohol harms are being reached by TACs. Consistent with evaluations of the UK Dry January, prospective studies have shown participation in IkPas to be associated with a reduction in alcohol consumption up to six months later (Bovens et al., 2017; Bovens et al., 2020; Bovens et al., 2021). Similar outcomes have been reported for both IkPas Dry January and '40 days' (Bovens et al., 2020) demonstrating that the benefits of TAC participation are observable during different times of the year. However, both campaigns occur during periods associated with specific customs. January is conventionally a time for committing to positive health-related behavioural changes (Norcross & Vangarelli, 1988; Norcross et al., 1989) and Lent traditionally a period for fasting in the Christian faith and latterly of abstaining from favoured food or drink (Cameli, 2010). Avoiding alcohol

consumption is likely to be more common during both periods relative to other times of the year. As such, the role of seasonality and associated cultural or religious practices, on the outcomes associated with participation in TACs cannot be dismissed.

A reduction in the strength of drinking habits and craving for alcohol following participation in IkPas has also been reported (Bovens et al., 2020; Esselink et al., 2024). In contrast to UK Dry January, researchers observed no significant change in DRSE among IkPas participants (Esselink et al., 2024). However, this study only included participants who expressed an interest in accessing an IkPas self-help guide. As such, they may reflect a subgroup of participants who were particularly motivated to make an ongoing change to their alcohol consumption (Esselink et al., 2024). This finding may not, therefore, translate to IkPas participants in general. Nevertheless, this apparent inconsistency regarding DRSE's proposed role as a mediator of change in alcohol consumption following Dry January participation (de Visser et al., 2016) suggests it would be beneficial to further interrogate the changes in DRSE associated with TAC participation.

Evaluation of participation in Dry January 2022 highlighted another difference between the two campaigns, noting that IkPas participants were, on average, older than their UK Dry January equivalents (Kools et al., 2024). The authors suggest this disparity may be attributable to the smartphone app offered by the UK campaign attracting more younger participants. A smartphone app is now available as part of the IkPas support package (IkPas, 2025a) though evidence as to the impact of this particular support is not yet available. Research has however examined the effectiveness of an IkPas self-help guide, with an RCT finding no additional effect of self-help guide use on reductions in alcohol consumption, craving, and drinking habits following IkPas participation (Esselink et al., 2024). This highlights the need for research into TACs which examines the effect of access to and, crucially, use of structured supports on outcomes of participation.

Tournée Minérale in Belgium also prioritises enduring behaviour change, encouraging people to take a break from drinking during February and use this period to reflect on their relationship with alcohol (Tournée Minérale, 2025). Evaluation of the inaugural Tournée Minérale in 2017 found participation was associated with a reduction of two alcohol drinks per week (seven to five) at six month follow-up (Thienpondt, Van Cauwenberg, et al., 2025). Significant decreases were observed in higher risk drinkers whereas a small increase in consumption was observed among lower risk drinkers. This is indicative of regression to the mean (McCambridge et al., 2014) and strengthens the argument that some of the reductions in alcohol consumption observed following Dry January participation may be attributable to regression to the mean. It provides further support for the need for TAC research which uses well-matched comparison groups.

Changes in some psychological and social determinants of alcohol consumption were also observed. Participants reported more positive attitudes towards drinking less alcohol and a reduction in habitual

alcohol consumption at follow-up (Thienpondt, Van Cauwenberg, et al., 2025). In conjunction with evidence from IkPas, this suggests that one of the mechanisms through which TACs lead to ongoing change is through weakening of drinking habits. Additionally, among male participants only, exposure to Tournée Minérale materials was shown to mediate reductions in alcohol consumption at six months (Thienpondt, Deforche, et al., 2025). However, no significant changes in DRSE were observed (Thienpondt, Van Cauwenberg, et al., 2025). Whilst this is consistent with findings from IkPas, it contradicts evidence from evaluations of Dry January. This further reinforces the need to collect additional evidence regarding the role of DRSE in changes in alcohol consumption following participation, to attempt to resolve this inconsistency.

The Hungarian campaign, Száraz November ('Dry November'), aims to empower participants to engage in moderate alcohol consumption moving forward (kékpont, 2021). Limited quantitative evidence is emerging regarding outcomes of participation. A conference abstract reports a longitudinal survey study of 125 participants, finding that successful completion of the TAC did not predict the likelihood of increased AUDIT-C score one year later (Terebessy et al., 2020). Whilst this evidence is insufficient to make conclusive claims, I would tentatively suggest it supports my earlier call to further examine the role of abstinence in long-term changes following participation in Dry January. Additionally, a small prospective study (N= 31) reported a moderate increase in DRSE over November and a reduction in anxious-depressive symptoms (Nagy et al., 2025). There was no significant change in alcohol craving. These findings, with the exception of cravings, are consistent with the increase in DRSE and improved wellbeing observed among Dry January participants (de Visser & Nicholls, 2020; de Visser & Piper, 2020). Given the small sample sizes in both studies, evidence regarding Dry November is currently best described as indicative of positive changes being associated with participation. Larger, well-powered studies are needed to draw more definitive conclusions.

The Buddhist Lent abstinence campaign has taken place annually in Thailand since 2003 and, with a duration of three months, is considerably longer than the majority of TACs (Saengow et al., 2024). Operating at a national and community level, a mass media campaign runs alongside community workshops, peer groups, and opportunities to publicly commit to abstinence (Saengow, 2019; Saengow et al., 2024). Occurring during Buddhist Lent in an overwhelmingly Buddhist country, the campaign utilises alcohol being perceived as a vice in Buddhism to promote participation (Saengow, 2019). Research indicates there are high levels of engagement, with around one third of drinkers nationally believed to have taken part in 2016 (Saengow, 2019). However, in contrast to Dry January, those who drank less frequently were more likely to take part (Saengow, 2019). Thus whilst Buddhist Lent has some similarities to Dry January it has a number of notable differences including duration, emphasis on ongoing abstinence, provision of intensive supports, and association with religious practices.

The campaign has been shown to be associated with a population-level reduction in alcohol consumption (Saengow et al., 2024). A time-series analysis of alcohol sales across a 23 year period revealed alcohol purchasing reduced by around 10% during Buddhist Lent each year (Saengow et al., 2024). However, this reduction was not maintained with consumption increasing to pre-campaign levels after Buddhist Lent suggesting no long-term association between participation and reductions in alcohol consumption. Whilst only two studies have examined the population-level impact of TACs (Case et al., 2021; Saengow et al., 2024) neither have found an association with lasting reductions in alcohol consumption. It is possible that previously reported reductions in consumption are restricted to certain groups or a limited proportions of participants and as such are not observable at the population-level. However, given the limited evidence available, it would be premature to conclude that TACs do not have an impact at the population level.

Comparison of drinkers in areas with community-level supports and those in areas without supports revealed higher rates of abstinence in areas where community-level support was available (Jirarattanasopha et al., 2019). Abstinence remained higher in the supported villages three months after Buddhist Lent but no difference in abstinence rates was observed at six months. This suggests that the added effect of community-level activities on abstinence rates may only be short-term. Campaign participants are also encouraged to publicly commit to abstaining from alcohol. Publicly committing to abstinence has been shown to predict total abstinence during Buddhist Lent (Jirarattanasopha et al., 2019; Saengow, 2019; Witvorapong & Watanapongvanich, 2020). A quasi-experimental study found the benefits of making a public commitment were maximised if combined with access to community-level activities (Witvorapong & Watanapongvanich, 2020). Parallels have been drawn between making a public commitment for the Buddhist Lent abstinence campaign and registering for Dry January (Saengow, 2019) which is similarly associated with an increased likelihood of total abstinence for the duration of the TAC (de Visser & Piper, 2020). Witvorapong and Watanapongvanich (2020) suggest that the efficacy of public commitment during Buddhist Lent may be due, in part, to the religious alignment of the campaign and consequently religious and social pressure to maintain abstinence. The same cannot be true for Dry January which has no obvious religious connotations. This suggest that whilst making a commitment may increase the likelihood of an individual remaining fully abstinent throughout a TAC, the underlying mechanism may differ between campaigns.

Minimal evidence is available regarding outcomes of philanthropy focussed TACs. One evaluation of FebFast, an Australian TAC which encourages participants to avoid drinking during February to raise funds for suicide and addiction charities (febfast, 2025), was identified. This retrospective study found that, four months after FebFast, over 50% of participants reported drinking less frequently whilst just under half consumed less alcohol on a typical drinking occasion (Hillgrove & Thompson, 2012). Whilst many evaluations of TACs use surveys and thus are vulnerable to self-report bias (Stockwell et

al., 2004; Devaux & Sassi, 2016), this may be exacerbated by this study's retrospective design and requirement for participants to report change in consumption per drinking occasion. Consequently, whilst there is some evidence of enduring benefits following FebFast participation, the limitations of the study limit the inferences that can be drawn.

In summary, research into other TACs supports evidence from Dry January that participation in temporary abstinence challenges can lead to enduring reductions in alcohol consumption. The benefits of TACs appear to apply cross-nationally with at least indications of positive outcomes observed in the Netherlands, Belgium, Hungary, Thailand and Australia. However, the quantity and quality of evidence varies. Some campaigns prioritise philanthropy whilst others, like Dry January, emphasise behaviour change. Where enduring changes to behaviour are the primary motivation, TACs are often characterised by the provision of structured supports: minimal evidence of their efficacy is available at present. Some TACs leverage existing elements of religious festivals or practices, this may influence the mechanisms that underpin any changes during or following temporary abstinence. Overall, whilst participation in other TACs appears to be associated with ongoing changes in alcohol consumption, the diversity of campaigns may limit the extent to which findings can be generalized across TACs.

Models of alcohol use & behaviour change

Alcohol use

Public awareness of some of the specific health risks, e.g. breast cancer, associated with alcohol consumption is low (Buykx et al., 2016; Neufeld et al., 2024) though its role in other conditions, such as liver disease, is widely recognised (Neufeld et al., 2024). We can, therefore, reasonably surmise that many people are aware of at least some of the harms associated with alcohol, though they may not necessarily conceive of themselves as 'at risk'. As such and before moving on to examine how drinking behaviour can be changed, it is necessary to first consider *why* people drink alcohol.

Many theoretical models of alcohol use have been proposed. One such model is the motivational model of use conceived by Cox & Klinger (1988). It proposes that determinants of drinking influence the expected affective change which would be experienced should an individual drink or not. This biopsychosocial model incorporates past drinking experiences, current factors, net benefits, cognitive mediators, and net expected affective change, ending with the decision to drink or not (Cox & Klinger, 1988, 2011). Central to the model is the notion that an individual's motivation to regulate affect mediates the influence of determinants of drinking on their final decision. For a decision to drink alcohol to occur, the expected benefit to positive affect must surpass the anticipated consequences of not drinking. Thus the final pathway to alcohol remains motivational.

According to the model, drinking motives can be categorised according to two dimensions based on the desired outcome of drinking: the valence of affective change (positive/negative) and whether

change occurs directly or indirectly (direct/indirect) (Cox & Klinger, 1988, 2011). Cooper (1994) provided empirical support for the framework identifying four drinking motives; **enhancement** of positive feelings (positive/ direct), obtaining **social** reward (positive/indirect), **coping** with negative emotions (negative, direct), and **conformity** to avoid social disapproval (negative, indirect). Research has found that drinking motives predict alcohol consumption and alcohol-related problems (Carey & Correia, 1997; Kuntsche et al., 2005; Piasecki et al., 2014; Bresin & Mekawi, 2021) demonstrating the significance of motivation in alcohol use. Evidence from a meta-analysis identified different pathways between respective drinking motives, alcohol use and alcohol-related problems (Bresin & Mekawi, 2021) further confirming the influence of motivation to drink on distinct features of alcohol use including dependence.

COM-B Model of Behaviour

More general models of behaviour can provide a useful framework to understand or design behaviour change initiatives and interventions such as Dry January. The COM-B model of behaviour (Michie, van Stralen, et al., 2011) is one example and has previously been applied to several areas of alcohol research including identification of the barriers to use of No/Low alcohol drinks (Davies et al., 2025), factors influencing screening and brief intervention in primary care (Rosário et al., 2021), and understanding alcohol consumption in older adults (Kostadinov & and Bartram, 2025). It benefits from the inclusion of theoretical concepts from existing models alongside the addition of relevant constructs, including external or environmental, that were omitted from previous models (Michie, van Stralen, et al., 2011; Stevely et al., 2018). Of particular pertinence to Dry January is the ability of the model to account for external or environmental factors, something absent from many models of behaviour (Minian et al., 2020).

As with any theoretical model the COM-B also has its limitations. Whilst the breadth of the model means it can be flexibly applied to different domains, critics have highlighted its potential to oversimplify complex behaviour and to neglect the role of individual variability (Ogden, 2016b). As such, prior to adopting the COM-B model as the theoretical framework for this thesis other models were considered, in particular the Theory of Planned Behaviour (TPB; Ajzen, 1991). Widely applied to health-related behaviours including alcohol consumption (Cooke et al., 2014) this theory posits that behavioural intentions are the most proximal determinant of behaviour and that three components, attitude, subjective norms and perceived behavioural control, shape these intentions (Azjen, 1991). However, whilst the TPB would have allowed for inclusion of some of the candidate determinants of change with respect to Dry January, unlike the COM-B model it has limited scope for the inclusion of social or environmental determinants. Given the anticipated importance of these factors to Dry January, the COM-B model was selected as the most appropriate framework.

According to the COM-B model (Figure 2.1) behaviour is enacted when an individual has sufficient **capability** and **opportunity** to perform said behaviour and, at a given time, has greater **motivation** to engage in that behaviour than alternatives (Michie, van Stralen, et al., 2011). Capability, the knowledge, skills and abilities necessary to enact a behaviour, can be *physical* (e.g. strength, stamina) and/or *psychological* (e.g. knowledge, skills). Opportunity can be understood as the external factors required for a behaviour to occur and includes both *physical* (e.g. time, resources) and *social* (e.g. social support, cultural norms) factors. Motivation is defined by Michie and colleagues as all the *"brain processes that energize and direct behaviour, not just goals and conscious decision-making"* (2011). In the COM-B model, motivation includes *automatic* (e.g. desires, emotional responses) and *reflective* (e.g. intentions, goals, evaluation) processes. Capability and opportunity also directly influence motivation and thereby influence behaviour. This means that motivation is assumed to play a crucial role, not only by directly influencing behaviour itself, but also by mediating the effect of capability and opportunity on behaviour.

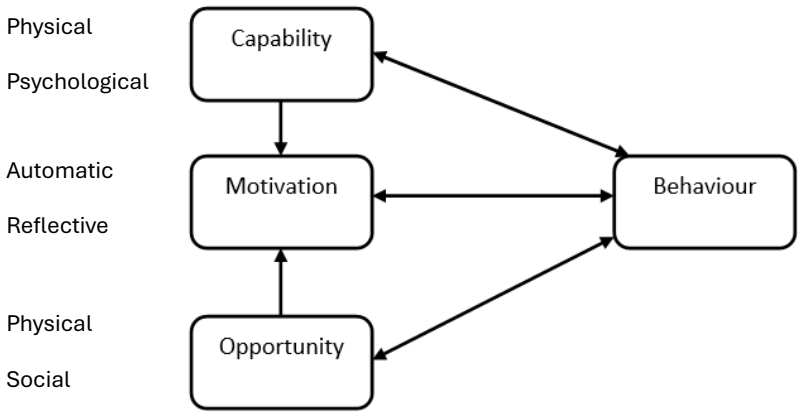

Figure 2.1: COM-B model of behaviour

Adapted from: "The behaviour change wheel: A new method for characterising and designing behaviour change interventions" by S. Michie, M. M. van Stralen and R. West, 2011, Implementation Science, 6, 42. Copyright 2011 by Michie et al; licensee BioMed Central Ltd

In this thesis, the COM-B model is intended to provide a heuristic framework around which relevant constructs can be organised, examined, and interpreted. Potential determinants of behaviour change have been identified and categorised according to the model (**Table 2.1**). First I identified different components of Dry January including the focus of behaviour change (temporary abstinence from alcohol), elements of the formal campaign (online communities, smartphone app etc) and considering how Dry January is positioned within society (e.g. cultural norms, social contagion). Next I examined the existing literature to identify a) determinants of behaviour change previously found to be associated with Dry January participation (e.g. DRSE) b) potential determinants alluded to but not measured in previous Dry January research (e.g. motivation) and c) potential determinants associated with different components of Dry January (e.g. online communities and identity change). As may be expected there were more potential determinants than would be feasible to rigorously examine in one

PhD. As such, I prioritised determinants for inclusion according to the strength of the hypothesised theoretical association and existing evidence and the practicality of measuring a given determinant. Finally, I classified each aspect of Dry January and potential determinant according to the corresponding COM-B component as shown in Table 2.1.The remaining sections of this review discuss these determinants and consider the evidence for their role in reductions in alcohol consumption following participation in Dry January.

Table 2.1: Potential determinants of drinking behaviour change and elements of Dry January according to COM-B model components

Model component		**Corresponding aspect of Dry January/ Determinant of drinking behaviour change**
Capability	Physical	*No relevant physical capability requirements identified*
	Psychological	Increase in DRSE Knowledge of personally effective behaviour regulation strategies (SETs)
Opportunity	Physical	Access to structured online supports
	Social	Social contagion Temporary changes to cultural norms
Motivation	Automatic	Desire to stop drinking during Dry January Desire to change drinking following Dry January
	Reflective	Intention to stop drinking during Dry January Intention to change drinking following Dry January Goal to complete Dry January
Behaviour		Temporary abstinence

Self-enactable techniques

During self-initiated attempts to change their alcohol consumption people often employ strategies to instigate and maintain said changes (Bishop, 2018). It is reasonable to expect that this will extend to Dry January as people attempt to abstain during the month and, in some instances, to reduce their subsequent consumption. Strategies or techniques to change behaviour can more formally be described as behaviour change techniques (BCTs). BCTs are the specific components which behaviour change interventions are comprised of and are intended to change the processes regulating behaviour (Michie, Abraham, et al., 2011). Researchers have identified BCTs used in alcohol reduction interventions, producing a taxonomy in which they are categorised as targeting either self-regulation or motivation (Michie et al., 2012). The ‘official’ Dry January campaign could be conceptualised as a behaviour change intervention. By contrast, the independent, not formally supported alcohol-free January undertaken by many people cannot. As such, the strategies used during

and following January may be more appropriately described as self-enactable techniques (SETs), actions taken by individuals to manage or modify their own behaviour (Knittle et al., 2020). Whilst framed around self-driven behaviour change, SETs often correspond closely to particular BCTs. In this thesis, conceptualising strategies as SETs rather than BCTs will ensure that strategy use can be examined in both 'official' and 'unofficial' Dry January participants.

Currently there is limited evidence regarding strategy use and behaviour change among Dry January participants. Qualitative interviews have identified some of the techniques used by participants to avoid drinking alcohol during Dry January (de Visser & Lockwood, 2018). Interviewees reported using a range of strategies including making a public commitment to Dry January, participating in alternative activities, distraction, monitoring and reflecting on their progress, and avoiding keeping alcohol in the home. Interviews with Tournée Minérale participants and analysis of diaries kept by Dry November participants indicate that similar strategies were used in both TACs (Pados et al., 2020; Thienpondt et al., 2024). This suggests that strategy use during TACs may, to some extent, be cross-cultural. However, Dry November participants also described strategies not reported by UK Dry January participants, including discretely disposing of alcohol during social events and consuming alternative substances e.g. cannabis (Pados et al., 2020). Whilst this may indicate variations in approach between different TACs, it may also reflect different levels of socially desirable responding in interview and diary studies.

People attempting to temporarily abstain from alcohol may use a variety of SETs to do so. Use of strategies targeting motivation and self-regulation were reported in the three studies above. However, it is unclear to what extent, SET use is associated with mid-term reductions in alcohol consumption. Additionally, we have little understanding of how strategy use progresses, changes, or potentially stops following Dry January. It is therefore necessary to expand our understanding of SET use and establish how use during and after Dry January relates to lasting reductions in alcohol consumption. Furthermore, by exploring how and why people employ specific SETs we can develop a comprehensive understanding of SET use. This may help to support people to ensure they are best-placed to have a successful Dry January, for example by informing improvements to the supports provided by ACUK to facilitate or prioritise certain SETs.

Capability

Drink refusal self-efficacy

Participation in Dry January has been associated with increases in both general self-efficacy, belief in one's own ability to undertake a behaviour or cope with a particular situation (Bandura, 1998), and in DRSE (de Visser et al., 2016; de Visser & Nicholls, 2020; de Visser & Piper, 2020). DRSE is comprised of three dimensions, each of which reflect self-efficacy to resist drinking alcohol in

response to a distinct trigger or situation: social pressure, opportunistic, and emotional relief (Young et al., 1991). All dimensions are negatively associated with alcohol consumption and are significant predictors of hazardous drinking (Young et al., 1991; Baldwin et al., 1993; Gullo et al., 2010; Gómez Plata et al., 2023). Compared to the general population, Dry January participants have lower levels of DRSE, i.e. are less confident in their ability to refuse a drink (de Visser & Piper, 2020). A stronger belief in one's ability to refuse a drink may support abstinence during January with greater emotion regulation and social pressure DRSE at baseline associated with an increased likelihood of total abstinence during Dry January (de Visser et al., 2016). Together these findings indicate that DRSE prior to Dry January predicts both participation and total abstinence during the month. It may also influence ongoing changes in alcohol consumption. DRSE has previously been shown to moderate treatment outcomes, with a review of outcomes for patients with alcohol use disorder (AUD) finding that, in the majority of studies, DRSE was positively associated with treatment outcome (Adamson et al., 2009). In the context of Dry January, this suggests that a greater belief in one's ability to refuse alcohol before Dry January participation may be associated with a greater reduction in consumption at six months. However, the role of DRSE as a potential moderator of mid-term change in alcohol consumption following Dry January participation has yet to be examined.

Whilst the role of baseline DRSE remains unclear, changes in DRSE during the course of Dry January do appear to contribute to reductions in alcohol consumption. Participation in behaviour change interventions is associated with an increase in DRSE (Voogt et al., 2014; Gause et al., 2016; Wood et al., 2023) with a study of contingency management finding that avoiding heavy drinking predicted an increase in DRSE (Wood et al., 2023). Increased DRSE following an intervention is also associated with reductions in consumption (Voogt et al., 2014; Gause et al., 2016). Indeed increases in DRSE during Dry January have been shown to mediate reductions in alcohol consumption six months later (de Visser et al., 2016). It is possible that, in repeatedly refusing or avoiding alcohol during January, the person demonstrates to themself that they are capable of choosing not to drink, resulting in an increase in DRSE. Observations of greater increases in DRSE among totally abstinent participants relative to those who remain only partially abstinent (de Visser & Piper, 2020) supports this interpretation.

Whilst there is some evidence to support the role of DRSE as both a moderator and mediator of change, some ambiguity remains. Evaluation of IkPas and Tournée Minérale, TACs otherwise very comparable to Dry January, found no evidence of a change in DRSE (Esselink et al., 2024; Thienpondt, Van Cauwenberg, et al., 2025). Further research is required to resolve this ambiguity and establish boundary conditions that determine when, how, and for whom DRSE plays an important role in participation in TACs.

Opportunity

Social Contagion

Social contagion, the spread of a belief, emotion, or behaviour across a social network (Christakis & Fowler, 2013), has been proposed as a potential mechanism driving change in alcohol consumption during, and following, Dry January (de Visser et al., 2016; de Visser & Piper, 2020). Though initiated by ACUK, the message of Dry January is disseminated through social networks amplifying and extending its reach. The experiences of at least some of the many millions of people who participate 'unofficially', potentially unaware of ACUK or the 'official' campaign, may be testament to this. The premise and structure of Dry January may be particularly well-suited to social contagion. Firstly, the simplicity of its key message, take a break from drinking alcohol for one month, requires minimal effort and cognitive capacity to understand and thus is advantageous for effective social contagion (Hodas & Lerman, 2014). Additionally, Dry January is framed as a public, shareable experience with participants encouraged to share their progress with others offline and online (Yeomans, 2019). The campaign also benefits from considerable coverage across old and new media and is widely discussed, albeit not always positively, on public social media (Russell et al., 2023). Together these factors may facilitate the social contagion potentially driving behaviour change during Dry January.

Whilst the effect of social contagion itself may not, at an individual level, be observable or measurable, related concepts, which could be thought of as markers of social contagion, have been considered. Interviews with 'official' Dry January participants noted a feeling of being "part of something bigger" associated with Dry January participation and a sense of connection to other participants (de Visser & Lockwood, 2018). Focus groups with Tournée Minérale participants also identified connectedness and a 'sense of togetherness' as facilitators of abstinence during the TAC (Thienpondt et al., 2024). Media played an important role in both instances. By providing people with a platform on which to observe a diversity of Dry January experiences and to exchange support and advice, social media heightened the connectedness felt by Dry January participants (de Visser & Lockwood, 2018). The mass media campaign accompanying Tournée Minérale similarly served to enhance the feeling of being part of something and increase feelings of connection to other participants (Thienpondt et al., 2024).

Whilst connectedness during TAC participation appears to be important to participants and potentially helpful in maintaining abstinence during the campaign, it is unclear whether this extends to subsequent behaviour. It would therefore be informative to examine whether a sense of connection and feeling part of something during Dry January are associated with ongoing changes in alcohol consumption. Additionally, experiences of 'official' TAC participants have thus far been prioritised. Studying the experiences of both 'official' and 'unofficial' participants will reveal whether this

experience is unique to participation in the organised campaign or if the cultural phenomenon of Dry January is such that even those nominally undertaking an "independent" Dry January still feel part of something bigger.

Cultural Norms

Cultural norms, the rules or beliefs influencing behaviour which are enforced by threat of social penalties (Room, 1975), inform individual behaviour across many social domains as individuals look to receive social approval and avoid sanctions (Gelfand & Jackson, 2016). Norms can serve to constrain or encourage drinking behaviour (Room, 1975). As a social practice, alcohol consumption incorporates norms of sharing, reciprocity and conformity (Cherrier & Gurrieri, 2012) and has a symbolic role in many social rituals (Bartram et al., 2017). Not drinking in a culture or context where consumption is the norm can be perceived as a violation of norms and result in social consequences (Piacentini & Banister, 2009; Cherrier & Gurrieri, 2012; Bartram et al., 2017). Anticipation of such consequences, for example having observed others experience them, may deter people from engaging in Dry January. Those who do participate could expect to experience social disapproval or other negativity during the month.

Social contagion may contribute to temporary changes in cultural norms regarding drinking during January. The value participants found in being 'part of something bigger' came not only from the connection but also the 'recognition and acceptability' it entailed (de Visser & Lockwood, 2018). The recognisability of 'Dry January' and a general understanding of what it involves, facilitated by the simplicity of the message disseminated through social networks, made it easy for participants to explain their non-drinking. Participants also found that taking part in Dry January was acknowledged as an acceptable reason for non-drinking. Many more people are aware of the campaign (78% of surveyed drinkers in 2016) than actually participate (de Visser et al., 2017). Given this widespread awareness, it is possible that, in addition to influencing the behaviour of those participating, the Dry January campaign also indirectly influences the behaviour of people who do not participate, specifically their response to others' non-drinking. Interviews with participants of the Australian TAC FebFast suggested that the campaign helps counter existing norms around alcohol consumption by making abstinence more socially acceptable, at least temporarily (Cherrier & Gurrieri, 2012). Increased acceptability of non-drinking or abstinence during Dry January is indicative of a temporary change in norms. Being less likely to face negative social consequences due to this relaxing of social norms may make it easier for people to avoid consuming alcohol. Consequently, in demonstrating to themselves they are able to refuse alcohol, this may support increases in DRSE. Thus whilst changes in norms are temporary they may contribute to longer-term reductions in alcohol consumption.

Shifts in existing drinking norms may not be universal, and as such increased acceptability of abstinence may not extend to all contexts. For example, some FebFast interviewees still felt a pressure to conform to cultural drinking norms, reporting an expectation from others to provide reasons for their non-drinking beyond taking a break (Cherrier & Gurrieri, 2012). In these situations, TAC participation is acknowledged but not considered sufficient justification suggesting that norms, in this context, have not changed. Drinking norms and the drinking cultures they inform are dynamic, varying over time, location, and context and can be influenced by social and cultural factors (Room, 1975; Gordon et al., 2012; Savic et al., 2016). As such, whilst Dry January might initiate temporary changes to cultural norms in some contexts, in other situations existing norms may persist and prevail.

Online supports

Access to free online supports is the main factor differentiating the 'official' and 'unofficial' Dry January participant experience. ACUK provide a daily motivational email, the Try Dry smartphone app, and two ACUK-moderated Facebook groups. Individuals who sign up to receive emails or download the app are considered to have registered for Dry January. Whilst research has explored participant perceptions of online supports and associations between support use and likelihood of total abstinence during a TAC, to date only one study has investigated the role of online supports on changes in alcohol consumption at follow-up. A prospective study of Tournée Minérale participants, published after the empirical work in this thesis was completed, examined the effect of exposure to TAC materials (newsletter, Facebook page, website) on alcohol consumption, comparing outcomes for male and female participants (Thienpondt, Deforche, et al., 2025). Exposure to the Tournée Minérale materials was found to mediate reductions in alcohol consumption at six months: participants who engaged with the materials reported slightly greater reductions in alcohol consumption at follow-up. However, this was a very small effect and only observed in males. This suggests that use of online supports may play a small role for certain groups of participants by facilitating ongoing changes to alcohol consumption following participation in TACs. It is important to note that this study used data collected during Tournée Minérale 2017 at which time only a newsletter, Facebook page, and website were available. Access to more sophisticated supports, e.g. smartphone apps, may be more impactful.

Emails. Regular emails or newsletters are a common support provided by organisers of TACs aiming to encourage ongoing behaviour change (e.g. Bovens et al., 2021; Thienpondt et al., 2024). During Dry January, ACUK send daily motivational emails to those registered via the website. Content includes inspirational stories, useful resources, and advice intended to support and motivate people taking part (Alcohol Change UK, 2025). An interpretivist analysis of these emails noted their positive and encouraging tone suggesting this was intended to elicit a positive emotional response from participants (Yeomans, 2019). Dry January participants have previously reported appreciating the tone

and content of the emails, finding them useful and motivational (de Visser & Lockwood, 2018; de Visser & Nicholls, 2020). In one study, relative to never reading them, always reading the emails was associated with increased likelihood of remaining abstinent during Dry January (de Visser & Nicholls, 2020). This suggests that not only are emails well- received by participants, but they may also be supporting people to remain abstinent during January.

Try Dry App. The Try Dry smartphone app launched in 2016 (Alcohol Change UK, 2024a) and is freely available to download. Features of the app include a calendar to track alcohol consumption and monitor calories, units and money saved, options to set goals, a drinking risk quiz, and alcohol-free 'missions' (e.g. attending a gig without drinking). Such features facilitate SETs including self-monitoring of behaviour (recording alcohol consumption), reflecting on outcomes of behaviour (tracking units saved), and goal-setting. Evaluations of Dry January 2018 and 2019 noted the app to be the online support which participants found most useful (de Visser & Lockwood, 2018; de Visser, 2019). As with participation in Dry January itself, use of the Try Dry app also appears to be increasing at a substantial rate with an increase of 34.8% of users between 2020 and 2021 (Oldham et al., 2022). Whilst the rate of uptake may have been enhanced by increased engagement with temporary abstinence by higher risk drinkers during this period, (Oldham et al., 2022) perhaps following increased consumption during the COVID-19 lockdowns (Garnett, Jackson, et al., 2021; Oldham et al., 2021), it nonetheless further demonstrates the continued growth of Dry January.

There is inconclusive but encouraging evidence that smartphone apps may support reductions in alcohol consumption (Colbert et al., 2020). Whilst there is no research examining the association between Try Dry use and changes in alcohol consumption, the effectiveness of similar alcohol reduction apps has been examined. An RCT of the Drink Less app found that use of the app was associated with greater reductions in consumption among increasing and higher risk drinkers compared to use of NHS alcohol advice webpages (Oldham et al., 2024). A similar trial of the Canadian SMAART app also reported greater reductions in consumption for participants randomised to receive the full version of the app compared to those who only received an educational module (advice) (Cunningham et al., 2024). Additionally, use of self-monitoring has been shown to mediate the effect of app use on alcohol reduction at six months (Garnett et al., 2024) suggesting that tracking or recording features may be of particular importance. Whilst the evidence is encouraging, it bears repeating that the effectiveness of app use, including Try Dry, during TACs has not yet been examined. Determining whether use of the Try Dry app is similarly associated with reductions in alcohol consumption following Dry January participation would provide knowledge that could be utilised to encourage uptake and use.

Online communities. Online communities may also serve as a valuable resource for people taking part in Dry January. Dry January relevant communities exist across a number of online platforms. In

addition to the official ACUK-moderated Facebook groups (Dry January Community Group, Try Dry Online Community) there are a number of peer-led online communities. Benefits associated with participation in online communities include improved knowledge, confidence, feelings of control, and wellbeing (Barak et al., 2008). Alcohol related online communities are spaces for mutual exchange of experiences, support, and advice on negotiating the challenges associated with reducing alcohol consumption (Coulson, 2014). Membership of online communities has been found to help people persist with both temporary abstinence and more sustained attempts to reduce alcohol consumption (Bliuc et al., 2017; Pennay et al., 2018). This indicates that online communities may be beneficial both when attempting to temporarily abstain during Dry January and when making subsequent reductions to alcohol consumption. Consistent with this, one study revealed that greater engagement with the Hello Sunday Morning (HSM) forum, where users commit to temporary abstinence for a period of time of their choosing, was associated with larger reductions in alcohol consumption (Kirkman et al., 2018). This suggests that the benefits of online communities are enhanced by active participation. Yet a large proportion of members of online communities 'lurk' (reading without posting) (Ridings et al., 2006; van Mierlo, 2014), and as such may experience limited benefits. It is therefore necessary to establish whether use of online communities is associated with reductions in alcohol consumption, and whether level of engagement with said communities influences the extent of these reductions.

There is currently no research exploring use of Dry January online communities specifically, yet evidence from social media provides an insight into how Dry January is discussed on different platforms. Thus far research into discussion of Dry January online has predominantly focussed on public social media such as Twitter (now X) and the ACUK Dry January Facebook page (Yeomans, 2019; Russell et al., 2022; Russell et al., 2023). Qualitative analysis of comments on the Dry January Facebook page revealed posts were generally positive, reflecting the positive approach and communication style employed by organisers (Yeomans, 2019). Analysis of Dry January related tweets from 2020 to 2022 reported common topics of discussion including resources, health benefits, and Dry January progress, but emphasised that posts were not always positive and sometimes took a derogatory view of Dry January (Russell et al., 2022). Additionally, sentiment analysis of tweets across the same period found that user sentiment toward Dry January was distinctly mixed, however it was also noted that individual tweets were more likely to be positive or neutral (Russell et al., 2023). The difference in tone and attitude toward Dry January may be explained by the difference in who was engaging. Engagement with the campaign Facebook page is arguably more likely be restricted to people participating in Dry January, whereas Dry January related discussion on Twitter likely includes a much broader group of discussants. Nevertheless, this suggests that framing and sentiment of discussions around Dry January may differ according to platform. A note of caution is that these findings pertain to discussions about Dry January on "open" social media forums. Their applicability

to online communities, where discussion tends to be restricted to members, is uncertain. But when considered together, these findings suggest that discussion, and consequently user experience of, online communities may well differ depending on factors such as the platform and involvement of campaign organisers.

Online communities may also contribute to the social contagion theorised to drive Dry January. Communications, supports, and resources regarding Dry January are predominantly digital with no organiser-facilitated in-person communities or groups available. As such, a considerable part of the social contagion of the campaign is also likely to occur online. Indeed some of the suggested benefits of online communities could be considered as indicators of social contagion. In particular, the sense of belonging or community which has been proposed as a both benefit of online communities and a motivation for joining them (Oh et al., 2014; Malinen, 2015; Bliuc et al., 2016). Research into use of online support communities by problem drinkers or people in recovery from substance use disorders corroborates this, with online communities helping people to recognise they were not alone in their experience (Bunting et al., 2021). This sense of belonging may, in part, reflect the feeling of being 'part of something bigger' previously reported (de Visser & Lockwood, 2018) and suggests that online communities are a facilitator of the social contagion which may drive Dry January. It also emphasizes the potential importance of online communities for Dry January participants in normalizing experiences, providing a sense of belonging, and preventing feelings of isolation.

In summary, existing research into use of online supports among Dry January participants has primarily examined uptake of the different supports on offer, user perceptions, and the association between support use and total abstinence during Dry January (de Visser & Lockwood, 2018; de Visser, 2019; de Visser & Piper, 2020). There is, however, an absence of evidence regarding the role of supports in facilitating lasting reductions to alcohol consumption. Additionally, two out of three of the online supports provided by ACUK are available all year round. As such, it is important to understand how use of supports changes during and after Dry January and establish whether continued engagement with online supports is associated with reductions in alcohol consumption. This knowledge would provide a foundation for the development and refinement of supports to maximise their effectiveness.

Motivation

Motivation to change drinking

Motivation has been presented as a construct which determines both alcohol use and behaviour change. Here I focus on evidence for motivation as a potential determinant of changes in alcohol consumption. Motivation to change drinking is proposed to be informed by the perceived benefits and consequences of drinking, anticipated benefits of change, and the extent to which attempts to initiate

changes to drinking are expected to be successful (Cox & Klinger, 2011). According to the COM-B model, motivation to change is integral to behaviour change and, to be successful, it must exceed motivation to undertake alternative behaviours, most notably continuing to drink (Michie, van Stralen, et al., 2011). Techniques targeting motivation are therefore a common feature of alcohol reduction interventions (Michie et al., 2012). Several components of Dry January facilitate SETs which, according to existing taxonomies, can be considered to target motivation (Michie et al., 2012; Knittle et al., 2020). For example, using the Try Dry app to reflect on the number of dry days/units saved, committing to participate by registering, and being exposed to Dry January success stories may contribute to increasing motivation during Dry January. Nevertheless, to date, motivation to change among Dry January participants has not been rigorously measured. Existing research into motivation has been restricted to examination of individual's motives for participating (de Visser & Lockwood, 2018; de Visser, 2019). Whilst useful information, it is perhaps more pertinent to understand how the extent to which someone is motivated to change influences their decision to participate and any enduring changes in alcohol consumption after the temporary abstinence period has ended. Measuring motivation to change prior to Dry January would offer insight into its potential role as a predictor of participation, and as a moderator of reductions in consumption.

Despite an abundance of techniques that seek to increase motivation to change drinking, evidence as to the influence of motivation in drinking behaviour change is inconclusive. Some studies have found an association between motivation to change and subsequent behaviour change, whilst others report no such correlation (Borsari et al., 2009; Kuerbis et al., 2013; Cook et al., 2015; de Vocht et al., 2018). For example, a prospective population study found greater motivation predicted increased likelihood of reduction attempts, but it did not predict a corresponding reduction in alcohol consumption (de Vocht et al., 2018). This suggests that motivation may inform people's decision to participate in Dry January but may not moderate subsequent changes in consumption. However, a study of people in alcohol treatment reported a small but significant association between pretreatment motivation and being abstinent or drinking moderately nine months later (Cook et al., 2015). In addition, researchers identified a strong association between posttreatment motivation to change and positive treatment outcomes at nine months, suggesting that change in motivation during an intervention may influence ongoing reductions in consumption (Cook et al., 2015). Whilst this is a different population to the target population for Dry January, it is possible that motivation to change has a similar role with respect to Dry January. It may influence the initiation of behaviour change, moderate reductions, and changes in motivation over time may also mediate reductions in alcohol consumption following participation in Dry January. Alternatively, given the inconsistencies in the available evidence it is also possible that it does not significantly contribute to changes in drinking behaviour. Determining the role of motivation to change in the context of Dry January would provide an indication as to whether online supports should be tailored to target this construct.

(Drinker) Identity

A shift in social identity is proposed to play a pivotal role in recovery from addiction as people transition from identifying as a member of a group defined by substance use to identifying as a member of a group defined by their recovery (Best et al., 2016). Whilst Dry January is not aimed at people with addiction, a similar shift in social identity may be seen in those who participate, and this change may in turn partially underlie the initiation and maintenance of changes in alcohol consumption. Changes in social networks and the opportunity for self-experimentation during TACs have been suggested to contribute to identity change. Pados and colleagues (2020) highlight the influence of social connections on identity, suggesting that the creation of new social networks during Dry November may result in positive changes to individual identity. Participation in Dry January has also been suggested to impact identity by enabling self-reformation through changing one's relationship with alcohol (Yeomans, 2019). Interviews with FebFast participants corroborate this. Specifically, insights into past drinking behaviour gleaned during FebFast prompted some participants to reevaluate and reconceive their self-identity (Robert, 2018). This suggests that, if participants use TACs as an opportunity to reflect on their existing relationship with alcohol as suggested by some organisers (Alcohol Change UK, 2025; IkPas, 2025b; Tournée Minérale, 2025), they may also experience identity changes.

Drinker identity, the extent to which people see themselves as drinkers (Lindgren, Ramirez, et al., 2016), may influence reductions in alcohol consumption following Dry January. A stronger drinker identity is associated with greater alcohol demand (Ramirez et al., 2016) and increased consumption over time (Foster et al., 2014; Lindgren, Neighbors, et al., 2016; Montes & Pearson, 2021). Identifying more strongly as a drinker has also been shown to predict future drinking problems (Lindgren, Ramirez, et al., 2016). In addition, drinker identity has previously been found to mediate (Blevins et al., 2018) and moderate (Hertel et al., 2021) changes in alcohol consumption over time. As such, it may be a determinant of reductions in alcohol consumption following participation in Dry January. However, much of the literature examining drinking identity has focussed on adolescent and emerging adult populations. With the average Dry January participant typically over 40 (de Visser et al., 2016; de Visser, 2019; de Visser & Piper, 2020), this is arguably a very different population of alcohol consumers. As such, it is unclear whether drinker identity will play a similar role in the changes associated with Dry January participation. Establishing whether changes to drinker identity occur and whether these are associated with reductions in alcohol consumption will contribute to our understanding of the mechanisms underpinning the effectiveness of Dry January.

In summary, participation in Dry January appears to be associated with mid-term reductions in alcohol consumption. However, a number of inconsistencies and ambiguities in the existing evidence require resolution. The role of seasonal variation in alcohol consumption and access to structured online supports on alcohol consumption are also yet to be determined. Belief in one's own ability to

refuse alcohol appears to mediate reductions in consumption among Dry January participants though evidence from other TACs contradicts this. A number of other candidate mediator and/or moderators of change have been identified and their potential application to Dry January theorised.

Aims of this PhD thesis

The primary aim of this thesis is to establish the psychological and social changes underlying reductions in alcohol consumption following participation in Dry January by heavy drinkers. To achieve this I will first seek to confirm the previously observed association between 'official' Dry January participation and ongoing changes in alcohol consumption among heavy drinkers. Outcomes for "official" and ''unofficial" Dry January participants will also be compared, and predictors of 'official' and 'unofficial' participation in Dry January examined. Finally, potential mechanism of short- and mid-term change will be evaluated. To achieve these aims I will address the following research questions.

RQ1 Does 'official' participation in Dry January result in enduring changes to alcohol consumption for people who are heavy drinkers?

RQ2 Are comparable changes in alcohol consumption for 'official' Dry January participants who are heavy drinkers also seen in:

a) Heavy drinkers who do not participate in Dry January
b) Heavy drinkers who attempt Dry January 'unofficially'

RQ3 Are enduring changes to alcohol consumption in 'official' and 'unofficial' Dry January participants who are heavy drinkers, relative to heavy drinkers who do not participate in Dry January, associated with (changes in) psychological or social determinants of alcohol consumption?

RQ4 What factors predict participation in Dry January by heavy drinkers?

To interrogate these research questions, this thesis takes a mixed-methods approach. I report results from prospective observational surveys, semi-structured interviews, and secondary data analysis. Below I briefly describe each study and articulate how it contributes to the overarching aims of the thesis. Employing a mixed methods approach is intended to enable me to address the research questions from multiple perspectives and, by integrating the findings from each of the studies, to develop a fuller, more holistic understanding (Wasti et al., 2022) of the changes in alcohol consumption associated with participation in Dry January.

Study One: Prospective observational survey study one (POS 1)

Research Questions: RQ1, RQ2, RQ3, RQ4

This study aimed to a) test whether the previously-reported association between Dry January participation and reduced alcohol consumption at follow-up can be replicated in a group of heavy drinkers and b) attempt to establish the psychosocial changes that underpin this reduction. Four groups of heavy drinking participants ('official' Dry January, 'unofficial' Dry January, people not attempting to reduce their drinking, and people attempting to 'cut down' but not abstain) were recruited. Participants were invited to complete surveys at baseline, mid-January, post-January, three-months and six-months. Alcohol consumption and psychological and social constructs were measured over time, limiting the risk of recall bias associated with retrospective designs (Talari & Goyal, 2020).

Study Two: Semi-structured interviews

Research Questions: RQ3

Semi-structured interviews were conducted to explore the use of strategies to avoid alcohol consumption during and following Dry January. 'Official' and 'unofficial' Dry January participants were interviewed to provide insight into the similarities and differences in approaches. This study provides additional nuance and depth to complement the quantitative findings of POS 1 and to identify relevant factors for inclusion in POS 2 (DeJonckheere & Vaughn, 2019).

Study Three: Prospective observational survey study two (POS 2)

Research Questions: RQ1, RQ2, RQ3, RQ4

A second prospective observational study attempted to resolve the issues in recruitment and retention encountered in POS 1 and to provide more robust confirmation of changes in alcohol consumption. This time, three groups of participants ('official' Dry January, 'unofficial' Dry January, and not participating in Dry January) were recruited and invited to complete surveys at four timepoints (baseline, post-January, three-months and six-months). Candidate mediators and moderators were examined including drinker identity and use of online supports. Structural Equation Modelling (SEM) was employed to investigate the pathways of change between Dry January participation and changes in alcohol consumption at six months.

Study four: Secondary data analysis*

Research Questions: RQ1, RQ3

Analysis of user-inputted and usage data from the Try Dry app was undertaken to provide insight into consumption behaviour up to nine months post-January, and how this is associated with use of the app. The potential for unintended negative consequences following Dry January participation was also examined. Making use of this existing dataset provided access to a much larger sample than would

have been feasible to collect primary data from given the resources and time available. Furthermore, utilising app usage data is advantageous because it enables observational, rather than self-report, measures of some variables, e.g. user engagement, to be used.

A note on online ethnography

Study four was initially intended to be an online ethnography of Dry January related online communities to examine interactions between users. I planned the study, obtained ethical approval, and began data collection. Significant attention had been given to the potential ethical issues associated with this approach including the ambiguity of public and private spaces online, reasonable expectations of privacy, and whether informed consent should be obtained (Ravn et al., 2019; Franzke et al., 2020; British Psychological Society, 2021). Actions were taken to mitigate or minimise potential harms. In the early stages of the study I began to have concerns that one forum had minimal relevance for Dry January in the UK, the focus of this thesis, and that points of interest from the other forum could not be reported ethically. This was not apparent during initial scoping to identify appropriate forums. Reflecting on the potential value of the study against the possible risks, I felt that the benefits no longer outweighed the potential harms. Based on the initial scoping I did not believe there were any plausible alternative communities which could reasonably be included instead. As such, I opted to end the study and look at alternative ways of examining online support use, opting to replace it with the Try Dry secondary analysis study.

Ethical considerations

When planning the studies in this thesis a number of ethical considerations were taken into consideration. Firstly, the need to frame my research appropriately and to use appropriate, non-stigmatizing language to avoid deterring participation in Dry January or discouraging future help-seeking (Kelly et al., 2015; Morris & Schomerus, 2023). I ensured this was reflected in participant facing materials and in the terminology used both in this thesis and in further dissemination of my findings. Additionally, given that ACUK, the organisers' of Dry January, part-funded this PhD I was also conscious of the importance of not appearing to promote the campaign. I was transparent about this conflict of interest ensuring it was detailed in all information sheets and declared alongside all dissemination of the work. I included details of ACUK's role in a particular study as appropriate e.g. supporting with the recruitment of 'official' Dry January participants.

A further consideration was participant welfare and the importance of minimising the likelihood of harm to those participating (Oates et al., 2021). Participants in the prospective studies and interviews were required to reflect on their relationship with alcohol, which had the potential to cause discomfort

or increase concerns about drinking. As such, I ensured that information sheets were explicit about what the study entailed and they emphasised that participants were able to withdraw at any time. I also provided signposting before and after studies directing participants to the NHS Alcohol support webpage and their GP should they have any concerns about their drinking or wish to discuss it further. Overall, in this thesis I endeavoured to take a lifecycle approach to ethics and to critically reflect on and address ethical considerations throughout the research process.

Chapter III

Investigating reductions in consumption following participation in Dry January by heavy drinkers: Prospective observational study one

Co-authors: Inge Kersbergen, John Holmes & Matt Field

Contributions: I designed the study and all co-authors reviewed and approved the study protocol. I produced the surveys and carried out data collection. I conducted formal analysis with support from IK. I wrote the original draft of the chapter. MF and IK reviewed and provided feedback.

Findings from this chapter have been presented at the following conferences:

Butters, A., Field, M., Kersbergen, I. & Holmes, J. (2022). Understanding what strategies Dry January participants use to temporarily abstain from alcohol. Oral presentation at 18th Annual Conference of INEBRIA, Edinburgh, Scotland

Butters, A., Field, M., Kersbergen, I. & Holmes, J. (2022). Understanding what strategies Dry January participants use to temporarily abstain from alcohol. Early Career Alcohol Research Symposium, Sheffield, UK

Abstract

Participation in Dry January appears to be associated with reductions in alcohol consumption six months later though this reduction has not been observed at the population level. Whilst increased DRSE during January is believed to mediate reduced consumption, little is known about other factors underpinning ongoing change. Additionally, concerns have been raised that the campaign may attract low risk drinkers. As such, this study aimed to establish the outcomes of participation in Dry January for heavy drinkers and examine other influencing factors. Four groups of participants ('Official' Dry January, 'Unofficial' Dry January, No Dry January and 'Cutting Down') were recruited to a prospective observational study. Alcohol consumption, DRSE, motivation to change, social contagion, and use of SETs were measured. Up to six surveys were completed: screening, baseline, mid-January, post-January, three months, and six months. Reductions in AUDIT-C were observed at six months for 'official' Dry January participants. Change in AUDIT-C was greater for 'official' relative to No Dry January participants. There was no significant difference in change in AUDIT-C between 'official' and 'unofficial' participants. Greater baseline consumption and use of more SETs post-January predicted greater reduction in consumption at six months among 'official' participants. All findings are limited by statistically underpowered analyses resulting from difficulties in recruitment and subsequent attrition. However, they tentatively indicate that previously observed reductions in consumption are also seen in heavy drinkers and are not entirely attributable to seasonal

variation in consumption. Reductions appear to be enhanced for participants who drank more prior to January and who used more SETs following January.

Introduction

Participation in Dry January has been linked to improvements in physical health and psychological wellbeing in addition to enduring reductions in alcohol consumption evident six months later (de Visser et al., 2016; de Visser & Nicholls, 2020; de Visser & Piper, 2020). Limitations of earlier research, as outlined below, restricts the confidence with which we can attribute these changes in alcohol consumption to participation in Dry January. Moreover, research to date has primarily focussed on the evaluation of outcomes with little attention given to the psychological and social changes which underlie changes. The current study aimed to address the limitations of previous research, resolve ambiguous findings and extend previous work to develop our understanding of the mechanisms underpinning any reduction in alcohol consumption associated with participation.

Seasonal variation in alcohol consumption and the implication of differences in baseline consumption

Comparisons with a control group of drinkers not attempting to change their drinking revealed that reductions in alcohol consumption six months after the end of January were limited to those participating in Dry January indicating that the reduction did not reflect a seasonal variation in alcohol consumption (de Visser & Piper, 2020). However, Dry January participants had considerably greater alcohol consumption at baseline reporting average AUDIT-C scores of 9.1 compared to the control group's score of 5.7 (de Visser & Piper, 2020). A further comparison group of people who tried to have a 'dry' January without signing up for the official campaign also had lower baseline levels of alcohol consumption (AUDIT-C = 5.1). There is evidence of regression to the mean when alcohol consumption is measured over time such that people with higher levels of consumption at baseline are more likely to report a reduction six months later even in the absence of an intervention (McCambridge et al., 2014). Whilst it may be that people who choose to participate in Dry January 'officially' are heavier drinkers than those who do not participate or who take part 'unofficially,' we cannot dismiss the possibility that at least part of the reported reduction in alcohol consumption is attributable to regression to the mean. This is further exacerbated by baseline measures of alcohol consumption being collected towards the end of December (e.g. de Visser & Piper, 2020) when alcohol consumption is typically higher (Cho et al., 2001; Lemmens & Knibbe, 1993; Uitenbroek, 1996). Obtaining baseline measures during this period means reductions in consumption following Dry January may, in part, reflect a return to pre-Christmas levels of alcohol consumption. Given these

limitations, it is necessary to first determine the extent to which the benefits associated with Dry January can actually be attributed to participation.

Potential psychological and social determinants of change

An increase in drink-refusal self-efficacy (DRSE) during January has been identified as a likely mediator of reductions in consumption associated with Dry January participation (de Visser et al., 2016; de Visser & Piper, 2020). However, conflicting evidence comes from evaluations of Tournée Minérale (Thienpondt, Van Cauwenberg, et al., 2025) and IkPas (Esselink et al., 2024) which found no evidence of a significant increase in DRSE. This indicates that, at the very least, there are inconsistencies to be resolved. Baseline levels of DRSE prior to Dry January may also be a factor in any ongoing changes. Associations between greater emotional relief and social pressure DRSE at baseline and likelihood of total abstinence during January (de Visser et al., 2016) suggest DRSE may also moderate changes in alcohol consumption during Dry January.

Examination of the wider drinking behaviour change literature reveals a number of other potential mediators and moderators. The extent to which Dry January participants are motivated to make changes to their drinking has not yet been measured. The role of motivation to change on reductions in alcohol consumption more broadly is far from clear with contradictory findings as to whether being motivated to change results in actual change (Apodaca & Longabaugh, 2009; Borsari et al., 2009; Kuerbis et al., 2013; de Vocht et al., 2018). Yet, in the absence of evidence to the contrary, it is possible that the extent to which people are motivated to change their drinking moderates the association between Dry January participation and enduring behaviour change. Evidence of changes in long-term drinking intentions following participation (de Visser, 2019) suggests that the degree to which people are motivated to change may also change during Dry January. This may also mediate any ongoing change in alcohol consumption.

Additionally, whilst the Dry January campaign evidently centres around temporary abstinence, it is unclear to what degree temporary abstinence in and of itself contributes to mid-term changes in alcohol consumption. Reductions in consumption are still observed, though to a lesser degree, in participants who do not remain fully abstinent during Dry January (de Visser et al., 2016; de Visser & Piper, 2020). Research also suggests that registration may be equally if not more important than abstinence. Partially abstinent registered participants were more likely to report improvements to wellbeing and DRSE than unregistered participants who were fully abstinent (de Visser, 2019). Whilst this does not necessarily negate the importance of temporary abstinence in the outcomes previously reported, its particular role does require further elucidation.

The Dry January campaign is suggested to engender widespread behaviour change through social contagion (de Visser et al., 2016; de Visser et al., 2017). This is believed to amplify and spread the

message of public health campaigns such as Dry January (Christakis & Fowler, 2008; Brown et al., 2014). Previous research on Dry January has examined related concepts such as 'feeling part of something bigger' or a togetherness (de Visser & Lockwood, 2018). However, the association between this and subsequent alcohol consumption has not been examined. As such, the impact of social contagion during Dry January on mid-term outcomes, namely ongoing reductions in alcohol consumption, remains unclear.

In attempting to temporarily abstain from alcohol for a month, people are likely to use a range of strategies or techniques to help them to do so. Interviews with Dry January participants have highlighted some of the strategies people use, including making a commitment to a month without drinking, taking part in alternative activities, distraction, and reflecting on achievements as the month progresses (de Visser & Lockwood, 2018). However, to the best of my knowledge, no study has examined the association between use of these strategies and lasting changes in alcohol consumption following Dry January participation. I attempted to address this by examining use of self-enactable techniques (SETs) among Dry January participants, systemically selecting SETs that were most likely to be relevant to Dry January participants.

A prospective observational study was conducted following participants from baseline to six months post-January. Attempts were made to control for the potential impact of seasonal variation in alcohol consumption and differences in baseline levels of consumption by obtaining baseline levels of consumption prior to the end of December and restricting participation in the study to heavy drinkers (AUDIT-C $\geq$ 5), although this was only partially successful. Participants who registered for the 'official' Dry January campaign were compared to people who attempted an 'unofficial' Dry January and people who made no attempt to change their drinking during January. Efforts were made to recruit a further group of people attempting to change their drinking at a different time of the year. Unfortunately, I struggled to retain participants in this group. Measures were included for the potential mediators and moderators of change previously described (motivation to change, DRSE, abstinence, social contagion, and use of SETs) in order to develop understanding of the mechanisms of action behind the mid-term changes in consumption identified in previous work. I attempted to answer and test the following research questions and hypotheses.

Research Questions

Primary Research Questions

RQ1 Does 'official' participation in Dry January result in enduring changes to alcohol consumption for people who are heavy drinkers?

RQ2 Are comparable changes in alcohol consumption for 'official' Dry January participants who are heavy drinkers also seen in:

a) Heavy drinkers who make no attempt to change their drinking

b) Heavy drinkers who attempt Dry January 'unofficially'

c) Heavy drinkers who attempt to 'cut down' at another time

Additional Research Questions

RQ3 Are enduring changes to alcohol consumption in 'official' and 'unofficial' Dry January participants who are heavy drinkers mediated by:

a) Changes in motivation to reduce alcohol consumption

b) Changes in drink-refusal self-efficacy

c) Successfully abstaining from alcohol for one month

d) Use of self-enactable techniques to change drinking

RQ4 Are enduring changes to alcohol consumption in 'unofficial' and 'official' Dry January participants who are heavy drinkers moderated by :

a) Motivation to change drinking prior to Dry January

b) Drink-refusal self-efficacy prior to Dry January

c) The 'social contagion' of Dry January

d) Alcohol consumption at baseline

RQ5 What factors predict participation in Dry January by heavy drinkers?

RQ6 What factors predict 'official' participation vs 'unofficial' participation in Dry January by heavy drinkers?

Hypotheses

1. People who participate in Dry January will have a reduction in AUDIT-C score six months later.

2. Reduction in AUDIT-C score six months after Dry January will be greater for 'official Dry January participants than for people who do not attempt to change their alcohol consumption.

3. Reduction in AUDIT-C score six months after Dry January will be greater for 'official' than 'unofficial' participants.

4. Changes in motivation to change over the course of Dry January will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

5. Changes in DRSE over the course of Dry January will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

6. The extent to which participants remain abstinent throughout Dry January will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

7. The number of SETs participants use and frequency of use will predict change in AUDIT-C at six month follow up after controlling for other factors.

8. Motivation to change their drinking prior to Dry January will predict change in AUDIT-C at six-month follow-up after controlling for other factors.

9. DRSE prior to Dry January will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

10. The extent to which participants feel "part of something bigger" during Dry January will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

11. Baseline alcohol consumption will predict change in AUDIT-C score at six-month follow-up after controlling for other factors.

Methods

Participants

Four groups of participants were recruited for the study; people who registered for Dry January via the website or Try Dry app ('Official' Dry January), people who attempted an alcohol-free January but who did not register ('Unofficial' Dry January), a control group of drinkers who were not participating in Dry January ('No Dry January') and a group of people who were attempting to change their alcohol consumption either by attempting to drink less or temporarily abstain but who did not take part in Dry January 2022 ('Cutting down').

To be eligible to participate people were required to be aged 18 or over, live in the UK, drink alcohol at least once per week and never have received treatment for alcohol problems. As shown in Figure 3.1 participants were recruited via two routes. Firstly, the study was advertised online via Twitter (now X), Facebook paid adverts, a Call for Participants page, and the University of Sheffield staff and student volunteer lists. Facebook adverts were checked daily and all comments hidden to avoid deterring potential participants, for example by a user including stigmatizing language in a comment. Secondly, Alcohol Change UK (ACUK), the organisation behind Dry January in the UK, included details of the study in one of the support emails sent out to Dry January participants who elected to receive them. Pursuing this second route of recruitment was deemed necessary due to the relatively small proportion of people who sign-up to Dry January compared to those who attempt an 'unofficial' Dry January (Alcohol Change UK, 2020).

Participants recruited via the first route completed a screening survey (T0) between 2nd November 2021 and 17th December 2021. People were only invited to participate in the full study if they had an AUDIT-C score of 5 or greater, a widely used cut-off point above which people are considered to be

at increasing risk of harm from alcohol (Public Health England, 2017). Restricting participation in the full study to heavier drinkers helped to ensure outcomes were being assessed for people whose alcohol consumption put them at risk of harm. It also enabled us to address the limitations of previous work by minimising differences in baseline consumption between groups. Respondents with AUDIT-C ≥ 5 who passed all attention checks and consented to follow-up were recontacted by email from 20th December and invited to complete the full baseline survey (T1). Those recruited via ACUK progressed directly to the baseline survey. Whilst it was hoped that participants coming via this route would complete the baseline at the end of December or very early January unfortunately, circumstances beyond my control meant that the email including details of the study was not sent until 12th January.

To recruit the 'cutting down' group I revisited the original group of screening survey participants with AUDIT-C ≥ 5, recontacting people who did not go on to complete the baseline survey (including those screened out by the quota which allowed a maximum of 140 'no Dry January' participants to complete the baseline survey.) Participants were emailed at the beginning of March, April, and May 2022 to ask if they were attempting to reduce their alcohol consumption or take a break from drinking and invited to take part in the baseline survey if they were. People who had taken part in Dry January 2022 were not eligible to participate.

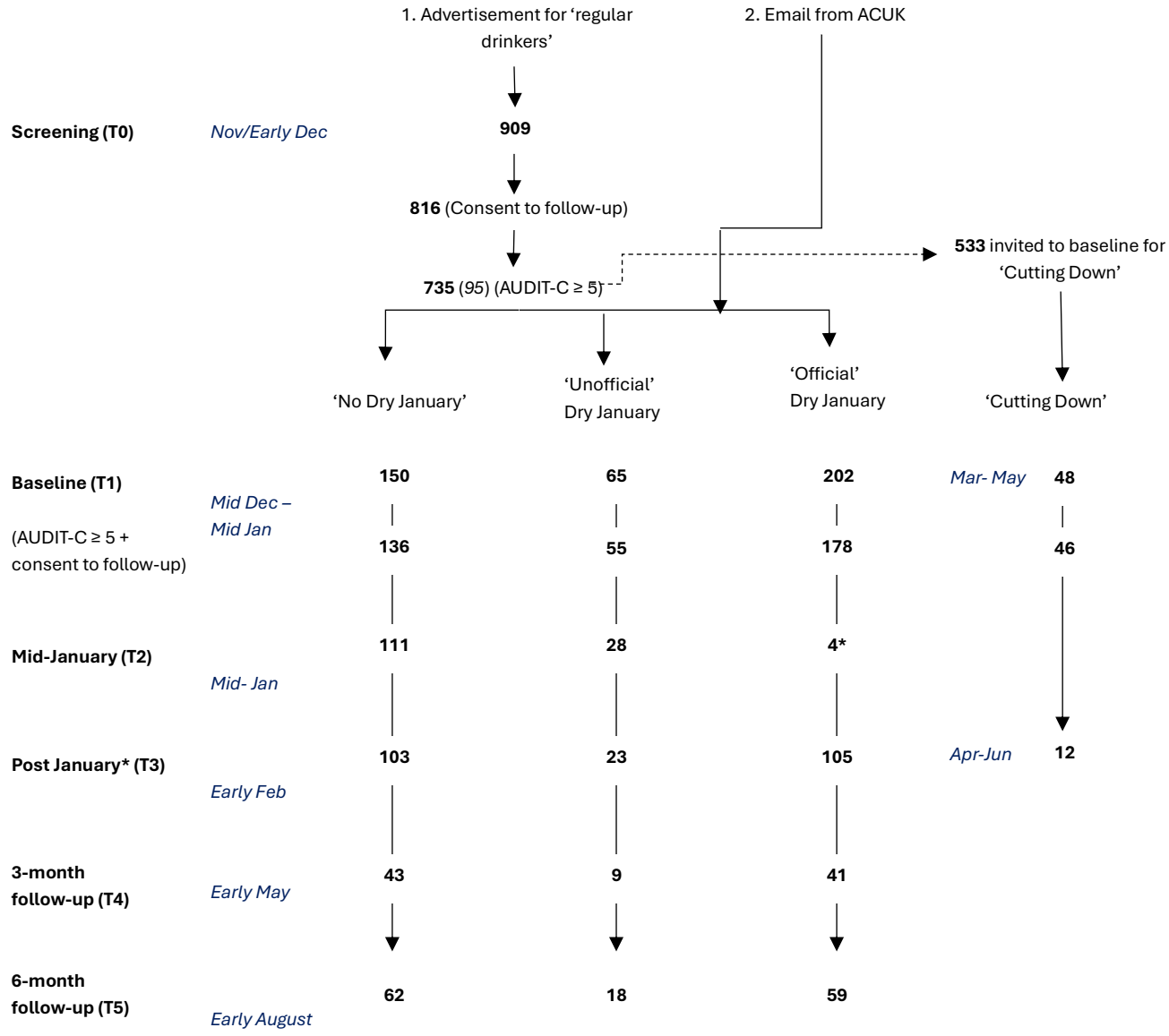

Figure 3.1: Participant numbers at each survey timepoint from initial recruitment and screening survey (T0) to six-month follow-up survey (T5)

Number of participants who completed at each timepoint (*number of participants who completed and eligible for inclusion in final analysis)*

Survey distribution dates for the 'No Dry January,' 'Unofficial' Dry January and 'Official' Dry January groups are shown on the left of the figure. Distribution dates for the 'Cutting down' group are shown on the right of the figure.

* Post-January equivalent distributed for 'Cutting Down' group 1 month after the baseline survey.

136 participants (Age M = 45.89 , SD = 13.27, range = 18-72) completed at least the baseline and six-month follow-up survey passing the majority of attention checks at each of these timepoints. A full breakdown of participant numbers per group at each timepoint is shown in Figure 3.1.

A power analysis for the primary research questions identified that, based on estimated effect size f^2=0.05 calculated from an average of between-group differences over time in a previous Dry January study (de Visser & Piper, 2020), α= 0.05 and anticipating 70% retention I would require 140

participants per group (N=560) at baseline to achieve statistical power of 80%. As approximately 20% adult drinkers were estimated to have attempted to have an alcohol-free January in 2021 (Alcohol Change UK, 2020) it was decided that 700 participants were needed to complete the screening survey (T0) to ensure at least 140 'unofficial' Dry January participants at baseline (T1). Unfortunately, I was unable to recruit the target sample size.

Procedure

Prior to commencement the study received ethical approval from the Department of Psychology at the University of Sheffield (ethics no: 043682) and was preregistered on osf.io (https://doi.org/10.17605/OSF.IO/4YSZ9). An additional unregistered exploratory analysis was conducted to investigate the association between SET use and abstinence (or alcohol use) during Dry January.

All surveys were designed and distributed using Qualtrics. Randomly generated ID numbers were automatically assigned to each survey as it was completed to ensure individual responses could be linked across each timepoint. After successful completion of the baseline (T1) participants were invited to all subsequent follow-ups regardless of whether they missed a survey to maximise the number of potential responses at each timepoint. In total participants could complete up to six surveys over the course of nine months including screening (T0), baseline (T1), mid-January (T2), Post-January (Post-January equivalent for 'cutting down' group one-month after baseline) (T3), three-month follow-up (T4) and six-month follow-up. Figure 3.1 shows the surveys completed by each group. The majority of 'Official' Dry January participants did not complete the mid-January survey due to the unfortunate late distribution of the baseline survey invite. Revisions were made to the baseline survey to include questions from the mid-January survey (e.g. social contagion questions) they would otherwise miss. Given the very low number of 'cutting down' participants who completed the Post January equivalent, I made the pragmatic decision not to proceed with this group beyond T3.

Optional prize draws were used to incentivize participation and attempt to minimise attrition (Boys et al., 2003) with participants having the opportunity to win one of two gift vouchers following each survey (value between £50 and £150). Survey invites were distributed via email and followed by up to two reminders. The potential prize available was highlighted in bold text in the body of the email to encourage participation as incentive-focussed invites have been linked to increased response rates and reduced likelihood of dropout once starting the survey (Zhang et al., 2016). For the final follow-up survey, invite information about the prize draw was included in the email subject line in recognition that an incentive focussed invite would only be effective if someone read the email. This was not done initially as there is mixed evidence as to the effectiveness of this approach with studies reporting positive, negative, and no effect of including prize draw information in the subject line (Linegang &

Moroney, 2012; Janke, 2014; So, 2018) However, given the fairly small sample size at the three-month follow-up I felt this was worth attempting and would at least provide useful information for a future study. Previous research has highlighted the importance of consistency and formality in the construction of the subject line, including the avoidance of excessive capitalization and making reference to the survey to avoid it being mistaken for 'spam' (Janke, 2014). As such, the same wording as previous survey invites, with the addition of mention of the prize draws, was used. Whilst I cannot definitively say whether there was or was not a 'spam effect' the distribution information available on Qualtrics showed that for the initial invite and two reminders there was one 'complaint' (people marking the email as spam in their inbox). Additionally, only ten emails 'bounced' suggesting that the vast majority of invitees did not appear to have regarded the invitation as spam.

Instructional manipulation checks (IMC) were included in all surveys to check participants were responding attentively, to try to increase statistical power (Oppenheimer et al., 2009) and mitigate the consequences of any careless responding on model fit, internal consistency and to prevent concealment of meaningful effects (Maniaci & Rogge, 2014; Arias et al., 2020). Two types of IMC were used, open text responses (e.g. "This is a question to check that you are reading the questions and responding carefully. Please type the word "purple" into the box below. Based on the instructions above type the name of a colour into the box below") and instructions to select a specific response to a multiple-choice question (e.g. "Please select 'Easy to refuse' in response to this statement.")

Measures

Wherever possible standardised and validated questionnaires were used to measure constructs of interest. All measures and a breakdown of the measures included at each timepoint are included in Appendix 1.

Alcohol use disorders identification test (Babor et al., 2001). Full AUDIT and Consumption subscale. The AUDIT is a 10-item questionnaire covering three domains of alcohol use: consumption (e.g. *"How often have you had a drink containing alcohol in the last six months?" (Never, Monthly or less, 2 to 4 times per month, 2 to 3 times per week, 4 or more times per week*)), potential dependence (e.g. *"How often during the last six months 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))*, and harmful outcomes (e.g. *" How often during the last six months have you been unable to remember what happened the night before because you had been drinking?"(Never, Less than monthly, Monthly, Weekly, Daily or almost daily)*) (Babor et al., 2001). Participants completed the full AUDIT during the baseline survey and at six-month follow-up and the three-item consumption subscale (AUDIT-C) at each other timepoint. AUDIT-C score (0-12) was calculated by adding scores for AUDIT items one to three with overall AUDIT score (0-40) calculated by totalling scores for all ten items. The AUDIT and AUDIT-C are widely used in primary care settings to screen for risk of alcohol harm and identify

those in need of intervention or support (Babor et al., 2001; Gache et al., 2005; Bradley et al., 2007; Aalto et al., 2011) as well as for research purposes (e.g. Dawson et al., 2005; Sebo et al., 2007; Smith & Shevlin, 2008). Online versions have been shown to have high test-retest reliability (Miller et al., 2002). The AUDIT-C has been shown to be accurate in the identification of heavy drinking (Bush et al., 1998), have excellent concurrent validity with the full AUDIT (correlation coefficient = 0.97) and excellent internal consistency ($\alpha = 0.94$) (Meneses-Gaya et al., 2010). Time-adjusted versions of both the AUDIT and AUDIT-C questionnaires were used (e.g. Garnett, Oldham, et al., 2021) with item wording adapted to ask about the previous month, three months, or six months (e.g. *"How often during the last [month/ three months/ six months] have you…").* A six-month adjusted AUDIT was used at baseline and six-month follow-up, and three-month adjusted and one-month adjusted AUDIT-C at the three-month and Post-January follow-ups respectively.

Drink Refusal Self-Efficacy Questionnaire (DRSEQ; Young et al., 1991; nine item version as used by de Visser et al., 2016). DRSE was measured using a nine-item version of the DRSEQ originally developed by Young and colleagues (1991). The DRSEQ has three subscales which measure peoples belief in their ability to refuse alcohol across three types of situation; emotional relief, social pressure and opportunistic drinking (Young et al., 1991). The nine item version used here has previously been shown to have good internal consistency for all subscales (social pressure α =.80, emotional relief α =.90, opportunistic α =.83) (de Visser et al., 2016). Participants were asked to indicate how easy it would be for them to refuse alcohol on a scale of one (Very difficult to refuse) to seven (Very easy to refuse) in different situations e.g. *'When my spouse or partner is drinking'* (social pressure), *'When I feel upset'* (emotional relief), *'When I first arrive home'* (opportunistic.) DRSE was calculated by averaging scores for each DRSEQ item (1-7). Scores for each of the DRSE subscales were obtained by averaging the items from these subscales: Items one, four and seven for the social pressure DRSE subscale (SP DRSE ; 1-7), items three, six and nine for the opportunistic DRSE subscale (O DRSE; 1-7) and items two, five and eight for emotional relief DRSE (ER DRSE; 1-7).

Motivation (From Alcohol Toolkit Study, Beard et al., 2015; identified by Stevely et al., 2018). Motivation to change was measured using five questions from the Alcohol Toolkit study (Beard et al., 2015) as identified by Stevely and colleagues (2018) as incorporating both reflective and automatic motivation. These are key determinants of behaviour according to the COM-B model of behaviour (Michie, van Stralen, et al., 2011), the model I am using as a theoretical basis from which to develop my explanation of the changes associated with Dry January participation. It is substantially shorter than many other widely used measures of motivation to change, such as the 12-item readiness to change questionnaire (Rollnick et al., 1992), thus its use was also intended to help limit the length of the survey and, hopefully, avoid the lower response rates associated with longer surveys (Galesic & Bosnjak, 2009). Participants responded to each item (e.g. '*To what extent are you actively trying to*

avoid drinking more alcohol than is good for you') on a scale of one (Not at all) to five (A great deal). Total score for motivation to change (1-5) was calculated by averaging scores for each item.

Social Contagion. To my knowledge there is no pre-existing questionnaire measuring 'social contagion.' Given the nature of this concept it is arguably not possible to 'measure' it directly at an individual level through a questionnaire. However, it is possible to ask people about more tangible things which may indicate social contagion. Questions were designed based on interview and survey findings from a previous evaluation of Dry January where analysis of interviews found themes of feeling 'part of something bigger' and a sense of 'connection' among participants (de Visser & Lockwood, 2019). Additionally, in a survey from the same evaluation participants were asked how important 'being part of a community' was in their reasons for signing up to the official campaign. Whilst this was not rated as particularly important as a reason for signing up (average rating of 2.9/10) that does not preclude it from being something that people felt a sense of during Dry January. As such, participants were asked to what extent they agreed or disagreed with three items on a scale of one (strongly disagree) to seven (strongly disagree) 'feeling part of a community' (*Taking part in Dry January makes me feel part of a community*), 'feeling part of something bigger' (*Sometimes people who are taking part in a challenge or making a lifestyle change say that they feel "part of something bigger" if they do it at the same time as other people. Taking part in Dry January makes me feel part of something bigger*) and 'feeling connected' (*I feel connected to other people who also took part in Dry January.)* Raw scores (1-7) were used for each of the social contagion variables ('part of something bigger', 'feeling connected', 'part of a community') at T2 and T3.

Abstinence. Abstinence was measured by asking people how many days since they last had an alcohol drink (from 0, I had a drink today – 51+) and on how many days they consumed alcohol during January (0-31).

Dry January (based on questions from de Visser, 2019). At baseline participants were asked whether they were intending to take part and whether they had registered for the official Dry January campaign. This was presented with a simple yes/no response with the question repeated with more detailed options post-January (Yes – website; Yes -app; Yes – both; No). Further questions about Dry January participation were asked for descriptive purposes including, when people made the decision to take part, previous attempts at temporary abstinence, others taking part, and plans for after Dry January.

Self-enactable techniques (SETs*).* A systematic approach was taken to determine which SETs would be included in the surveys. Firstly, a compendium of 123 SETs (Knittle et al., 2020) was cross-referenced with a taxonomy of behaviour change techniques (BCTs) identified as being components of interventions which aimed to reduce alcohol consumption (Michie et al., 2012). The 72 SETs identified were assessed against research discussing temporary abstinence from alcohol and use of

strategies or techniques (Bartram et al., 2017; Bishop, 2018; de Visser & Lockwood, 2018; Pennay et al., 2018; Yeomans, 2019; Knittle et al., 2020; Pados et al., 2020). Examples of 27 distinct SETs were found. I developed questions and Dry January specific examples for each SET, presenting these to previous Dry January participants during PPI sessions to ask for feedback. PPI participants were recruited from an ACUK moderated Dry January Facebook group and received a shopping voucher to thank them for their time. During each session one question was shown at a time and the contributor asked for feedback on the understandability of the question and whether they considered the Dry January specific example to be relevant. Where items overlapped, e.g. self-monitoring of behaviour and reflecting on self-monitoring of behaviour, additional feedback was sought as to whether the different meanings were clear. This left a final list of 14 SETs (see Table 3.1) for inclusion in the survey. Survey participants were asked to state how often they engaged in each strategy from one (Never) to seven (Several times per day). SET use (ever) was scored as the number of SETs a participant used at least once with SET use during January and after January calculated separately (0-14). SET use (weekly) was the number of SETs used weekly or more frequently (0-14).

Table 3.1: 14 SETs included in the Post-January and six-month follow-up surveys with Dry January relevant examples

Self-enactable technique	Dry January relevant example	COM-B component
Behaviour goal-setting	Setting a goal not to drink alcohol during January.	Reflective motivation
Outcome goal-setting	Setting a goal to lose weight, save money, improve sleep, feel physically better or improve a relationship.	Reflective motivation
Self-monitoring of behaviour	Using an app to record alcohol consumption or record “dry” days.	Psychological capability
Self-monitoring outcomes of behaviour	Recording weight change, money saved, sleep, mood or improvement in relationships.	Psychological capability
Obtain information about health consequences	Searching online for information about the health benefits associated with a break from alcohol.	Psychological capability

Public Commitment	Telling friends or family about your intention to take part or post about it on social media.	Social opportunity Reflective motivation
Observe demonstration of behaviour	Reading blogs by someone who had successfully completed Dry January in previous years.	Social opportunity Psychological capability
Behaviour substitution	Drinking non-alcoholic alternatives instead of alcohol or doing something else(e.g. going for a run) instead of having a drink.	Physical opportunity Psychological capability
Normalize difficulty	Reminding yourself that other people are also finding it difficult to avoid drinking during Dry January and that this is normal.	Social opportunity
Problem solving	Identifying situations or times of the day where you might find it hard not to drink and putting a plan in place for what you would do to avoid drinking in these situations.	Psychological capability
Distraction	Trying to keep yourself busy at a time when you wanted to drink or would usually drink.	Physical Opportunity
Restructuring social environment	Arranging social activities to take place in environments where you wouldn't typically drink or avoiding certain people.	Social opportunity Physical opportunity
Support others	Offering encouragement to other people, either in real life or online, who were also taking part in Dry January.	Social opportunity
Get emotional or social support	Friends encouraging you not to drink or getting support and encouragement from people online.	Social opportunity Reflective motivation

Sociodemographic questions. Questions included gender, age, household income and level of education for descriptive purposes, to examine whether these factors predicted participation (RQ5 and RQ6), and to enable these characteristics to be included as covariates in regression models.

COVID-19 Impact. During January 2022 some uncertainty and concern remained around COVID-19 which could potentially affect alcohol related and non-alcohol related social practices. Questions were included in the Post-January survey to measure the impact of this. Participants were asked to rate the impact of COVID-19 or the restrictions in place at that time on their efforts not to drink alcohol from one (Made significantly more difficulty) to seven (Made significantly easier). Participants were also asked to rate the extent of the impact of COVID-19 or restrictions in place at that time on other areas of their life from one (Not at all) to five (A great deal). As restrictions were different across the devolved nations of the UK (Hale et al., 2022) participants were also asked to specify whether they lived in England, Northern Ireland, Scotland or Wales.

Data preparation and analysis

Data were prepared and analysed using R/RStudio (RStudio Team, 2020; R Core Team, 2024). Change in AUDIT-C between baseline and six-month follow-up (AUDIT-C T5 – AUDITC T1) and AUDIT-C at six months were the main dependent variables (DV) used. Dummy variables were coded for Dry January participation ('Official' Dry January as reference group), gender (woman as reference group), total abstinence during Dry January (not fully abstinent as reference group), and individual SET use ('never used' as reference group.) Dry January groups were determined according to participants' responses to participation and registration questions in the Post-January survey. If participants did not complete the Post-January survey their response to the equivalent questions at baseline was used. This decision was made in respect to the fact that participants may have changed their decision to participate/not participate or to register/not register at the last-minute.

Data were included in the primary analysis and the secondary analysis for RQ3 and RQ4 if participants completed at least the baseline and six-month follow-up surveys. Sensitivity analyses were conducted for the primary and secondary analyses with Dry January participation determined according to participants' initial baseline responses. Multiple imputation was used to deal with missing data at T3 or T4. Five imputed datasets were created using the *mice* package (van Buuren, 2011). All continuous predictor variables, the dependent variable and sociodemographic covariates were used in the imputation process. Sensitivity analyses were conducted alongside multiple imputation to account for the fact that data may be missing not at random (MNAR) and to explore the robustness of findings across different MNAR scenarios (Leurent et al., 2018). Variables included in the regression model (predictors and dependent) were adjusted by 5%, 10% and 15%. Data were

included in the analysis answering RQ5 and RQ6 for all 'official', 'unofficial' and 'No Dry January' participants who completed the baseline (T1) survey. Finally, data were included in the exploratory analysis for 'official' Dry January participants who completed the baseline (T1) and Post-January (T5) surveys.

Frequency counts and averages for participant characteristics were calculated for each timepoint as were median scores for AUDIT-C, motivation to change, DRSE, ER DRSE, SP DRSE, and O DRSE. Median social contagion (part of something bigger, connection, community) scores were obtained for baseline/mid-January and Post-January. Median SET use (ever, weekly or more frequently) scores were obtained for the post-January and six-month follow-up surveys. Wilcoxon tests were used to compare AUDIT-C at screening and baseline to investigate the impact of the Christmas and New Year period on reported consumption.

A Wilcoxon test was carried out to compare AUDIT-C at baseline and six-month follow-up (RQ1). Linear regression models were used to answer RQ2a and b comparing change in AUDIT-C (baseline to six-month follow-up) with Dry January participation as the main independent variable (IV). Separate models were used to compare 'official' to 'unofficial' and to 'no Dry January.' As data collection was suspended for the 'cutting down' group following the Post-January equivalent survey it was not possible to answer RQ2c.

Further linear regression models were used to address association ins RQ3 and RQ4 with AUDIT-C at six-months as the dependent variable. Separate models were used for 'official Dry January' and 'unofficial Dry January' participants with baseline AUDIT-C, AUDIT-C post-January, baseline motivation, motivation Post-January, baseline DRSE, DRSE Post-January, abstinence, SET use (ever) during January, SET use (ever) after January, part of something bigger (Post-January), connection (Post-January), and community (Post-January) scores included as predictor variables. Stepwise deletion was carried out until all remaining predictors were statistically significant.

Logistic regression was used to compare Dry January participation ('official' and 'unofficial') to membership of the 'no Dry January' group (RQ5) and to compare likelihood of being a member of the 'official' vs 'unofficial' Dry January group. Stepwise deletion was used for both models with the initial model including baseline AUDIT-C, baseline DRSE, baseline motivation, gender, age, income, and education as predictor variables. Distributed χ^2 was calculated to evaluate model fit.

Variance inflation factor (VIF) was obtained for all multiple regression models (linear and logistic) and checked for evidence of multicollinearity. Breusch-Pagan tests were conducted for linear models to check for evidence of heteroskedasticity and diagnostic plots were inspected to check residuals for normality. For regression models, where associations were not significant (alpha at 0.05) Bayes Factors were calculated using the *BayesFactor* package (Morey & Rouder, 2023) to determine whether there was evidence to support the null hypothesis or if data were insensitive (Dienes, 2014).

Changes from preregistration

Baseline AUDIT-C was not included as a covariate in RQ2 regression models because the dependent variable (change in AUDIT-C) incorporated this. AUDIT-C at six months was used as the dependent variable for RQ3 and RQ4 to enable baseline AUDIT-C to be included as a predictor.

Separate regression models were conducted to answer RQ3 and RQ4. This was preferred to building on the models from RQ2 as these research questions were not comparing the different participant groups so use of the original models was unnecessary. Motivation and DRSE at baseline and Post-January were included as predictor variables instead of change in motivation and change in DRSE over the month to enable the impact of baseline levels to be examined separately. Multiple imputation was used instead of full information maximum likelihood. Due to the small sample size the planned SEM was not carried out. As SEM was not carried out RQ3 and RQ4 are addressed with respect to the *associations* between the described variables and changes in alcohol consumption rather than their mediation/moderation effects.

An exploratory analysis was conducted to examine the association between SET use and abstinence (or alcohol consumption) during Dry January. Logistic regression models were used to see whether SET use (ever) or use of any individual SET predicted total abstinence. Given the small sample size and recommendations that the number of predictors in a model should be limited to ten events per variable (EPV) (Harrell Jr. et al., 1984; Peduzzi et al., 1996) individual models were used for each SET. To investigate the association with consumption during Dry January linear regression was conducted with change in AUDIT-C (from baseline to Post-January) as the DV and SET use (ever) as the primary independent variable. Further linear regression models were used to look at the association between each individual SET and change in AUDIT-C. Finally, logistic regression was carried out to determine the predictors of use of each individual SET.

Results

The sociodemographic characteristics of participants in the final sample (N= 136) are shown in Table 3.2. A breakdown of Dry January related characteristics is included in Appendix 2 (Supplementary Table 2.1).

Table 3.2: Characteristics of final sample of participants (people who completed at least baseline (T1) and six-month (T5) follow-up*surveys (baseline and post-January (T3) equivalent for 'cutting down'))

	Official Dry January (N= 58)		**Unofficial Dry January (N=18)**		**No Dry January (N=60)**		**Cutting Down (N=12)**	
Age:								
Mean (SD)	50.09 (12.28)		43.22 (12.29)		42.63 (13.55)		38.92 (14.68)	
Range	23-72		25 - 62		18 -68		25-67	
	Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Gender :								
Man	15	25.86%	4	22.22%	24	40.00%	6	50.00%
Woman	43	74.14%	14	77.78%	36	60.00%	6	50.00%
Non-binary	0	0%	0	0%	0	0%	0	0%
Prefer to self-describe	0	0%	0	0%	0	0%	0	0%
Prefer not to say	0	0%	0	0%	0	0%	0	0%
Household income:								
£0 -£26,999	7	12.07%	4	22.22%	17	28.33%	0	0%
£27,000 - £38,999	10	17.24%	4	22.22%	13	21.67%	4	33.30%
£39,000 - £54,999	14	24.14%	6	33.33%	14	23.33%	1	8.30%
£55,000 - £78,999	8	13.79%	3	16.67%	7	11.67%	4	33.30%
£79,000+	15	25.86%	1	5.56%	6	10.00%	2	16.70%
Prefer not to say/ don't know	4	6.90%	0	0	3	5.00%	1	8.30%
Education:								
No formal qualifications	1	1.72%	0	0%	0	0%	0	0%
Secondary education	6	10.34%	5	27.78%	6	10.00%	3	25.00%
A-levels	5	8.62%	3	16.67%	10	16.67%	1	8.30%
Professional/ Vocational	11	18.97%	0	0	13	21.67%	1	8.30%

UG degree	17	29.31%	5	27.78%	17	28.33%	2	16.70%
PG degree	15	25.86%	3	16.67%	6	10.00%	2	16.70%
Doctorate degree	3	5.17%	2	11.11%	8	13.33%	3	25.00%
Prefer not to say/ don't know	0	0%	0	0%	0	0%	0	0%
1+ previous attempt at temporary abstinence	53	91.38%	16	88.89%	42	70.00%	12	100%

AUDIT-C at screening and baseline were compared to determine whether responses were likely to have been influenced by the Christmas/ New Year period. Numerically, median AUDIT-C was slightly lower at baseline than screening (Table 3.3). However, this difference was only statistically significant for the "no Dry January" group and was a small effect size.

Table 3.3: Median AUDIT-C (IQR) at screening (T0) and baseline (T1) by group including participants who completed at least the screening and baseline surveys

	Median AUDIT-C (IQR)		
	Screening (T0)	**Baseline (T1)**	**Differences**
Official Dry January (N=6)	8.50 (2.50)	7.50 (2.50)	*z*= -0.89, *p* = .371, *r* =.37
Unofficial Dry January (N=42)	9.00 (3.00)	8.00 (3.00)	*z* = -.33, *p*=.739, *r* = .05
No Dry January (N=150)	8.50 (4.00)	8.00 (3.75)	*z* = -2.17, ***p*= .030**, *r* = .18
Cutting Down (N=49)*	8.00 (3.00)	7.00 (3.00)	*z*= -1.67, *p* = .095, *r*=.24

*Baseline data for Cutting Down participants collected between March and May 2022.

Primary Analysis

Median AUDIT-C scores by group at each timepoint are shown in Table 3.4 and the change over time displayed in Figure 3.2. AUDIT-C scores for the 'official' Dry January group were significantly lower at six-month follow-up (T5) compared to baseline (T1) (z = -4.83, p <.001) with a large effect size (r=.63) (RQ1, H1). 'Official' Dry January participants had lower alcohol consumption six months after Dry January than before.

Table 3.4: Median AUDIT-C, AUDIT, DRSE (Emotional regulation DRSE, social pressure DRSE, opportunistic DRSE), motivation, social contagion and COVID impact by group at Baseline, Post-January, three-months and six-months* where measured (IQR in parentheses.)

	' Official' Dry January				**'Unofficial' Dry January**				**No Dry January**				**'Cutting Down'**	
	Baseline	**Post- Jan**	**3-month**	**6-month**	**Baseline**	**Post-Jan**	**3-month**	**6-month**	**Baseline**	**Post- Jan**	**3-month**	**6-month**	**Baseline**	**Post-Jan**
AUDIT-C (0-12):	9.50	1.00	9.00	8.00	8.50	2.00	12.00	8.50	8.00	6.00	8.00	8.00	7.50	6.50
	(3.00)	(4.00)	(2.25)	(5.75)	(2.75)	(3.00)	(3.00)	(3.75)	(2.50)	(3.00)	(3.00)	(3.25)	(3.00)	(2.00)
AUDIT (0-40)	17.00			13.50	18.00			15.50	12.00			11.00	12.00	
	(10.75)	-	-	(14.25)	(10.25)	-	-	(10.75	(12.00)	-	-	(10.00)	(9.25)	-
DRSE (0-7):	3.78	4.50	4.44	4.67	4.11	5.17	2.89	4.00	4.56	4.44	4.78	4.62	4.67	5.06
	(0.86)	(1.11)	(1.51)	(1.70)	(1.67)	(0.97)	(1.78)	(1.61)	(2.45)	(1.55)	(1.08)	(1.91)	(1.45)	(1.33)
ER DRSE	3.17	4.00	3.67	4.67	3.67	5.84	2.33	4.17	4.33	5.00	5.17	4.84	4.67	5.50
	(1.66)	(2.33)	(2.33)	(2.92)	(1.67)	(0.91)	(2.00)	(1.92)	(3.08)	(3.00)	(2.42)	(2.75)	(2.09)	(1.66)
SP DRSE	3.00	3.33	3.00	3.33	2.67	3.67	2.67	3.00	2.84	2.67	3.00	3.00	3.00	3.00
	(1.33)	(1.33)	(2.17)	(2.34)	(2.59)	(2.58)	(1.00)	(2.59)	(1.42)	(1.67)	(1.08)	(2.42)	(1.08)	(0.66)
O DRSE	5.33	5.84	5.67	6.00	5.33	6.50	4.67	5.50	6.00	6.00	6.33	6.17	6.33	6.17
	(1.58)	(1.67)	(1.50)	(1.34)	(1.75)	(1.50)	(4.00)	(2.50)	(1.75)	(2.00)	(1.34)	(1.75)	(1.42)	(1.17)
Motivation (0-5)	4.00	4.20	3.80	4.00	3.50	4.20	2.80	4.00	3.00	3.20	3.00	3.20	3.60	3.50
	(1.00)	(0.60)	(1.20)	(0.00)	(1.35)	(0.90)	(1.00)	(0.00)	(1.25)	(1.40)	(1.05)	(0.00)	(0.70)	(0.80)
Social Contagion (0-7) **														
Part of something bigger		5.00				4.50							2.00	3.00
		(2.00)				(1.50)							(3.00)	(2.25)
Community		5.00				4.50							4.00	4.00
		(2.00)				(1.25)							(2.25)	(1.25)
Connection		5.00				4.50							3.50	4.00
		(2.00)				(1.00)							(2.25)	(1.50)
Effect of COVID-19 on Dry January attempt (0-7)		4.00 (0)				4.00 (0)								-
Impact of COVID-19 on other areas of life (0-5)		2.00 (1.25)				1.00 (1.00)				2.00 (2.00)				-
		No.	**%**			**No.**	**%**			**No.**	**%**		**No.**	**%**
Remained abstinent		26	44.83%			3	16.67%			0	0		1	8.30%

Did not remain abstinent	22	37.93%	9	50.00%	57	95.00%	11	91.70%
Did not answer***	10	17.24%	6	33.33%	3	5.00%	0	0

*Mid-January results not included as only 3 ‘official’ Dry January participants from final sample completed the mid-January survey.

** ‘Cutting Down’ answered social contagion questions at baseline as they did not complete a mid-January equivalent.

*** Participants who did not respond to Post-January survey did not report their abstinence during January

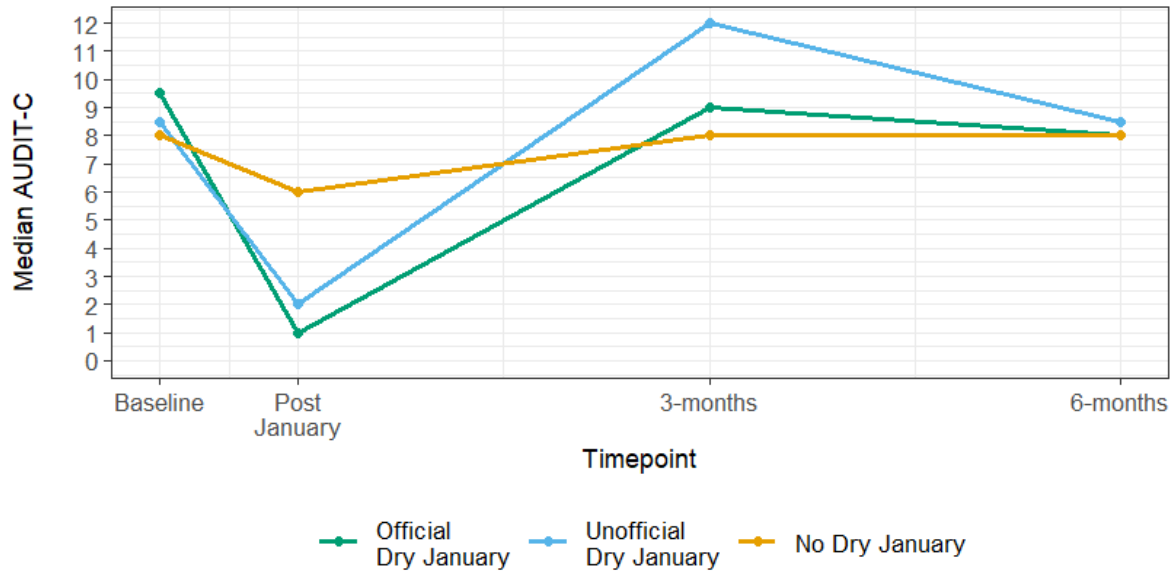

Figure 3.2: Median AUDIT-C at Baseline , Post-January, three-month and six-month follow-up by group using data from all participants completing at least baseline and six-month follow-up*

* Cutting Down group not included as data not collected beyond Post-January equivalent

Table 3.5: Multiple linear regression models comparing change in AUDIT-C and additional covariates between 'Official' Dry January and 'No Dry January' groups

	Model 1 (Dry January status (no Dry January))			**Model 2** (Model 1 + age + man + education + income)		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Dry January status (no Dry January)	1.75	0.74, 2.77	**<.001**	1.69	0.59, 2.80	**.003**
Age				-0.01	-0.06, 0.03	.487
Gender (man)				-0.01	-1.14, 1.11	.979
Education				0.17	-0.21, 0.54	.372
Income				0.04	-0.32, 0.40	.832

Model1: $F(1,116) = 11.79$, $p<.001$, $R^2=0.09$

Model 2: $F(5,112) = 2.67$, $p = .026$, $R^2=0.11$

As predicted, change in AUDIT-C at six months was greater for 'official' Dry January participants than for those not taking part in Dry January at all (H2, RQ2a) (Table 3.5.) There was no significant difference in change in AUDIT-C between 'official' and 'unofficial Dry January groups (Table 3.6). As $p>.05$ Bayes factors were calculated for each model (Model 1 BF = 0.30, Model 2 BF= 0.06). These indicated that there was substantial evidence for the null hypothesis in both instances according to widely used cut-offs (Jeffreys, 1961) (H3, RQ2b). This suggests that there was no difference in

change in alcohol consumption between ‘official’ and ‘unofficial’ participants six months after Dry January.

Table 3.6: Multiple linear regression models comparing change in AUDIT-C between ‘Official’ Dry January and ‘Unofficial’ Dry January groups adjusting for common sociodemographic covariates

	Model 1 (Dry January status)			**Model 2** (Model 1 + age + gender(man) + education + income)		
	β	**95% CI**	***p***	**β**	**95% CI**	***p***
Dry January status (‘Unofficial’)	0.42	- 1.22, 2.05	.614	0.17	-1.57, 1.91	.847
Age				0.001	-0.06, 0.06	.967
Gender (man)				1.67	0.00, 3.34	.050
Education				-0.22	-0.73, 0.29	.394
Income				-0.40	-0.98, 0.19	.182

Model 1: $F(1,74) = 0.26$, $p = .614$, $R^2 = 0.003$

Model 2: $F(5,66) = 1.33$, $p = .264$, $R^2 = 0.09$

Secondary analysis

The number of SETs used after January (H7, RQ3d) and AUDIT-C at baseline (H11, RQ4d) predicted change in AUDIT-C at six-months for ‘Official’ Dry January participants after controlling for other factors (Table 3.7). Using more SETs after Dry January and having a lower baseline AUDIT-C predicted lower AUDIT-C at follow-up. Coefficients and standard errors (SEs) were relatively stable across sensitivity analyses (Supplementary Table 2.2) suggesting that these results are reasonably robust.

Table 3.7: Multiple linear regression models evaluating potential mediators/moderators of change in AUDIT-C at six months in 'Official' Dry January participants (H4-H11; RQ3, RQ4)

	AUDIT-C at 6-months					
	First Model (All potential predictors)			**Final Model** (AUDIT-C at baseline + SETs used after January)		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
AUDIT-C baseline	0.94	0.50, 1.39	**<.001**	0.98	0.65, 1.31	**<.001**
AUDIT-C Post-January	0.29	-0.24, 0.81	.250			
DRSE baseline	0.44	-0.64, 1.51	.412			
DRSE Post-January	0.15	-0.93, 1.23	.772			
Motivation baseline	0.21	-1.45, 1.86	.800			
Motivation Post-January	-0.40	-2.25, 1.46	.664			
Abstinence	0.07	-3.34, 3.49	.962			
SETs used during January	-0.01	-0.37, 0.36	.961			
SETs used after January	-1.36	-1.95, -0.77	**<.001**	-1.37	-1.89, -0.85	**<.001**
Part of something bigger	0.66	-0.51, 1.83	.241			
Connected to others	-0.38	-1.37, 0.61	.431			
Part of a community	0.01	-1.04, 1.06	.977			

Model 1 pooled R^2= 0.62
Final model pooled R^2 = 0.52

No significant predictors of change in AUDIT-C were observed for 'Unofficial' Dry January participants (Table 3.8). However, there was substantial variation in 95% confidence intervals (Supplementary Table 2.3) indicating that these findings may not be robust.

Table 3.8: Multiple linear regression model evaluating potential mediators/moderators of change in AUDIT-C at six-months in 'Unofficial' Dry January participants

	AUDIT-C at 6-months		
Variable	**β**	**95% CI**	***p***
AUDIT-C baseline	1.49	-2.03, 5.02	.266
AUDIT-C Post-January	-0.03	-1.87, 1.80	.951
DRSE baseline	1.49	-7.88, 10.86	.594
DRSE Post-January	-0.56	-12.64, 11.51	.860
Motivation baseline	0.64	-8.08, 9.35	.762
Motivation Post-January	3.66	-11.50, 18.82	.386
Abstinence	-0.93	-13.88, 12.01	.832
SETs used during January	0.60	-2.86, 4.06	.508
SETs used post-January	-1.45	-3.16, 0.27	.075
Part of something bigger	-0.14	-4.36, 4.08	.908
Connected to others	0.26	-6.28, 6.80	.884
Part of a community	-0.90	-8.94, 7.13	.670

Pooled R^2= 0.89

For RQ5 I compared participation in Dry January, 'officially' and 'unofficially', (n = 255) to membership of the 'no Dry January' group (n = 136). Participation in Dry January was significantly associated with baseline AUDIT-C, baseline motivation to change, and household income ($\chi^2(3)$= 162.19, p<.001). A one unit increase in baseline AUDIT-C was associated with being 1.22 times (95% CI [1.02, 1.39], p =.005) more likely to be trying to have a dry January. This indicates that people taking part in any type of Dry January consumed more alcohol at baseline than people not participating in Dry January. Baseline motivation appeared to have a particularly substantial association, with a one unit increase in motivation associated with being 5.17 times (95% CI [3.63, 7.35], p<.001) more likely to be attempting a dry January. A one unit increase in household income (being in the next quintile up) was associated with being 1.26 times more likely to participate (95% CI [1.06, 1.50], p=.008). Relative to not taking part in Dry January at all, greater baseline alcohol consumption, being more motivated to change at baseline, and having a higher household income were associated with being more likely to be attempting Dry January.

Significant differences were also observed between 'official' (n= 194) and 'unofficial' Dry January (n = 61) groups ($\chi^2(3)$= 24.84, p<.001). A one unit increase in motivation at baseline was associated with being 1.87 times more likely to be an ' official' Dry January participant (95% CI [1.27, 2.77], p =.002). A one unit increase in household income was associated with being 1.36 times (95%CI [1.10,

1.68], p = .004) more likely to be participating officially and a one unit increase in education with being 1.23 times (95% CI [0.99, 1.52], p=.063) more likely to be taking part officially rather than unofficially. Overall, taking part in Dry January 'officially' rather than 'unofficially' was predicted by greater baseline motivation to change, higher household income, and having completed a higher level of education.

Exploratory analysis

One hundred and five 'official' Dry January participants completed at least the baseline and Post-January survey. A significant reduction in AUDIT-C and increase in motivation to change and DRSE during January was observed (Table 3.9). Participants used a median of 11 SETs (IQR = 3) at least once during January. 95.24% of participants engaged in behavioural goal-setting; this was the SET used one or more times by the greatest proportion of participants (Supplementary Table 2.4). Self-monitoring of behaviour was used most frequently: 81.9% of participants did this daily or more frequently.

Table 3.9: AUDIT-C, DRSE, motivation and abstinence for 'official' Dry January participants who completed both baseline and Post-January surveys (n =105)

	Baseline	**Post-January**	**Differences**
	Median (IQR)	**Median (IQR)**	
AUDIT-C	9.00 (3.00)	2.00 (4.00)	z = -8.91, ***p*<.001**, *r* = .87
Motivation	4.00 (1.00)	4.40 (0.80)	z= -2.11, ***p* =.035**, *r*= .21
DRSE	3.89 (1.23)	4.56 (1.33)	z= -6.09, ***p*<.001**, *r*= .59
-ER DRSE	3.67(1.67)	4.00 (2.67)	z= -3.83, ***p*<.001**, *r*= .37
-SP DRSE	3.00 (1.67)	3.67 (2.00)	z= -5.32, ***p* <.001**, *r* = .52
-O DRSE	5.33 (2.00)	6.00 (1.67)	z= -5.24, ***p* <.001**, *r* =.51
	No. of participants	**% of participants**	
Complete abstinence	50	47.6%	

There was no evidence of a significant association between the number of SETs used and likelihood of total abstinence (Table 3.10) However, this model was not particularly well-fitting. Adding in covariates improved the model slightly but significance was not achieved. Given the sample size and number of predictors included, the apparently improved fit in model 3 was likely due to overfitting. No significant association was observed for any individual SETs and likelihood of total abstinence but again these models were not good fits for the data .

Table 3.10: Logistic regression models investigating the association between the number of SETs used and likelihood of total abstinence during January including models controlling for common covariates

	Model 1 (No. SETs used)				**Model 2** (Model 1 + baseline AUDIT-C , age, gender(man))				**Model 3*** (Model 2 + income, education)			
	β	**OR**	**95% CI**	***p***	**β**	**OR**	**95% CI**	***p***	**β**	**OR**	**95% CI**	***p***
No. SETs used	0.10	1.10	0.94, 1.30	.247	0.13	1.14	0.96, 1.35	.152	0.19	1.21	1.00, 1.47	.056
Baseline AUDIT-C					-0.22	0.80	0.65, 0.99	**.039**	-0.17	0.84	0.67, 1.07	.155
Age					0.01	1.01	0.98, 1.04	.637	0.02	1.02	0.99, 1.06	.196
Income									-0.31	0.74	0.52, 1.04	.080
Education									0.21	1.23	0.85, 1.80	.277
Gender (man)					0.59	1.81	0.64, 5.07	.261	0.69	1.99	0.66, 6.01	.222

Model 1: $\chi 2(1)= 1.37$, $p = .243$
Model 2: $\chi 2(4)= 6.77$, $p = .149$
Model 3: $\chi 2(6)= 11.48$, $p = .075$
* Shown to illustrate improvement in model fit as the number of predictor variables included increase. Based on the 10 EPV rule of thumb there are too many predictors in model 3

Table 3.11: Linear regression models showing association between the number of SETs used and change in AUDIT-C between baseline and Post-January follow-up

	Model 1 (SETs ever used)			**Model 2** (Model 1 + age, gender)			**Model 3** (Model 2 + income + education)		
	B	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
No. of SETs used	-0.17	-0.40, 0.06	.138	-0.21	-0.44, 0.03	.082	-0.22	-0.47, 0.03	.086
Age				-0.02	-0.07, 0.02	.322	-0.03	-0.08, 0.01	.155
Income							0.11	-0.35, 0.56	.644
Education							0.37	-0.11, 0.85	.132
Gender (man)				-0.65	-2.08, 0.78	.368	-0.72	-2.18, 0.74	.331

Model 1: $F(1,103) = 2.24$, $p = .138$, $R^2 = .02$
Model 2: $F(3,101) = 1.39$, $p = .251$, $R^2 = .04$
Model 3: $F(5,89) = 1.77$, $p = .128$, $R^2 = .09$

There was no evidence of a significant association between the number of SETs used and change in AUDIT-C during January (Table 3.11). Two individual SETs, 'Public Commitment' and 'Restructuring the social environment' (Table 3.12) were significantly independently associated with change in AUDIT-C. Making a public commitment was associated with reduction in AUDIT-C score 1.98 times greater than not making a commitment. Restructuring the social environment was associated with a reduction of 1.30 times greater in AUDIT-C compared to not using this SET. Making a public commitment and restructuring the social environment were both associated with lower alcohol consumption during January.

Table 3.12: Linear regression evaluating the effect of the SET ' Public commitment' on change in AUDIT-C between baseline and Post-January follow-up

	Public commitment						**Restructuring social environment**					
	Model 1 (Public commitment)			**Model 2** (Model 1 + age + gender(man))			**Model 1** (Restructuring social environment)			**Model 2** (Model 1 + age + gender(man))		
	β	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
SET	-1.98	-3.57, -0.39	**.015**	-2.22	-3.85, -0.60	**.008**	-1.30	-2.39, -0.21	**.020**	-1.36	-2.45, -0.26	**.016**
Age				-0.02	-0.07, 0.02	.285				-0.02	-0.07, 0.02	.320
Gender (man)				-0.74	-2.14, 0.66	.295				-0.45	-1.84, 0.94	.519
Model 1: $F(1,103) = 6.07$, $p = .015$, $R^2 = .06$ Model 2: $F(3,101) = 2.84$, $p = .042$, $R^2 = .08$							Model 1: $F(1,103) = 5.63$, $p = .020$, $R^2 = .05$ Model 2: $F(3,101) = 2.38$, $p = .074$, $R^2 = .07$					

Baseline DRSE was significantly associated with use of both 'Public Commitment' ($\chi2(1) = 9.05$, $p = .003$) and 'Restructuring the social environment' ($\chi2(1) = 4.67$, $p = .031$). A one unit increase in DRSE at baseline was associated with being 0.41 times less likely (95% CI [0.22, 0.74], $p = .004$) to use 'Public commitment' and .64 times less likely (95% CI[0.41, 0.96], $p = .037$) to use 'Restructuring the social environment'. This suggests that people who were more confident in their ability to refuse alcohol prior to Dry January were less likely to make a public commitment or restructure their social environment during January. Predictors of other SETs are shown in Supplementary Table 2.5

Discussion

In line with previous research (de Visser et al., 2016; de Visser & Piper, 2020), I found evidence of a reduction in alcohol consumption among participants who signed up to the 'official' Dry January campaign. Whilst significant, this reduction was also relatively small with median AUDIT-C at six months (8.00) remaining in the higher risk category. The reduction observed was greater for 'official' Dry January participants than for those not taking part in Dry January suggesting it is not (entirely) attributable to seasonal variation in consumption. Comparisons with people participating 'unofficially' found no evidence of differences in reduction between people who did and did not register for the official campaign. This contrasts with earlier research which reported reductions in consumption for a greater proportion of registered Dry January participants compared to unregistered participants (de Visser, 2019). However, considerable attrition, and consequently a very small sample of 'unofficial' participants at six months, means that this analysis was particularly underpowered and consequently this finding may not be robust.

Restricting participation to heavy drinkers (AUDIT-C ≥5) provided control groups which were more evenly matched according to baseline consumption compared to previous evaluations {de Visser, 2020 #253}. Attempts were also made to account for the potential impact of the Christmas/New Year period on baseline measures. Whilst I found no evidence that people reported higher levels of typical consumption during this period (indeed the only significant finding actually indicated that the 'no Dry January' group reported slightly lower consumption) the lack of screening data for all but a few 'official Dry January' participants means that we can draw limited conclusions in regard to this.

Among 'official' participants, alcohol consumption prior to Dry January and the number of SETs used following Dry January predicted alcohol consumption at six month follow-up. Whilst it is unlikely that using a greater number of SETs is itself responsible for a greater reduction in consumption this may reflect intentions and/or a commitment to make ongoing changes to drinking behaviour. Not everyone participating in Dry January intends to make ongoing changes to their alcohol consumption(de Visser & Lockwood, 2018; de Visser, 2019) and those using SETs after January may be more likely to be doing so. Whilst intentions are not sufficient for a behaviour to occur they are necessary (Sheeran & Webb, 2016). Therefore, this finding may therefore simply reflect differences in outcomes between people who were attempting to make changes to their alcohol consumption and those who were not. It may also indicate the degree to which someone is actively engaged in changing their behaviour with use of more SETs potentially representing greater engagement. Different SETs may also have been utilised in different contexts and with different frequencies, with some SETs used perhaps only a few times as people experimented to determine which ones were (still) useful after January in respect of their changing goals. As such, the number of SETs used may be an indicator of intention and action toward changes to drinking behaviour following Dry January participation.

Different patterns of SET use may also have influenced the number of SETs used and, potentially, their effectiveness. Using factor analysis and expert consensus a previous study identified BCTs co-occurring across interventions (Bohlen et al., 2020). One group of co-occurring techniques also included corresponding SETs from the current study: behaviour goal-setting, outcome goal-setting, self-monitoring behaviour, self-monitoring of outcomes, emotional social support, and problem-solving (Bohlen et al., 2020). Therefore, if someone was using one SET from this group they may be more likely to utilise others thus increasing the overall number employed. Additionally, whilst use of a greater number of techniques is not necessarily associated with increased effectiveness (Spohrer et al., 2021), use of multiple techniques congruent to a particular behaviour change theory may result in synergies (Dombrowski et al., 2012; Prestwich, Conner, et al., 2016; Bohlen et al., 2020). The group of SETs previously outlined includes techniques related to all elements of the COM-B model. Use of SETs targeting capability, opportunity, and motivation may therefore have enhanced the benefits of Dry January participation. Whilst the current study's small sample size precluded analysis of interactions between SETs, it is possible that, by using a greater number of SETs including many which are theoretically linked, some participants benefitted from this synergistic effect.

Heavier drinkers, who were more motivated to change their drinking and had higher household incomes were more likely to be attempting to have a Dry January of any type. Furthermore, people with greater motivation to change at baseline, higher household incomes and a higher level of education were more likely to register for the 'official' campaign than take part 'unofficially.' With the exception of motivation to change which, to the best of my knowledge, has not previously been measured in Dry January participants, these findings are consistent with prior research (de Visser, 2019; de Visser & Piper, 2020). However, lack of an association with DRSE contradicts previous findings where Dry January participants were less confident in their own ability to refuse alcohol (de Visser, 2019; de Visser & Piper, 2020). Whilst the current study is limited by a substantially reduced sample size compared to previous evaluations of Dry January, it would nonetheless be beneficial to resolve this inconsistency.

The number of SETs used did not predict likelihood of total abstinence during January. Nor was there evidence of an association between use of any individual SET and likelihood of total abstinence. However, models were not well-fitting hence these findings cannot be considered as conclusive evidence that SET use is not associated with the likelihood of total abstinence during Dry January. Whilst there was no significant association between the number of SETs used and change in AUDIT-C over the month, there was an association with two individual SETs: 'Public commitment' and 'Restructuring the social environment.' Making a public commitment to change has been linked to positive outcomes across various health-related behaviour including smoking cessation (Black et al., 2020), weight loss (Coupe et al., 2019) as well as temporary abstinence from alcohol (Witvorapong & Watanapongvanich, 2020). Previous research suggests it increases the likelihood of someone

abstaining due to the potential for negative social consequences, e.g. embarrassment or disapproval from others, should abstinence be broken (Witvorapong & Watanapongvanich, 2020). Whilst my findings do not support the role of public commitment in maintaining abstinence they do indicate that it could help limit any consumption that occurs should someone break their abstinence. Thus, whilst publicly committing to taking part in Dry January does not appear to prevent someone drinking it may make them less likely to drink in ways that will elicit these negative social consequences. For example, avoiding drinking in front of those who are aware of their Dry January participation or avoiding excessive consumption. Restructuring the social environment is believed to lead to behaviour change through changes to social influences (Carey et al., 2019). A meta-analysis of alcohol intervention RCTs including components targeting social influence showed that changing social influences has a robust, albeit small, effect on alcohol consumption (Prestwich, Kellar, et al., 2016). In the case of Dry January, avoiding places where alcohol is drunk, people drinking, or people who typically drink heavily may also serve to change participants social influences. This may help to limit alcohol consumption and mean any consumption that occurs is lower than it otherwise would be. Thus, through their respective mechanisms, making a public commitment and restructuring the social environment may help Dry January participants to restrict their alcohol consumption during January.

Limitations

This study has a number of limitations. Firstly, a high rate of attrition resulted in a small final sample. Subsequently many analyses were statistically underpowered and some models potentially overfitted. Retention was overestimated with a lower proportion of people completing the baseline survey than anticipated. As such, I was unable to obtain a pre-Christmas baseline measure of consumption for the majority of participants. Additionally, due to circumstances beyond my control, baseline measures were not collected from participants recruited via ACUK, almost all 'official' Dry January participants, until mid-January. Given evidence that people report current consumption even when asked to consider past consumption (Searles et al., 2000) it is possible that this delay influenced their responses. Recruiting via two routes, whilst appropriate given the specific requirements of the study, may also have introduced variance. Participant burden varied according to route of recruitment with those coming via the screening survey completing a greater number of surveys than those recruited via ACUK. Participants' primary motivations for taking part may have differed according to their route of recruitment. For example, Facebook adverts may have attracted people primarily interested in the prize draw, whilst those recruited via ACUK may have been motivated by a desire to find out whether Dry January was effective. Between-group differences may therefore reflect differences according to route of recruitment rather than fundamental differences between people participating 'officially' or 'unofficially' in Dry January. Finally, this was an observational study which means that there was a lack of randomisation with people self-selecting to participate in Dry January or not.

Whilst arguably ecologically valid, this may have also introduced confounds into the study which I have not recognised or controlled for.

In summary, these findings provide tentative support for a reduction in alcohol consumption among heavy drinkers following participation in Dry January. This reduction does not appear to be fully attributable to seasonal variation in consumption. Registering for Dry January and having access to online supports did not appear to enhance the benefits of participation. However, the reliability of this finding is limited by the very small sample of 'unofficial' participants. Use of more SETs following January predicted greater reductions in consumption, perhaps reflecting greater commitment to behaviour change. During January, making a public commitment to participation and restructuring the social environment appeared to help people limit any alcohol consumption. All results are limited by difficulties in recruitment, substantial attrition, and consequently underpowered analyses. Nevertheless, the issues and limitations of the current study are also instructive and will be used to inform the design of the second prospective observational study.

Chapter IV

"Knowing how it works for me": A qualitative interview study of the use of personalised approaches to manage common challenges during Dry January

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Contributions: I designed the study and developed the interview guide with feedback from IK and MF. I conducted and transcribed all interviews. I conducted formal analysis with support from IK. I wrote the draft manuscript. All co-authors reviewed and provided feedback on the manuscript.

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Abstract

Background

Participation in temporary abstinence challenges such as Dry January is associated with benefits including enduring reductions in alcohol consumption. However, undertaking temporary abstinence requires people to negotiate certain challenges. Building on previous research, we examined how and why particular strategies were used to address challenges and how use developed following January. Given differences in reported outcomes, we also explored differences and similarities in strategy use between 'official' UK Dry January registrants and those attempting an 'unofficial' alcohol-free January.

Methods

We conducted 16 online semi-structured interviews with individuals who participated 'officially' or 'unofficially' in Dry January 2022 and who, prior to this, were regular drinkers. Data were analysed using reflexive thematic analysis and themes constructed around the common challenges people faced and the strategies used to address them.

Results

Four themes were generated: breaking the routine, dealing with socialising whilst not drinking, avoiding loss of motivation, and dealing with the potential for 'failure.' People took personalised approaches to addressing these challenges, retaining the meaning of important rituals and practices whilst still changing their alcohol consumption. This personalisation was reflected in the variation in strategy use and adaptation of strategies over time. Despite overall variation in strategy use, many strategies were employed by both 'official' and 'unofficial' participants.

Conclusion

Dry January provides an opportunity for people to learn what strategies do and do not work for them. Capitalising on the flexibility of Dry January to offer additional opportunities for personalisation may help people get the most from their Dry January experience.

Background

Temporary abstinence challenges (TACs), during which people voluntarily abstain from alcohol for a short period, may contribute to reducing alcohol consumption at the population level (de Ternay et al., 2022). Dry January, a month-long TAC, is well-established in the UK with 175,000 people registering for the official campaign, organised by the charity Alcohol Change UK, in 2023 (ACUK; Alcohol Change UK, 2024a). Millions more participate 'unofficially,' attempting an alcohol-free January independently (Alcohol Change UK 2022). Participation in Dry January and similar campaigns has been associated with enduring reductions in alcohol consumption, physical health improvements and increased wellbeing (de Visser et al. 2016; Thienpondt et al. 2017; Bovens et al. 2020; de Visser and Nicholls 2020; de Visser and Piper 2020). Some outcomes, including increased belief in one's ability to refuse alcohol and improved health and wellbeing are more likely to be reported by participants registering for the campaign than those participating 'unofficially' (de Visser 2019), indicating the necessity of understanding both 'official' and 'unofficial' Dry January experiences.

Despite the potential benefits, temporary abstinence is not without difficulties. Stress, drinking triggers, alcohol's dominance in society, and social pressures are some of the challenges faced by those taking a break from drinking (de Visser and Lockwood 2018; Pennay et al. 2018; Thienpondt et al. 2024). The literature identifies several strategies used to manage these challenges including planning ahead of social occasions, reducing or avoiding socialising, and publicly committing to an alcohol-free period (de Visser and Lockwood 2018; Pennay et al. 2018; Pados et al. 2020).

Additionally, because alcohol consumption is a highly routinized social practice (Blue et al. 2016; Meier et al. 2018) that coexists and is interwoven with other social practices, such as eating, socialising, and watching television (Schatzki 2002; Blue et al. 2016; Meier et al. 2018), changes to alcohol consumption also affect these intertwined practices. Considering how use of strategies to avoid drinking influences interlinked practices is necessary to develop a more holistic understanding of people's Dry January experiences.

People temporarily abstaining from alcohol report using online supports including smartphone apps and social media (de Visser and Lockwood 2018; Pennay et al. 2018; Pados et al. 2020). ACUK provide a range of digital supports for Dry January participants including the Try Dry app, motivational emails and Facebook groups (Alcohol Change UK n.d.). Apps such as Try Dry allow people to self-monitor and reflect on their alcohol consumption (Bishop 2018; de Visser and Lockwood 2018). Access to online groups enables people to give and receive support (de Visser and Lockwood 2018; Pennay et al. 2018; Pados et al. 2020) and to observe the experiences of others and normalize the difficulties they may be experiencing (de Visser and Lockwood 2018; Pennay et al. 2018). Access to ACUK's supports is the main factor differentiating the 'official' and 'unofficial' Dry January experience.

Whilst we have some understanding of what Dry January registrants do to avoid drinking, we know less about how and why particular strategies are employed. It is also unclear how strategy use progresses – whether it continues, develops or stops – following January and the impact this has on other social practices. Additionally, given the differences in access to structured supports and outcomes between 'official' and 'unofficial' participants (de Visser 2019) it is important to understand any corresponding differences in strategy use during and after January. Therefore, this study aimed to answer the following research question: How do 'official' and 'unofficial' Dry January participants avoid drinking alcohol during and following Dry January?

Focussing on the challenges of temporary abstinence and the strategies individuals use to negotiate them, this paper aims to develop a deeper, more nuanced understanding of how people avoid drinking during Dry January and beyond.

Methods

We conducted online semi-structured interviews with individuals who participated in Dry January 2022. The study was underpinned by a critical realist philosophical approach to recognise that we are accessing interviewees' perception of their reality and that this, and our interpretation of it, occurs within and is influenced by a particular cultural context and language.

Participants

We recruited interviewees who had 'officially' or 'unofficially' tried to have an alcohol-free January 2022, were 18 or older, lived in the UK and typically drank alcohol at least once per week. We aimed to recruit 12-20 interviewees with an equal number of 'official' and 'unofficial' participants. This was primarily informed by the time and resources available but also took into consideration Malterud et al's concept of information power (2016), whereby the amount of relevant information held within a sample can influence the number of participants required. This included features of the planned study which may have maximised the relevant information within our sample, including the specificity of our target population and relatively narrow study aims and those which may have restricted it such as the potential influence of the first author's novice interviewer status on dialogue quality. Interviewees were recruited from a prospective observational study of Dry January 2022, Twitter/X and participant recruitment site 'Call for Participants.' Twenty interviews were conducted, with data from 16 interviewees analysed (Table 4.1). Four interviews were not analysed to maintain data integrity: two revealed they did not meet the eligibility criteria and two demonstrated characteristics, including vague responses, repetition of stories, and reluctance to use cameras, indicating they may not be genuine participants (Pellicano et al. 2023; Ridge et al. 2023).

Table 4.1: Age and gender of interviewees according to Dry January status

		'Official' Dry January	'Unofficial' Dry January	All interviewees
Age	Mean (SD)	52.38 (14.23)	33.38 (9.94)	42.88 (15.39)
	Range	28-68	22-51	22-68
		No.	No.	No.
Gender	Male	4	2	6
	Female	4	6	10

Data Collection

Ethical approval was received from the Department of Psychology Research Ethics Committee at the University of Sheffield (ethics no: 047230). The interview guide (Appendix 3A) was structured temporally from pre-to post-January to facilitate recall. It was flexible and responsive to individual narratives and developed iteratively throughout the study (Braun and Clarke 2013; DeJonckheere and Vaughn 2019). To minimise socially desirable responding and allow interviewees to highlight tools or strategies which were personally relevant we avoided targeted questions about specific resources. All interviews were carried out between 9/9/2022 and 14/11/2022 following final data collection for the prospective observational study in August 2022. Interviews were conducted via Google Meet enabling inclusion of a geographically diverse group of interviewees (Archibald et al. 2019). Informed consent was obtained from interviewees prior to interview.

Analytic Procedure

Interviews were analysed using Reflexive Thematic Analysis (RTA; Braun and Clarke 2006; Braun and Clarke 2021). RTA was selected due to its flexibility and coherence with our philosophical approach, research aims, and method of data collection. We coded for semantic and latent meaning taking a hybrid inductive and deductive approach. This was primarily inductive with deductive analysis enabling us to ensure coding and subsequent theme generation were relevant to our research question (Byrne 2022) and reflected the influence of conceptualising drinking as a social practice on our interpretation of the data. Further details of the analysis are available in Appendix 3B.

Reflexivity and positionality

The interview guide, developed and piloted within the research team, was based on research questions derived from the overarching aims of AB's PhD research. Interviews were conducted and transcribed by the first author who kept a reflective research diary throughout. Analysis was also conducted by AB with support from IK. Consistent with principles of RTA and our philosophical approach this did not include consensus coding (Braun and Clarke 2021; Braun and Clarke 2024) but discussion of

progress/uncertainties and reflection on potential themes. A detailed reflexivity and positionality statement is included in Appendix 3C.

Results and Discussion

Four themes were constructed around common challenges to non-drinking during and following Dry January: breaking the routine, dealing with socialising whilst not drinking, avoiding loss of motivation, and dealing with the potential for 'failure' (Figure 4.1). Whilst challenges were shared, approaches to managing them were diverse. 'Official' and 'unofficial' experiences overlapped in many places with just a few key points of difference (Figure 4.1). Selecting preferred strategies for specific challenges, adapting strategies to meet individual needs and tailoring their use of supports enabled people to take a personalised approach to Dry January.

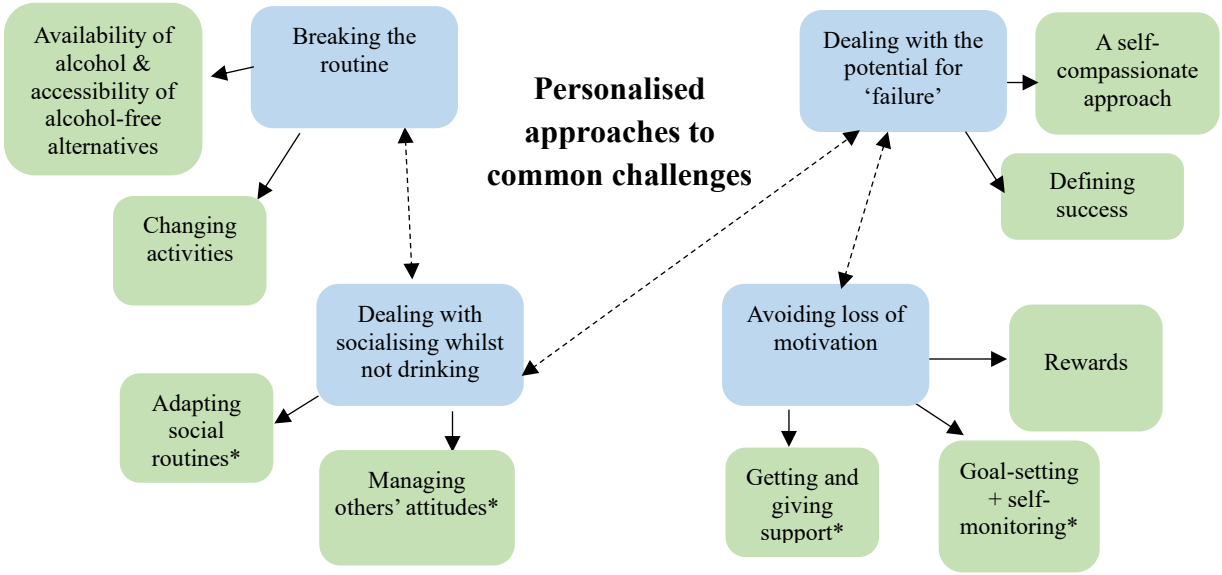

Figure 4.1: Thematic map showing the relationship between subthemes (green) and themes (blue) generated in analysis of interview data. Dashed lines indicate bidirectional relationships between particular themes. *Subthemes where differences in 'official' and 'unofficial' Dry January approaches were most apparent, see text for details.

Breaking the routine

Drinking practices were intertwined with other social practices as part of established routines. Dry January participants needed to break, and rebuild, these routines. Limiting the **availability of alcohol** and/or ensuring the **accessibility of alcohol-free alternatives** such as no- and low- alcohol beverages (NoLos) and soft drinks helped break drinking routines particularly during the early stages of Dry January. Alcohol consumption was bound up with Sophie's post-work routine, but alcohol-free alternatives helped to disrupt this.

> I just had a variety of flavours of tonic water in the fridge ready so if I got home from work I could just go to the fridge and there it is.
>
> (Sophie, 43, 'Official')

Sophie's experience reflects the often routinized nature of in-home alcohol consumption including use of alcohol to mark the transition between different parts of an individual's day and their different identities (Brierley-Jones et al. 2014; MacLean et al. 2022; Wright et al. 2022). Replacing alcohol with an alternative drink allowed her to maintain the routine, retaining the symbolic role of a drink in marking these transitions without consuming alcohol.

Other interviewees used NoLos to smooth the transition into Dry January before use gradually reduced. Some people recalled starting to consider the necessity of potential drinking occasions suggesting increased awareness of the routinized nature of previous drinking.

Jack continued to use NoLo alternatives post-January, developing a strategy to manage cravings.

> …in the past [had] a bit of a habit of cracking open a beer as soon as Friday night and finished work came about and made a positive effort to change that. So would have an alcohol-free beer and maybe another one and then say to myself well I'll have an alcohol one if I still fancy.
>
> (Jack, 56, 'Official')

An alcohol-free beer allowed Jack to let the urge to drink pass and consider whether he actually wanted an alcoholic drink. Whilst consumption of both NoLos and alcoholic drinks within one drinking occasion may be uncommon (Davey 2021; Nicholls 2023b, 2023a; Perman-Howe et al. 2024) this 'strategic' use of NoLos (Nicholls 2023a) enabled Jack to maintain his end of week routine whilst also transitioning to more mindful alcohol consumption.

Others reverted to former drinking routines. Beth (22, 'Unofficial') reinstated her previous routine, albeit less frequently, of drinking wine when cooking. During Dry January wine had been replaced by grape juice. The dual role of alcohol in this practice, as ingredient and accompaniment to the cooking process, may have contributed to its retention, as the replacement might not have sufficiently captured the intended purpose.

Changing their activities also helped break routines. Moving out of spaces they associated with alcohol and participating in an alternative activity was helpful for some people. Kim (51, 'Unofficial') typically drank alcohol whilst watching television in her lounge. Deliberately moving to a different space in her home and undertaking an activity she did not associate with alcohol created distance between herself and the context where consumption was most likely to occur weakening the connections between the different elements of her drinking practice (Shove et al. 2012; Blue et al. 2016).

Neil similarly distracted himself with activities he did not associate with alcohol consumption.

> …trying to exercise more in terms of activities cos then I think that distances you from… they're two kind of divergent paths aren't they, going out and getting shitfaced and going out for a run instead would be the (laughs) two opposites.
>
> (Neil, 28, 'Official')

Participating in an activity he considered fundamentally incompatible with drinking helped Neil minimise the likelihood of consuming alcohol both during and following Dry January. Thus increasing exercise was beneficial both for the positive outcomes associated with exercise itself and for its role in helping him avoid drinking.

In summary, in early January people broke drinking routines and smoothed their transition into temporary abstinence. To negotiate the challenge of entrenched drinking routines people used alcohol-free alternatives to disrupt practices whilst retaining their meaning. Undertaking alternative activities to avoid environments they associated with alcohol whilst distracting themselves from cravings, further weakened drinking routines.

Dealing with socialising whilst not drinking

There was considerable variation in approaches to socialising whilst not drinking. Many people described **adapting social routines** to manage the challenges of alcohol-free socialising. This sometimes involved emotional and practical preparations before social events.

> I just had to really psyche myself up a little bit before I went there to be like okay once I'm there I can perform. Almost like I can be me, oh this sounds really weird, be me but with a little bit of preparation whereas I guess before I'd relied on the alcohol effect to bring my personality out.
>
> (Rachel, 27, 'Unofficial')

Mental preparation fulfilled a role previously played by alcohol helping Rachel portray a version of herself she was happy for others to see. She reflected on how, prior to Dry January, her lack of confidence in her sober self prevented her from engaging in certain activities without alcohol. As she gained experience in alcohol-free socialising ("*the more I did it the more I confirmed to myself that I could do it*") the extent of preparations reduced. Increased self-esteem following successful alcohol-free social interactions (Conroy and de Visser 2018) during January, may have lessened the degree to which alcohol-free socialising challenged Rachel and reduced her need to prepare.

Adapting existing social routines during January led to some interviewees prioritising more meaningful interactions.

> I'm in a relationship, a lot of my friends who have more of a lifestyle of just going out it's like they're trying to meet people cos they might be single, which I absolutely get, but it's also I more so want to connect with them as friends and not just to be someone they're sitting with while they're trying to meet people.
>
> (Fiona, 28, 'Unofficial')

Fiona, whose alcohol consumption reduced substantially post-January, reflected on how alcohol-focussed environments did not facilitate meaningful interactions at her life stage. Prioritising meaningful connection, including by deprioritising certain people, was primarily discussed by 'unofficial' interviewees in their twenties. This may be explained by the 'maturing out' of harmful drinking observed as young people transition into adult roles (Yamaguchi and Kandel 1985; Bachman et al. 2002). The purpose of socialising during this period is also suggested to change from facilitating interactions with new people to maintaining existing relationships (Järvinen and Bom 2019). Our observations may therefore reflect the age differences between 'unofficial' and 'official' interviewees (Table 4.1), rather than a difference in the groups' approaches to alcohol-free socialising.

Considering the response of others to their non-drinking led to distinct approaches as people decided how to **manage others' attitudes**. To mitigate others' feelings of discontentment several interviewees prewarned people that they would not be drinking. Preparing others for their non-drinking appeared to help reduce apprehension about alcohol-free socialising, potentially through removing some uncertainty.

Consistent with previous findings (de Visser & Lockwood, 2018; Pennay et al., 2018; Thienpondt et al., 2024), interviewees sometimes experienced unsupportive attitudes.

> …we went to a friend's house for a meal and she was doing cocktails, she said, 'get taxis' and I said, 'well actually I'll be your taxi cos I'm doing Dry January' but she said to me 'can I corrupt you, I need somebody to test my cocktails' and I said 'no I'm doing Dry January' and she tried a further four times to get me to try the cocktails which at the time… I was just puzzled at the time but my reflection on that is that I still find that really disrespectful but it was quite unexpected.
>
> (Sophie, 43, 'Official')

Refusing drinks despite persistent pressure enabled Sophie to demonstrate to herself that she could remain alcohol-free. Her experience supports suggestions that Dry January participation may help increase self-efficacy in refusing alcohol (de Visser et al. 2016; de Visser and Piper 2020) and indicates that repeatedly resisting pressure to drink may contribute to this increase.

Olivia's (28, 'Unofficial') approach differed to Sophie's. Whilst she also continued socialising, she opted to refuse alcohol without acknowledging her participation in Dry January. Managing others' attitudes by 'going stealth,' being open about not drinking but not disclosing why, helped Olivia avoid

unhelpful external pressure to 'succeed' in Dry January, which she appeared to prioritise over avoiding pressure to drink.

This 'stealth' approach was only discussed by 'unofficial' participants including Phillip who avoided all socialising during January, in expectation of negative responses.

> I'll make excuses […] 'oh I can't come out tonight I'm sick' or 'I've got no money' or anything cos I think people kind of respond better to that. Funny, actually thinking about it they respond better to some kind of tragedy going on than simply saying 'actually no I just don't wanna drink.'
>
> (Phillip, 44, 'Unofficial')

Whilst disclosing TAC participation helped some people quickly explain their non-drinking (Cherrier and Gurrieri 2012; Bartram et al. 2017) for others discretion about changes to drinking was preferable, allowing them to avoid negative reactions (Herman-Kinney and Kinney 2012; Bartram et al. 2017). 'Going stealth' appeared as effective for those who took this approach as actively managing others' attitudes did for others. However, as Phillip acknowledged, avoiding socialising can increase feelings of isolation. Thus whilst a 'stealth' approach seemed an effective short-term strategy, the negative consequences of ongoing isolation on mental health (Leigh-Hunt et al. 2017) suggests, longer-term, this approach could prove more problematic.

To summarise, social routines were adapted to negotiate the challenges of alcohol-free socialising. As they settled into their 'new normal' with, in some cases, increased confidence in their ability not to drink, strategy use changed. People acknowledged, if not necessarily engaged with, others' responses to their non-drinking considering whether to actively manage other peoples' attitudes or adopt a 'stealth' approach.

Avoiding loss of motivation

Interviewees' accounts highlighted the need to avoid losing motivation as January progressed with **getting and giving support** discussed by both 'official' and 'unofficial' participants. Participating with others enabled people to benefit from mutual emotional support.

> …it was overall really positive, when we would call [each other] it was always really hyping each other up kind of thing instead of being 'ah I'm not gonna make it!' it was always just 'you've got this!'
>
> (Beth, 22, 'Unofficial')

Whilst Beth participated 'unofficially' the positivity of her interactions echo the positive approach to behaviour change taken by the 'official' Dry January campaign (Yeomans 2019). Mutual support may have not only served as a morale boost but also helped minimise feelings of isolation by enabling Beth to share her Dry January experience with someone else.

Other interviewees, such as Alan (68, "Official), also benefited from connecting to other Dry January participants. Alan found receiving support in an 'official' Dry January Facebook group beneficial with the feeling he was also helping others (*"I was talking about my own experiences to encourage people and that helped as well")* providing additional motivation. He reflected on how membership of this online community helped him feel *"part of something"* a concept previously reported as important by Dry January participants (de Visser et al. 2016; de Visser and Lockwood 2018). Only 'official' participants discussed use of online communities, potentially reflecting differences in people's desire to situate their temporary abstinence in the context of something bigger or as a shared experience, which may have contributed to their decision to officially register.

For Alan, and likely others, the motivational role of the group reduced post-January as he become less of an active contributor and more of an observer. Diversification of people's drinking intentions and goals after January and lack of an overarching shared experience may explain this.

Goal-setting and self-monitoring influenced motivation both during and following January with considerable variation in the nature and use of both strategies. Phillip engaged in informal, progressive goal-setting.

> I strip it right back and literally go into that whole just not for today thing and just start with a day, and then two, and then three because, depending on how out of control I feel, 30 days just feels it's never gonna happen.
>
> (Phillip, 44, 'Unofficial')

Short-term goal setting like this may help people persist with behaviour change (Pearson 2012). For Phillip, it prevented demotivation from what, early in an alcohol-free month, felt like an impossible task.

Some interviewees avoided setting explicit goals. Neil (28, 'Official') approached Dry January and his intention to remain alcohol-free longer-term as a permanent change to adapt to rather than a goal to achieve. Failing to achieve a goal can lead to undesired consequences such as reduced self-efficacy (Pearson 2012). Therefore, whilst useful for some, for others, not setting a formal goal may help by minimising pressure and preventing demotivation should they fail to achieve said goal.

Reflecting on self-monitoring post-January also proved a source of ongoing motivation.

> I was chatting to a friend just yesterday and I was like 'oh look at this, 31 days dry in January and 22 in February .' And it's like every month you can see it goes down, 18, 14, then 4 [dry days] and you're like 'geez!'
>
> (Louise, 39, 'Official')

Observing the change over time made it harder to avoid self-deception and motivated Louise to take another break from alcohol. Early identification of increasing consumption could prevent regression to pre-January drinking. Therefore the motivational impact may be twofold. Firstly, inspiring people to make a change and secondly averting the potential loss of motivation should someone revert to previous drinking patterns.

Whilst discussed by the majority of 'official' Dry January interviewees, self-monitoring was reported substantially less by 'unofficial' participants with no 'unofficial' interviewee reporting using a digital tool for self-monitoring. With alcohol reduction interventions including self-monitoring shown to have better outcomes (Michie et al. 2012) access to customisable tools which facilitate this may be advantageous**.** Advertising alcohol reduction apps (beyond Try Dry) at times when temporary abstinence is common could improve awareness of available resources and potentially increase uptake.

Rewards were also used to maintain motivation. Some individuals replaced alcohol with an alternative, immediate reward such as 'treat' foods whilst others favoured a delayed reward at the end of January.

> I kind of motivated myself and thought [of] the money I would usually spend on going out and drinks. I just decided to get other items at the end of the month.
>
> (Matt, 29, 'Unofficial')

Matt's use of self-incentive, planning to reward himself after sufficient progress toward a behaviour or outcome (Michie et al. 2013; Knittle et al. 2020), motivated him to maintain his temporary abstinence. Creating a direct association between behaviour (not drinking) and reward by planning to use the money he was saving on his reward may have enhanced this effect.

Some interviewees did not use material rewards but instead gained a *sense* of reward from achieving goals or receiving badges on the Try Dry app.

> …each night when the app would go "oh did you stay dry today" and you press yes and then it gives you the little confetti. I found that I was looking forward to that, it was real positive reinforcement each day
>
> (Sophie, 43, 'Official')

The structure of the app enabled users to receive these extrinsic 'rewards' at different frequencies echoing the immediate versus delayed approach employed by those using physical rewards. Whilst the frequency and size of external and self-rewards differed between interviewees, their function, to maintain motivation, was the same. The diversity in reward patterns suggests interviewees themselves were best placed to identify the pattern of rewards which most suited their needs.

Sophie's experience and that of others illustrates how use of digital supports could change over time to support different strategies. Finding the daily stamps or badges motivational, some participants began to use them as incentives to reach the end of the day, week, or month without drinking. Although the available evidence suggests the effect of self-incentives on behaviour change is fairly weak (Brown et al. 2018) they were nonetheless perceived to be useful by those who reported using them. Thus for some people, whilst initially a tool for self-monitoring and goal-setting, the rewards received resulted in the app also becoming a tool for self-incentivization.

To summarise, getting and giving support was important in sustaining motivation during Dry January. Many interviewees intended to reduce or limit their alcohol consumption post-January: strategy use was modified to reflect these changing goals. Use (or not) of goal-setting and self-monitoring in addition to self-incentivization with personally relevant rewards also helped people avoid losing motivation.

Dealing with the potential for 'failure'

There was variation in how interviewees **defined success**. Some only considered total abstinence during January as success. Others had a broader, more flexible understanding of a successful Dry January:

> I'm not saying that we didn't do it completely […] there were two occasions in January when we had a drink, one was my birthday and one was my husband's birthday and we just had a small amount, I had a small amount of champagne and that was it. But that was a planned decision.
>
> (Hazel, 66, 'Official')

Despite consuming alcohol during a pre-planned break, Hazel still considered her Dry January successful. More rigid definitions of success carry more opportunities to "fail" and, as previously discussed, failure to meet a goal may have a negative effect on someone's motivation to persist with Dry January. This parallels the abstinence violation effect (AVE) whereby people may experience negative cognitive and affective responses following a lapse in abstinence (Marlatt and Gordon 1985; Curry et al. 1987). Those who attribute lapses internally, i.e. blame themselves, may experience a sense of failure and be at increased likelihood of returning to previous drinking behaviour (Curry et al. 1987; Collins and Lapp 1991). With respect to Dry January, this could lead to people ceasing their attempt at an alcohol-free month or not attempting further behaviour change. However, if the AVE can be averted a lapse can be a learning experience potentially increasing people's self-efficacy in managing challenging situations (Marlatt and Gordon 1985; Collins and Witkiewitz 2020).

Both **self-compassionate** and self-critical approaches to lapses during and following January were reported. Self-compassion, responding with care and compassion to oneself following mistakes or

perceived failures (Barnard and Curry 2011), was demonstrated by some interviewees through a flexible approach to breaks, planned or otherwise. Acknowledging progress to that point and confidence in their ability to resume Dry January appeared to influence the degree to which people responded self-compassionately.

Focussing on their progress helped some interviewees avoid an all-or-nothing approach.

> The other thing I'm tranna focus on, which I'm doing with loads of things, is progress not perfection. So actually even if over 30 days I had 20 days, 28 days no drinking I would see that as a massive positive whereas years ago I would have been like 'arrgh that's it I didn't do those two days' now I'd be more realistic and say 'well actually you did 28 days that's great that'll make it easier to do 30 next time' or 'that's 28 days you didn't have a drink'.
>
> (Louise, 39, 'Official')

Louise's changed approach to perceived 'failures' indicates that transition to a more self-compassionate approach is possible. Previous themes suggest the Dry January experience itself could increase participants self-compassion. For example, adapting social routines helped people recognise their ability to socialise without alcohol thus increasing self-acceptance and their belief in their sober selves. However, having a more flexible definition of success may be necessary to react self-compassionately to lapses in abstinence. Alternatively, being self-compassionate may itself contribute to someone defining 'success' more flexibly.

Several interviewees also engaged in self-talk, but with considerable difference in tone and content. In line with earlier work those taking a self-compassionate approach used positive self-talk focussing on resisting drinking and persevering with Dry January (de Visser and Lockwood 2018; Pennay et al. 2018). Conversely, more self-critical interviewees engaged in negative self-talk following alcohol consumption. Whilst the content of self-talk differed, its function, to motivate them to continue toward a particular drinking goal, was the same. This exemplifies the variation in strategy use between individuals, with the same strategy being enacted in different ways.

To summarise, definitions of 'success' differed between interviewees and may be shaped by the complex, individual factors influencing someone's Dry January experience. Self-compassion and self-criticism were apparent in both 'official' and 'unofficial' participants. Some strategies, e.g. self-talk, were used in both approaches albeit being enacted in different ways.

Conclusion

Each Dry January experience is unique. Whilst people face common challenges in breaking routines, negotiating socialising, maintaining motivation, and dealing with 'failure' they take personalised approaches to overcome them. The same strategy may be enacted in different ways to achieve

different aims or address different challenges. Elsewhere, distinctly contrasting approaches, for example actively managing others' expectations and 'stealth' approaches to socialising, appeared equally effective. Some strategies preserved the meaning of particular social practices emphasising the importance of facilitating personalisation within the formal Dry January campaign. Strategies were adapted and developed during January and maintained throughout the year in response to changing goals, pressures, knowledge, and psychological capability. Our results suggest people evaluated the benefit of particular strategies at particular times, adjusting their behaviour accordingly.

Similar approaches were taken by those registered for the 'official' campaign and interviewees undertaking an 'unofficial' Dry January, with only a few notable points of difference. 'Unofficial' participants did not report using digital tools and discussed goal-setting and self-monitoring considerably less than their 'official' counterparts. They did however describe 'going stealth' to manage others' attitudes and prioritising meaningful social interaction, neither of which were reported by 'official' interviewees.

This study had limitations. When comparing experiences of 'official' and 'unofficial' interviewees, we cannot assume that people not *mentioning* use of a particular tool or strategy meant they did not use it. Future studies might directly probe the use of specific tools or strategies in order to identify how official and unofficial Dry January participants differ in this regard. Additionally, to ensure we captured experiences after January, interviewing did not begin until September increasing the risk of recall bias. Future research could address this by employing longitudinal interviews to examine experiences of Dry January and ongoing change "in the moment."

Strengths of this study include its unique insights into strategy use during and following January, and inclusion of 'official' and 'unofficial' Dry January participants. It also highlights constructs which, to the best of our knowledge, have not previously been discussed in the context of Dry January or other TACs, e.g. self-compassion. Future research should establish whether these constructs underpin changes in consumption associated with participation in Dry January. If so these findings could be exploited by campaign organisers, for example by incorporation into digital supports.

Our study also emphasises the need to take a nuanced approach to measuring and quantifying Dry January experiences. The notion of an individual's Dry January being "successful" or "unsuccessful" according to whether or not they maintained total abstinence may be a false dichotomy. Future research should take a broader view of the measurement of "success." Finally, this work illustrates the importance of acknowledging and retaining the flexibility inherent in any type of dry January and demonstrates that registering for a campaign does not reduce this flexibility. Indeed the availability of tools and numerous ways in which they can be utilised arguably increases opportunities for customisation. TACs, including Dry January, could and should capitalize on this by providing more tools and inspiration for people to personalise strategy use and build their own Dry January.

Chapter V

Investigating the psychological and social determinants of reductions in alcohol consumption following participation in Dry January: Prospective observational study two

Co-authors: Inge Kersbergen, John Holmes & Matt Field

Contributions: I designed the study and all co-authors reviewed and approved the study protocol. I produced the surveys, carried out data collection, and conducted formal analysis. I wrote the original draft of the chapter. MF and IK reviewed the draft chapter and provided feedback.

Findings from this chapter have been presented at the following conferences:

Butters, A., Kersbergen, I., Holmes, J. & Field, M. (2024). *Investigating reductions in alcohol consumption following participation in Dry January.* Poster presentation Society for Study of Addiction (SSA) Annual Conference 2024, Newcastle, UK.

Butters, A., Kersbergen, I., Holmes, J. & Field, M. (2024). *Understanding reductions in alcohol consumption following participation in Dry January.* Oral presentation at UK Society for Behavioural Medicine Annual Scientific Meeting, Glasgow, UK.

Abstract

A second prospective study, informed by methodological insights gleaned from the previous prospective study (Chapter III), was conducted. This study aimed to provide more robust evidence as to the associations between Dry January participation and ongoing reductions in alcohol consumption and to elucidate the underlying psychological and social mechanisms of change. Additional candidate mediators and moderators were examined including drinker identity and use of structured online supports. Significant reductions in alcohol consumption were observed six months after 'official' participation in Dry January. Greater reductions were observed for 'official' participants relative to 'unofficial' participants and those not attempting Dry January. For 'official' participants, motivation to change drinking, DRSE, drinker identity, degree of abstinence during January, and use of the Try Dry app post-January were all associated with changes in consumption at six months. Structural equation modelling identified indirect pathways between level of abstinence, increased DRSE, and greater reductions in consumption. For 'unofficial' Dry January participants, social contagion, level of abstinence, motivation to change, and drinker identity during January were associated with consumption at six months though inconsistencies in responses limited the robustness of these findings.

Introduction

Results from my first prospective observational study (Chapter III) tentatively supported an association between participation in Dry January and reductions in alcohol consumption six months later (de Visser et al., 2016; de Visser & Piper, 2020). The findings also indicated that these reductions were not fully attributable to seasonal variation and suggested there was no difference in outcomes between those participating 'officially' and those attempting an 'unofficial' independent Dry January. However, the conclusions we can draw from these results are limited due to recruitment difficulties and high attrition resulting in a very small comparison group, statistically underpowered analyses, and overfitted models. Nevertheless it did provide valuable insights in regard to recruitment and retention and the feasibility of the original approach.

Exploiting these methodological insights, the current study aims to more robustly confirm reductions in alcohol consumption among heavy drinkers, examine the role of seasonal variation in alcohol consumption and establish the impact of registering for the 'official' Dry January campaign. It also seeks to further elucidate the mechanisms underpinning reductions in alcohol consumption. In the first prospective study I focussed on the strategies used by participants, the self-enactable techniques (SETs; Knittle et al., 2020), to avoid or limit their alcohol consumption during and following Dry January. The present study builds on this and incorporates findings from the semi-structured interviews in Chapter IV to explore the tools used by participants in the enactment of these strategies, namely the online supports provided by Alcohol Change UK (ACUK). My approach to online support use is twofold. Firstly, to produce more robust evidence as to the role of *access* to online supports by retaining an acceptable sized comparison group of 'unofficial' Dry January participants. Secondly, to ascertain the impact of *use* of said supports on mid-term changes in alcohol consumption.

Potential psychological determinants of change will also be examined. In addition to the constructs previously considered (DRSE, motivation to change, abstinence, and social contagion) drinker identity, the extent to which someone identifies as a drinker (Lindgren, Ramirez, et al., 2016), will also be included as a candidate moderator and mediator. Identifying with drinking or as a drinker has been shown to positively predict alcohol consumption (Lindgren, Neighbors, et al., 2016; Lindgren, Ramirez, et al., 2016; Hertel et al., 2021; Montes & Pearson, 2021) and mediate changes in drinking over time (Blevins et al., 2018). Identifying less strongly as a drinker at baseline has been found to predict reduced drinking eight months later (Hertel et al., 2021) suggesting the extent to which someone identifies with drinking prior to Dry January may moderate changes in alcohol consumption at six months. Changes in identity are seen in individuals with substance use disorder as they move into recovery (Best et al., 2016). Whilst this is not the target population for Dry January, indeed people who are physically dependent on alcohol are explicitly discouraged from participating, it is possible that similar identity changes occur during the transition to temporary abstinence.

The current study therefore aims to build on previous research, to attempt to resolve ambiguous findings, and to further elucidate the mechanisms of change underpinning the association between participation in Dry January and ongoing change.

Research Questions

Primary Research Questions

RQ1 Does 'official' participation in Dry January result in enduring changes to alcohol consumption for people who are heavy drinkers?

RQ2 Are comparable changes in alcohol consumption for 'official' Dry January participants who are heavy drinkers also seen in:

a) Heavy drinkers who do not participate in Dry January
b) Heavy drinkers who attempt Dry January 'unofficially'

Additional Research Questions

RQ3 Are enduring changes to alcohol consumption in 'official' and 'unofficial' Dry January participants who are heavy drinkers, relative to heavy drinkers who do not participate in Dry January, mediated by:

a) Changes in motivation to reduce alcohol consumption
b) Changes in drink-refusal self-efficacy
c) The degree to which someone remains abstinent during January
d) Changes in drinker identity

RQ4 Are enduring changes to alcohol consumption in 'unofficial' and 'official' Dry January participants who are heavy drinkers, relative to heavy drinkers not taking part in Dry January, moderated by :

a) Motivation to change drinking prior to Dry January
b) Drink-refusal self-efficacy prior to Dry January
c) Alcohol consumption at baseline
d) Drinker identity at baseline

RQ5 Are enduring changes to alcohol consumption in 'official' and 'unofficial' Dry January participants who are heavy drinkers associated with:

a) Use of online supports during Dry January
b) Use of online supports following Dry January
c) The 'social contagion' of Dry January

RQ6 What factors predict participation in Dry January by heavy drinkers?

RQ7 What factors predict ‘official’ participation vs ‘unofficial’ participation in Dry January by heavy drinkers?

Hypotheses

1. People who participate in Dry January will have a reduction in extended AUDIT-C score six months later.

2. Reduction in extended AUDIT-C score six months after Dry January will be greater for ‘official’ Dry January participants than for people who do not take part in Dry January.

3. Reduction in extended AUDIT-C score six months after Dry January will be greater for ‘official’ than ‘unofficial’ participants.

4. Changes in motivation to change over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

5. Changes in DRSE over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

6. The extent to which participants remain abstinent throughout Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

7. Changes in drinker identity over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

8. Motivation to change their drinking prior to Dry January will predict extended AUDIT-C at six-month follow-up after controlling for other factors (including AUDIT-C at baseline.)

(This tests if baseline motivation moderates the magnitude of change in AUDIT-C over six months.)

9. DRSE prior to Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors (including AUDIT-C at baseline.)

(This tests if baseline DRSE moderates the magnitude of change in AUDIT-C over six months.)

10. The extent to which participants feel “part of something bigger” during Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

11. The extent to which participants feel connected to others taking part in Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

12. The extent to which participants feel part of a community during Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

13. Baseline alcohol consumption will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.

Methods

Participants

Three groups of participants were recruited: 'Official' Dry January (people who registered for Dry January on the ACUK website or by downloading the Try Dry app), 'Unofficial' Dry January (people who were attempting to have an alcohol-free January without registering for a formal challenge), and 'No Dry January' (people who drank alcohol but were not participating in Dry January 2023). Participants were recruited via an advert in emails distributed by ACUK to Dry January participants and the participant recruitment platform Prolific (https://www.prolific.co/). Eligibility criteria were: being aged 18+, living in the UK, and drinking alcohol at least once per week. The exclusion criterion was ever having received treatment for alcohol use disorder. Prolific participants completed a brief screening survey to identify people who were maybe or probably going to participate in Dry January to avoid overrecruiting 'No Dry January' and underrecruiting 'Official' or 'Unofficial' Dry January participants. Participants were only invited to complete subsequent surveys if they had AUDIT-C ≥ 5 at screening (Prolific) or baseline (ACUK). In accordance with Prolific policies, participants recruited via this route were paid following completion of each survey whilst participants recruited via ACUK received a gift voucher following completion of all surveys. Participants from each group received a total of £7 for completing all surveys.

Power analyses were conducted using G*Power 3 (Faul et al., 2007) to determine the minimum sample size required to answer the primary research questions. To observe the minimum effect size ($dz = 0.18$) observed in a previous study of Dry January, with $\alpha = 0.05$ and 80% power I determined that a sample size of 245 'official' participants would be needed at the final follow-up. For RQ2, an estimated effect size of $f^2 = 0.05$ was derived from between-group differences in change in AUDIT-C (de Visser & Piper, 2020). For linear regression models with two predictors (Dry January participation and baseline AUDIT-C), 98 participants per group would be required to attain 80% power. Structural equation modelling (SEM) was planned to explore potential pathways of change. 245 'official' participants would enable us to detect an indirect effect size of $\beta = 0.16$. As I also intended to conduct this for the 'unofficial' Dry January group I therefore aimed to have 245 'unofficial' participants at six months.

Use of the same method of recruitment for (most of) the 'official' Dry January group as the first prospective study meant that I anticipated similar levels of participant eligibility to participate (86%) and six month retention (36.67%). For the 'unofficial' and no Dry January groups I was using Prolific rather than social media ads and word of mouth as used previously. With pre-screening questions

available on Prolific, I therefore anticipated a slightly increased eligibility rate of (90%). Given my use of Prolific and the financial incentive provided to participants, I expected substantially improved retention (Kothe & Ling, 2019) estimating this to be 80%. Based on this I determined that I should aim to recruit 778 'official', 341 'unofficial' and 137 no Dry January participants at baseline. With estimates suggesting 20% of UK drinkers attempt to have an alcohol-free January (Alcohol Change UK, 2020) I calculated that I would need to recruit a minimum of 1702 participants to the Prolific screening survey to ensure a sufficient proportion of 'unofficial' Dry January participants were included.

Procedure

Ethical approval was granted by the School of Psychology ethics committee at the University of Sheffield (ethics no: 050198). Data were collected at four timepoints: Baseline (T1), Post-January (T2), three month follow-up (T3) and six month follow-up (T4). Participants recruited via Prolific were invited to complete all surveys via the platform with participation restricted, using Prolific ID's, to those identified as eligible via the screening survey. ACUK participants were invited to complete subsequent surveys via email and received two reminders per survey. Three attention checks were included in each survey, participants not passing at least two checks at baseline were not invited to complete the follow-up surveys.

As some measures were only shown to individuals reporting Dry January participation, participants were briefly asked whether they took part in Dry January at each follow-up survey. This revealed some inconsistencies in reported group membership across timepoints. For example, someone reporting attempting an 'unofficial' Dry January at baseline saying they did not take part at Post-January follow-up. Table 5.1 shows the number of participants by group at each timepoint according to their "main" group allocation (based on response post-January or baseline if post-January missing) and the group reported at each timepoint.

A proportion of this change may be attributable to factors such as changes of the intention to participate in Dry January or not categorizing an "unsuccessful" attempt as having participated. However, there is a notable difference in the proportion of inconsistent responses between Prolific (44.10% changing group at least once) and ACUK participants (11.27%) with inconsistent group membership (Table 5.2). Sensitivity analyses were conducted to account for inconsistent responding.

Table 5.1: Participant numbers at each timepoint according to route of recruitment (Prolific or via ACUK) and group

	Prolific			ACUK			Total		
	No Dry January	**Unofficial**	**Official**	**No Dry January**	**Unofficial**	**Official**	**No Dry January**	**Unofficial**	**Official**
Screening (T0)		**1698***							
Baseline (T1)	**300**	**133**	**31**	**16**	**13**	**538**	**316**	**146**	**569**
	193	*242*	*29*	*2*	*11*	*554*	*195*	*253*	*583*
Post-January (T2)	**231**	**109**	**29**	**13**	**7**	**333**	**244**	**116**	**362**
	231	*109*	*29*	*13*	*7*	*333*	*244*	*116*	*362*
3-Months (T3)	**216**	**109**	**29**	**6**	**5**	**280**	**222**	**114**	**309**
	237	*117***		*16*	*275***		*253*	*392**	
6-Months (T4)	**218**	**111**	**29**	**7**	**4**	**264**	**225**	**115**	**293**
	241	*117***		*24*	*251***		*265*	*368**	

Bold shows number of participants at each timepoint by group based on their final group allocation

Italic shows number of participants according to group reported at each timepoint.

* Total number of participants: grouping data not available for screening survey

** At three and six months follow-up participants were only asked whether they participated in Dry January (yes/no) hence numbers at this stage include both 'official' and 'unofficial' Dry January groups.

Table 5.2: Number and proportion of participants according to route of recruitment (Prolific or ACUK) and number of changes in group across the study

	ACUK		Prolific	
No. changes	**No.**	**%**	**No.**	**%**
0	243	89.01%	199	55.59%
1	25	9.16%	135	37.71%
2	4	1.47%	22	6.15%
3	1	0.37%	2	0.56%

0 changes = entirely consistent responses

Measures

Each survey included measures of alcohol consumption and of the psychological and social constructs theorised to contribute to any changes in alcohol consumption. Wherever possible standardized and validated measures were used. With the exception of the Alcohol Self-Concept Scale (ASCS) and online support questions, all measures were the same as those used in the first iteration of this study (Chapter III.) A breakdown of the measures included at each timepoint and all measures in full are shown in Appendix 4A and B.

Alcohol Use Disorders Identification Test-Consumption subscale (AUDIT-C; Babor et al., 2001). Alcohol consumption was measured using the AUDIT-C the three-item subscale of the Alcohol Use Disorders Identification Test. This has been found to accurately identify heavy drinking (Bush et al., 1998) and had acceptable internal consistency (Mean $\alpha = .71$). Extended response options were used (Kaner et al., 2013; Beard et al., 2015) and, in line with previous work, (Garnett, Oldham, et al., 2021) time adjusted versions of the AUDIT-C were used with item wording adapted to ask about the previous month, three months or six months. Scores for each item were summed to give a total score of 0-12.

Drink Refusal Self-Efficacy Questionnaire (DRSEQ ; Young et al., 1991). DRSE was measured using the nine item version of the DRSEQ. This had good internal consistency (M $\alpha = .83$) and has previously been used in Dry January/temporary abstinence studies (de Visser et al., 2016; Field et al., 2020). Participants reported the difficulty of refusing alcohol in different scenarios (1. Very difficult – 7. Very easy) across three subscales: emotional relief (e.g. "*When I am worried*"), opportunistic (e.g. "*When I first arrive home*") and social pressure (e.g. "*When my friends are drinking*"). A mean score (0-7) was calculated for each subscale and for overall DRSE.

Motivation to change (From Alcohol Toolkit Survey, Beard et al., 2015; identified by Stevely et al., 2018). Motivation to change drinking was measured using five items from the Alcohol Toolkit survey. Participants reported the extent to which they agreed with each statement (1. Not at all to 5.

Definitely). Items have previously been characterised as measures of reflective (e.g. *"To what extent are you actively trying to avoid drinking more alcohol than is good for you"*) and automatic (e.g. *"To what extent do you want to keep your drinking within safe limits"*) motivation (Stevely et al., 2018). Together these items had good internal consistency (Mean α= 0.83). Total motivation to change was the mean of individual item scores.

Alcohol Self-Concept Scale (adapted from Shadel & Mermelstein, 1996; **ASCS**; Lindgren et al., 2013). Drinker identity was measured using the ASCS a measure of drinker identity (Lindgren et al., 2013). Participants indicated their agreement (-3. Strongly disagree to 3. Strongly agree) with five items (e.g. "*Drinking alcohol is who I am*"). A higher score indicates that someone more strongly identifies as a drinker or with drinking alcohol. The ASCS has previously been shown to have good construct validity and external validity (Bakkali et al., 2023) and had good internal consistency for the sample (Mean α= 0.88). The total score was the mean of all five items.

Social Contagion. Findings from interviews with previous Dry January participants (de Visser & Lockwood, 2018) informed the development of three items incorporating within-individual indicators of social contagion (feeling part of something, connection, part of a community.) Participants' agreement (1. Strongly disagree to 7. Strongly agree) across each item (e.g. "*Taking part in Dry January makes me feel part of a community*") was averaged to give an overall social contagion measure: internal consistency for this was excellent (α =.90).

Abstinence. Participants were asked how many days they drank alcohol during January (0-31). This was recoded for analysis (31 – drinking days) to reflect alcohol-free days.

Dry January. Questions from previous evaluations of Dry January were included (de Visser & Lockwood, 2018; de Visser, 2019) covering participation and registration, time spent thinking about participating, previous attempts at temporary abstinence, co-participants, and drinking plans following January.

Online Supports. Data from semi-structured interviews with 'official' Dry January participants was used to develop questions about use of the Try Dry app, motivational emails, and Facebook groups. Separate to the reflexive thematic analysis reported in Chapter IV, brief deductive, semantic thematic analysis was conducted with respect to participant use of different components of the online supports. From this 25 questions were developed. Items covered frequency of use of each support (Never – Daily or more often) and different elements of supports ("*How often did you use the calendar to record the days when you didn't drink, i.e. 'stayed Dry,' during January?*"). Two questions were also included regarding perceptions of the impact of supports (e.g.*" To what extent did reflecting on your progress using the app give you a sense of achievement?.")* Post-January (T2) questions were asked with respect to use over January, and at six-month follow-up (T4) participants were asked about their

post-January use of online supports. Elements of online supports were mapped to SETs and components of the COM-B model (Appendix 4C.)

Demographics (T1). Demographic data were collected: age, gender, household income, level of education and ethnicity.

Data preparation and analysis

Research questions, hypotheses and analysis plan were preregistered (https://osf.io/q5epv/).

All data preparation and analysis was conducted in RStudio (RStudio, 2020)/ R 4.4.1 (R Core Team, 2024). For RQ1-5 data were included from participants completing at least the baseline (T1) and six month follow-up (T4) surveys and passing the majority of attention checks (minimum of two out of three per survey.) For RQ6 and 7 data were included from all participants completing the baseline survey. The main dependent variable (DV) was AUDIT-C at six months (RQs 1- 5). For RQ6, a dummy binary variable was created to reflect participation in any Dry January compared to No Dry January. For RQ7, DV was type of Dry January ('official' or 'unofficial). Independent variables included DRSE, ASC, Motivation, Social Contagion, Abstinence, Dry January group, and frequency of use of online supports. Change in DRSE, ASC, and Motivation at one month and six months were calculated by subtracting baseline measures from measures at Post-January and six months. Frequency of use of the Try Dry app uses the item regarding overall use of the app. For Facebook groups an average was taken of reported frequency of reading posts/comments and posting/commenting. For emails item one, frequency of reading emails, is used. Frequency of use scores were calculated separately for January and post-January (February – August). Demographics were included as covariates for RQ1-5 and as predictors for RQ6 and 7. For RQ 1-5 binary dummy variables were coded for gender (*man*, woman as reference group), ethnicity (*non-white*, white as reference group) and education -Post 18 (*no Post 18 education* as reference group)

Missing data per variable ranged from 0-12% for the 'Official' Dry January group, 0-8% for the 'Unofficial' Dry January group and 0-6% for the No Dry January group. Little's test (Little, 1988) and visualisations of patterns of missingness suggested that data at T2 and T3 was missing at random for each group. Missing data were imputed using random forest based imputation with the *missForest* R package (Stekhoven & Bühlmann, 2011). Imputation was carried out separately for each group to minimise bias (Zhang et al., 2023). Error estimates were obtained for each group, normalized root mean squared error (NRMSE) for continuous variables and proportion of falsely classified entries (PFC) for categorical variables. Estimates were acceptable: Official Dry January (NRMSE = 0.12, PFC = 0.31), Unofficial Dry January (NRMSE =0.12), No Dry January (NRMSE = 0.16). No PFC estimates are reported for the unofficial and no Dry January groups as no categorical variables were imputed for these groups.

Descriptive statistics were calculated for baseline AUDIT-C, psychological and social constructs, Dry January participation, and demographics. Participant characteristics according to the number of follow-ups completed were tested using ANOVA's with post-hoc pairwise t-tests (continuous variables) and chi-squared tests. Where assumptions of equal variance were not met Welch's one-way test with post-hoc Games-Howell tests were used instead. Where expected frequences were less than five Fisher's Exact Test was used instead of chi-squared test. Independent t-tests and chi-square tests were conducted to compare groups for RQ6 and 7. Where assumptions of linearity were not met Mann-Whitney U tests and Fisher's Exact Test were used respectively. Similarly, due to non-linearity, RQ1 was tested using a Wilcoxon-Signed rank test. For RQ2- 5, the DV (AUDIT-C at six months) and an IV (baseline AUDIT-C) were transformed (^2) as assumptions of linearity and normal distribution of residuals were not met. Multiple linear regression models were used to test RQ2-5. One model compared 'Official' and No Dry January consumption at six months (RQ2a) and one compared 'Official' and 'Unofficial' consumption at six months. For RQ3-5, predictors of change among 'Official' and 'Unofficial' participants were examined separately. One regression model (per group) included variables for changes during January (RQ3 and 5) and one model incorporated variables for baseline measures of psychological determinants (RQ4).

Structural equation modelling was then used to examine the hypothesised mediation and moderation effects specified in RQ3 and RQ4 among 'Official' Dry January participants. Model one modelled pathways between Dry January participation and AUDIT-C at six months via one month change in DRSE, motivation and ASC, and Abstinence (RQ3). Model two modelled the interaction between Dry January participation and baseline DRSE, motivation, and ASC (RQ4). Separate models were used to avoid duplicating variables, e.g. baseline DRSE and change in DRSE, within one model. Parameters were estimated using maximum likelihood and standardised coefficients and robust standard errors obtained. Goodness of fit indices were evaluated against commonly used cutoffs (Schermelleh-Engel et al., 2003). As recommended, multiple indices are reported covering absolute (χ2, RMSEA, SRMR), incremental (CFI, TLI,) and parsimonious (AIC, BIC) fit (Schermelleh-Engel et al., 2003; Kline, 2015; Kang & Ahn, 2021).

Multiple linear regression was also used for an exploratory analysis looking at changes in psychological variables and use of online supports following January as predictors of consumption at six months. A further exploratory analysis used logistic regression models to examine predictors (demographics, baseline psychological and social variables) of using the Try Dry app, Facebook groups and ACUK emails.

Sensitivity analyses were conducted for all analyses to account for inconsistencies in reporting of group membership. Analyses were repeated excluding data from participants with 1) two or more changes in group and 2) any change in group. Unless otherwise stated all results were robust to

inconsistencies in group membership (see Appendix 5 for all sensitivity analyses and additional results.)

Changes from preregistration

Though not explicitly specified in the preregistration I intended to use the *mice* (multiple imputation by chained equations) R package to impute missing data and conduct sensitivity analyses recommended by the package developers adjusting imputations by 5,10, and 15% (van Buuren & Groothuis- Oudshorn, 2011). Pattern-mixture models were not used. I instead used *missForest* which, being non-parametric and thus not assuming linearity between variables (Stekhoven & Bühlmann, 2011), was more appropriate for the data and reported out-of-bag error estimates. In addition to the stated variables, sociodemographic covariates, and frequency of online support use during and after January ('Official' group only) were also included in the imputation. Non-parametric tests (Wilcoxon signed-rank, Mann-Whitney U, Welch's one-way test, Fisher's Exact Test) were used where assumptions necessary for the preregistered parametric tests (T-test, ANOVA, chi-squared test) were not met.

Multiple linear regression models for RQ3,4 and 5 were initially intended to include baseline, post-January, three month, and six month measures of AUDIT-C, motivation, DRSE, and ASC. Repeated measures of individual variables were highly correlated resulting in unexpected behaviour in regression coefficients, for example coefficients for ASC switching signs. To mitigate this, change in DRSE, motivation, and ASC at one month and six months were used as predictors instead. Separate models were used for baseline measures, during January change, and post-January change. Frequency of use for each online support during and following January were used instead of dichotomous variables (used/did not use) to make full use of the data available. Social contagion and use of online supports were not included in the structural equation models as these were not measured in the No Dry January group. SEM was not conducted for the 'unofficial' Dry January group due to insufficient sample size at T4.

Results

Completion of follow-ups

Participants recruited via Prolific were significantly more likely to complete all three follow-ups than those recruited via ACUK. 'No Dry January' and 'Unofficial Dry January' participants were more likely to complete all follow-ups than 'Official' participants. Participants completing one follow-up had greater baseline AUDIT-C than those not completing any follow-ups and those completing all three. People completing zero or two follow-ups had greater motivation at baseline than those

completing all follow-ups. There was a greater proportion of women than men throughout, although this was particularly evident among participants completing one (72.23% women) or two (76.11% women) follow-ups compared to those completing zero (67.51% women) or three (57.92% women). There were no significant differences according to baseline DRSE, baseline ASC, age, education, ethnicity, or income. Full analysis of participant completion of follow-ups is shown in Appendix 5 Supplementary Table 5.1.

Descriptive statistics

Descriptive statistics restricted to participants who completed at least baseline and six month follow-up surveys, and so included in analyses for RQ1-5, are shown in Supplementary Table 5.2. Notable differences between groups include baseline AUDIT-C where, despite best efforts 'official' Dry January participants still reported higher AUDIT-C scores than both other groups. The proportion of women in the 'official' Dry January group was substantially greater with 80.41% compared to 46.96% and 39.11% respectively in the 'Unofficial' and No Dry January groups. The mean age of each group was between 45.09 and 49.10 and the overwhelming majority of participants in each group identified as being of white ethnicity. Similar proportions of participants were educated to undergraduate degree level or higher, although a higher percentage of 'official' participants reported being in the highest household income bracket.

Dry January participation

The majority of 'official' participants registered for Dry January by downloading the Try Dry app (Supplementary Table 5.3). At baseline, over half of both 'official' and 'unofficial' participants intended to drink less following Dry January with ~30% and ~25% respectively intending to stop drinking completely. Post-January the proportion of Dry January participants intending to stop drinking had reduced to 14.94% (official) and 12.38% (unofficial). Previous attempts at temporary abstinence were common: 92.1% of 'official,' 89.57% of 'unofficial' and 71.56% of 'No Dry January' participants had tried to have a break from alcohol in the past.

Use of online supports

261 of the 'official' Dry January participants included in the primary analysis completed the Post-January survey with 256 (98.08%) reporting use of at least one online support (Try Dry, emails, Facebook groups) during January. Of these 22.66% (58) reported using all three of the available supports. A full breakdown of online support use during and following Dry January is shown in Supplementary Tables 5.4 and 5.5.

The Try Dry app was the most used support with 88.51% of participants using the app at least once and 57.85% using it daily during January. App users were more likely to record 'Dry' days (96.54% at least once) than drinking (59.31%) or drinking as planned (38.96%). Try Dry use reduced following January: 61.17% of participants used it at least once between February and August but only 17.18% used it daily. Substantially more users continued to record Dry days compared to drinking.

80.08% of 'official' participants signed up to ACUK emails for January, of these 55.98% read emails most or every day. Around a quarter of participants joined a Dry January Facebook group with 97.01% reading posts at least once and 52.24% posting or commenting themselves. Users were equally likely to use Facebook groups for both giving and receiving support. Membership of Facebook groups remained relatively unchanged following January though use of groups did reduce. Of those reporting group membership, 36.99% posted or commented and 91.78% read a post at least once in the ensuing six months. Only a handful of participants (n= 6, 8.22%) read posts daily.

Primary Analysis

Dry January vs no Dry January characteristics

(RQ6) Compared to people not taking part in Dry January at all, those participating in any type of Dry January ('official' or 'unofficial') were significantly more likely to be a woman and be in a higher household income band (Supplementary Table 5.6). At baseline, Dry January participants reported slightly greater alcohol consumption and moderately weaker belief in their ability to refuse alcohol and identified as drinkers to a slightly stronger degree but had greater motivation to change. All findings were robust to sensitivity analyses (Supplementary Table 5.7).

Official Dry January vs Unofficial Dry January characteristics

(RQ7) In comparison to 'unofficial' Dry January participants, those participating 'officially' reported, at baseline, slightly greater AUDIT-C, moderately lower DRSE, slightly greater motivation to change, and, to a small extent, identified more strongly as a drinker (Supplementary Table 5.8). They were also more likely to be a woman and to report being in the highest band of household income. Differences in income were not robust to sensitivity analyses for inconsistent group reporting (Supplementary Table 5.9).

Table 5.3: Mean (SD) and median (IQR) AUDIT-C at each timepoint according to group (Official, Unofficial and No Dry January). Wilcoxon signed rank test comparing AUDIT-C at baseline and at six month follow-up by group.

	AUDIT-C								
	Baseline		**Post-Jan**		**3-months**		**6- months**		
	Median (IQR)	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Difference between baseline and six months**
Official Dry January	10	9.44	2	3.17	8	7.37	8	7.65	*z*= -10.42, ***p* = <.001**, *r* =.61
(n=291)	(3)	(1.92)	(6)	(3.62)	(5)	(3.14)	(4)	(3.03)	
Unofficial Dry January	9	8.63	3	3.73	8	7.62	8	7.57	*z*= -4.37, ***p* = <.001** *r* = .41
(n=115)	(3)	(1.97)	(7)	(3.57)	(4)	(3.03)	(4)	(2.79)	
No Dry January	8	8.26	7	7.13	8	7.96	8	7.84	*z*= - 3.25, ***p* = .001** , *r* = .22
(n=225)	(3)	(1.96)	(4)	(2.75)	(4)	(2.26)	(4)	(2.21)	

Results robust when controlling for inconsistencies in group membership (Supplementary Table 5.10)

Changes in alcohol consumption

As predicted (H1), 'Official' Dry January participants reported a significant, large reduction in AUDIT-C between baseline and six month follow up (RQ1; Table 5.3). AUDIT-C at each timepoint according to participant group is shown in Figure 5.1.

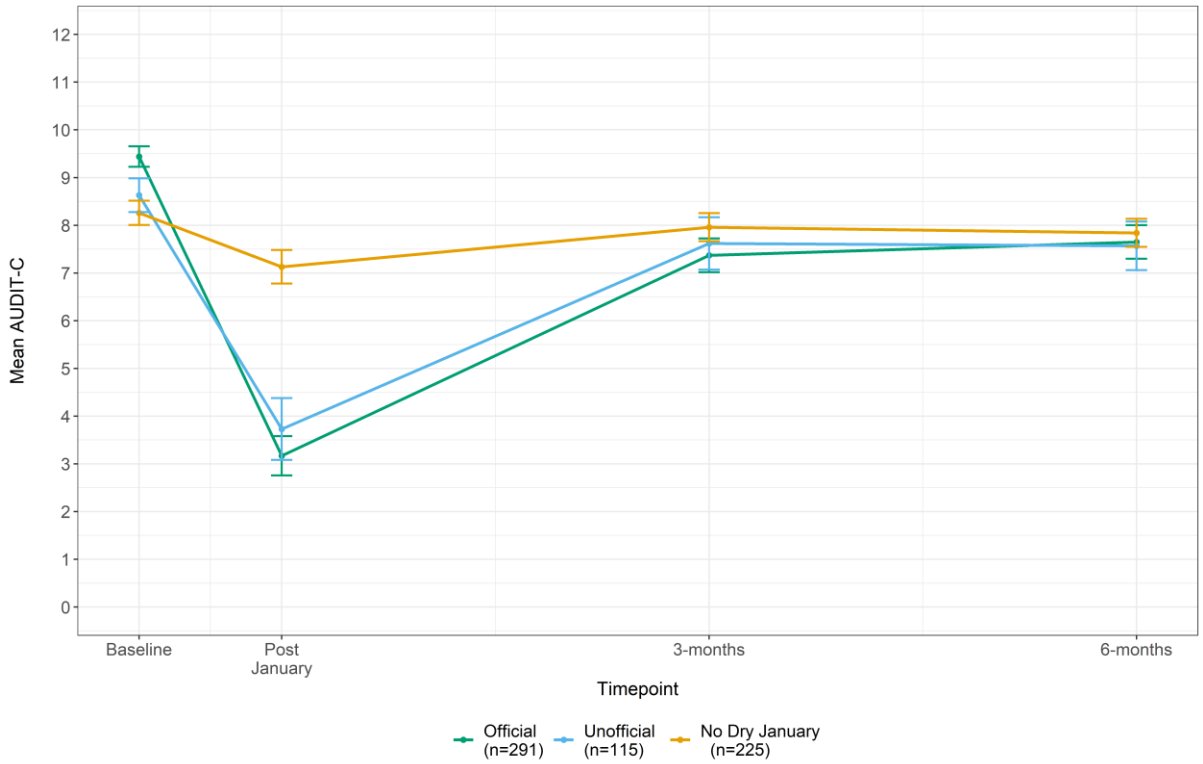

Figure 5.1: Changes in mean AUDIT-C (with 95% confidence intervals) from baseline to six month follow-up according to group

After controlling for baseline consumption AUDIT-C at six months was lower for 'official' Dry January participants than for participants who did not take part in any type of Dry January (RQ2a, H2; Table 5.4).

Table 5.4: Regression models comparing AUDIT-C at six months between 'official' and No Dry January groups controlling for baseline consumption (Model 1) and sociodemographic covariates (Model 2) (n=516)

	AUDIT-C at 6-Months*					
	Model 1			Model 2		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.68	0.60, 0.75	**<.001**	0.67	0.59, 0.75	**<.001**
Group (No Dry January)	12.70	7.20, 18.20	**<.001**	12.01	5.67, 18.35	**<.001**
Age				-0.07	-0.28, 0.15	.550
Gender – Man				0.82	-5.21, 6.85	.789
Non-white ethnicity				-2.14	-18.49, 14.22	.798
Income				-0.00	-1.83, 1.83	.998
Post-18 education				-1.78	-8.29, 4.72	.590

* Models used transformed AUDIT-C at six months (6-month AUDIT-C^2) and AUDIT-C (Baseline AUDIT-C^2).
Results robust when controlling for inconsistencies in group membership (Supplementary Table 5.11)
Model 1: $F(2, 513) = 148.5$, $p<.001$, $R^2 = 0.367$
Model 2: $F(7, 508) = 42.17$, $p<.001$, $R^2 = 0.368$

The third hypothesis was partially supported. AUDIT-C at six months was significantly lower for 'official' compared to 'unofficial' Dry January participants only when controlling for sociodemographic characteristics (Table 5.5). Due to non-significance of the key variable of interest Bayes Factors were calculated for model one. These revealed moderate evidence against the null hypothesis when only group membership was included in the model ($BF_{10} = 6.85$). However, when baseline AUDIT-C was controlled for there was decisive evidence against the null model ($BF_{10}=1.03 \text{ X } 10^{-32}$) indicating that there likely was a difference in change in consumption between 'official' and 'unofficial' Dry January participants. These results were relatively robust when controlling for inconsistencies in group membership though reporting non-white ethnicity was no longer significant when participants reporting any change in group was excluded (Supplementary Table 5.12). As the vast majority of participants were of white ethnicity this is likely due to data from a single or very small number of participant(s) being excluded.

Table 5.5: Regression model comparing 'Official' and 'Unofficial' Dry January participants AUDIT-C at six months controlling for baseline consumption (Model 1) and sociodemographic covariates (Model 2) (n= 406)

	AUDIT-C at 6-Months*					
	Model 1			**Model 2**		
Predictors	**β**	**95% CI**	***p***	**B**	**95% CI**	***P***
Baseline AUDIT-C*	0.66	0.56, 0.75	**<.001**	0.67	0.58, 0.77	**<.001**
Group (Unofficial Dry January)	6.81	-0.38, 14.00	.063	7.62	-0.33, 15.57	.060
Age				0.01	-0.28, 0.30	.948
Gender – Man				-2.37	-9.96, 5.21	.539
Non-white ethnicity				-17.50	-33.34, -1.66	**.030**
Income				-1.35	-3.60, 0.90	.240
Post-18 education				1.56	-6.58, 9.69	.707

* Models used transformed AUDIT-C at six months (6 months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).
Model 1: $F(2, 403) = 97.04$, $p<.001$, $R^2=0.325$
Model 2: $F(7, 398) = 28.65$, $p<.001$, $R^2 =0.335$

Across all groups the proportion of participants classified as being at higher risk (AUDIT-C score of 8-10) or at risk of possible dependence (AUDIT-C score 11-12) reduced between baseline and six months (Figure 5.2). The proportion of participants at low or increasing risk consequently increased as people moved to lower risk categories. Of particular note was the reduction in the proportion of 'official' participants categorised as at risk of possible dependence which reduced from 29.9% at baseline to 14.09% at six months.

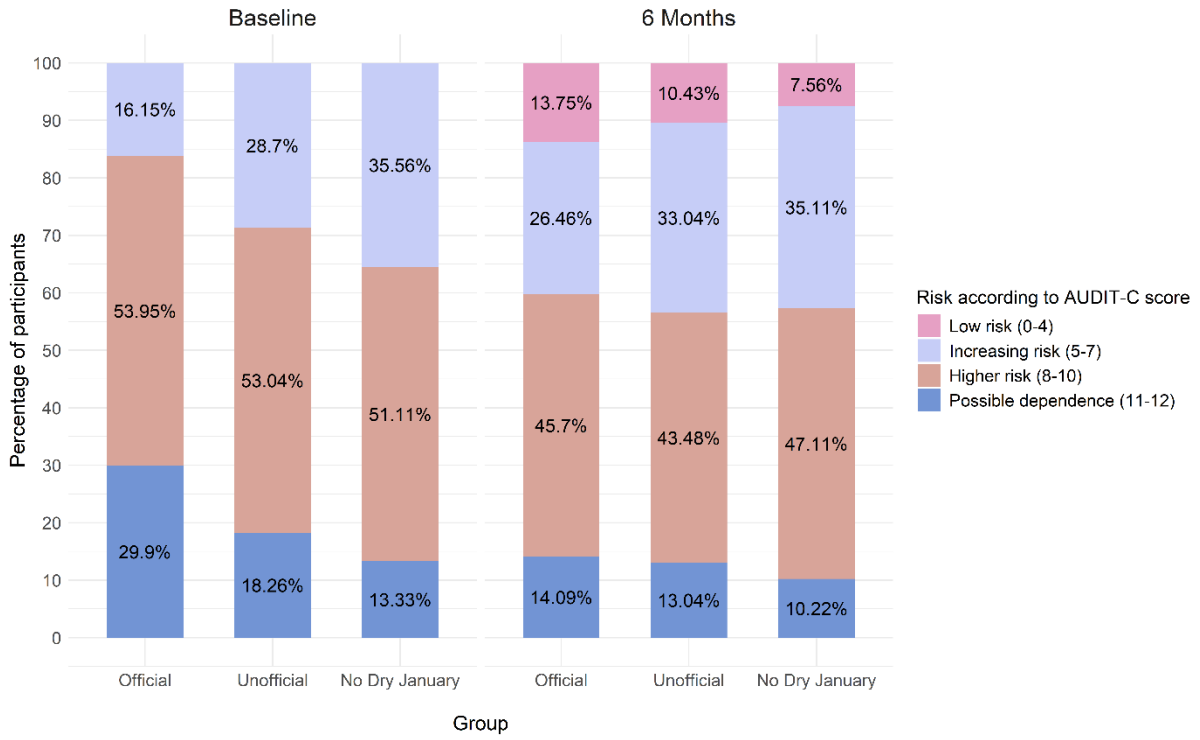

Figure 5.2: Percentage of participants classified as low risk, increasing risk, higher risk and possible dependence according to AUDIT-C cutoffs at baseline and six months.

N.B. No low risk participants are apparent at baseline as participants whose consumption met these levels (AUDIT-C <5) would not have been eligible to participate in the study.

Psychological and social determinants of change

For both 'official' and 'unofficial' Dry January participants DRSE and motivation to change increased over January whilst the extent to which people identified as a drinker reduced (Table 5.6.) Among 'official' Dry January participants change in DRSE and ASC, abstinence, social contagion, and use of online supports *during* January were not significant predictors of AUDIT-C at six months (RQ3, 5; Table 5.7). Additionally, whilst not statistically significant in the initial analysis, change in motivation at one month was significant in all sensitivity analyses such that a greater increase in motivation to change over January predicted lower AUDIT-C at six months (Supplementary Table 5.13.) This was a relatively large effect with a one unit increase in motivation associated with AUDIT-C being between 6.35 and 7.28 units (across all sensitivity analyses) lower at six months.

The hypothesis that baseline AUDIT-C would significantly predict AUDIT-C at six months (H13) was consistently supported, with greater consumption at baseline associated with greater consumption at the final follow-up (RQ4; Table 5.8.) Regression models did not support the hypothesised roles of DRSE (H5, H9), degree of abstinence (H6), change in ASC (H7), baseline motivation to change (H8), or feeling part of something bigger (H10), connected to other participants (H11), or part of a community (H12).

Table 5.6: Mean and median DRSE, motivation, ASC, social contagion, and abstinence at each timepoint (where measured) by group.

	Official Dry January (n = 291)				Unofficial Dry January (n=115)				No Dry January (n=225)			
Variable	**Med**	**IQR**	**Mean**	**SD**	**Med**	**IQR**	**Mean**	**SD**	**Med**	**IQR**	**Mean**	**SD**
DRSE (overall; 0-7)												
Baseline	3.67	1.33	3.65	0.97	4.00	1.29	4.01	1.07	4.33	1.44	4.38	1.09
Post- January	4.78	1.44	4.66	1.06	4.67	1.55	4.66	1.20	4.44	1.55	4.43	1.13
3-months	4.39	1.63	4.45	1.13	4.39	1.33	4.36	1.18	4.56	1.55	4.55	1.10
6-months	4.33	1.55	4.37	1.13	4.33	1.55	4.35	1.08	4.44	1.55	4.43	1.13
Emotional Regulation DRSE (1-7)												
Baseline	3.33	2.17	3.57	1.45	3.67	2.00	3.91	1.56	4.67	2.67	4.39	1.63
Post- January	4.67	2.00	4.51	1.53	4.67	2.33	4.71	1.57	4.67	3.00	4.51	1.66
3-months	4.33	2.67	4.34	1.63	4.33	2.67	4.33	1.65	4.67	2.67	4.63	1.64
6-months	4.33	2.67	4.31	1.54	4.67	2.84	4.40	1.66	4.67	3.00	4.54	1.71
Opportunistic DRSE (1-7)												
Baseline	5.00	2.00	4.95	1.29	5.67	1.66	5.42	1.22	6.00	1.67	5.71	1.13
Post- January	6.00	1.34	5.83	1.05	6.00	1.34	5.79	1.06	6.00	1.67	5.66	1.20
3-months	6.00	2.00	5.61	1.19	6.00	1.08	5.65	1.18	6.00	1.34	5.87	1.14
6-months	5.67	1.67	5.54	1.21	6.00	1.67	5.63	1.12	6.00	1.67	5.73	1.19
Social Pressure DRSE (1-7)												
Baseline	2.33	1.33	2.44	1.09	2.33	1.66	2.70	1.31	3.00	1.67	3.03	1.33
Post- January	3.67	2.00	3.65	1.44	3.00	2.00	3.47	1.64	3.00	2.00	3.12	1.38
3-months	3.00	2.00	3.40	1.48	3.00	2.66	3.09	1.49	3.00	2.00	3.16	1.31
6-months	3.00	2.33	3.25	1.52	3.00	2.00	3.01	1.34	2.67	2.00	3.04	1.35
Motivation (1-5)												
Baseline	4.20	0.80	4.14	0.68	3.60	1.20	3.56	0.83	3.20	1.20	3.24	0.83
Post- January	4.40	1.00	4.20	0.71	3.80	1.20	3.79	0.78	3.40	1.20	3.29	0.85
3-months	4.00	1.00	3.93	0.74	3.60	1.40	3.59	0.89	3.20	1.20	3.23	0.85
6-months	4.00	1.20	3.94	0.73	3.60	1.10	3.52	0.81	3.20	1.00	3.24	0.84

ASC (-3 to 3) Baseline	0.00	2.00	-0.10	1.37	-1.00	2.30	-0.69	1.51	-0.6	2.4	-0.58	1.39
Post- January	-1.00	2.20	-0.90	1.32	-1.60	2.40	-1.17	1.51	-0.8	2	-0.82	1.39
3-months	-1.00	2.40	-0.93	1.40	-1.40	2.20	-0.98	1.50	-1	2.4	-0.83	1.46
6-months	-1.00	2.40	-0.82	1.47	-1.40	2.10	-1.05	1.43	-1.2	2.4	-0.85	1.49
Social Contagion (1-7)	4.33	1.66	4.38	1.52	3.33	2.33	3.31	1.66	-	-	-	-
-Connectedness	5.00	2.00	4.40	1.70	4.00	3.00	3.59	1.92	-	-	-	-
-Community	4.00	2.00	4.25	1.69	3.00	3.00	3.03	1.76	-	-	-	-
-Something bigger	5.00	2.00	4.48	1.67	3.00	3.00	3.31	1.80	-	-	-	-
Abstinence (no. days)	31	4	27.33	6.48	29.00	5.00	26.85	5.89	19	15	16.29	9.13

Table 5.7 Multiple linear regression model examining association between changes in psychological factors, social contagion, abstinence, and use of online supports during Dry January on AUDIT-C at six months (RQ3, RQ5) for 'Official' and 'Unofficial' Dry January

	AUDIT-C at 6- months*											
	'Official Dry January (n =291)						**'Unofficial' Dry January (n =115)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variables	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.67	0.56, 0.78	**<.001**	0.68	0.57, 0.80	**<.001**	0.72	0.54, 0.89	**<.001**	0.77	0.58, 0.96	**<.001**
Change in DRSE at 1M	-3.05	-7.28, 1.18	.157	-3.26	-7.54, 1.01	.134	-2.14	-8.98, 4.70	.537	-3.30	-10.15, 3.54	.341
Change in Motivation at 1M	-5.05	-10.65, 0.55	.077	-5.04	-10.72, 0.63	.081	0.97	-6.22, 8.15	.790	2.14	-5.11, 9.39	.560
Change in ASC at 1M	1.13	-3.20, 5.47	.607	1.22	-3.14, 5.58	.583	2.49	-4.27, 9.25	.467	1.58	-5.16, 8.32	.642
Social Contagion	0.66	-2.20, 3.53	.650	0.38	-2.53, 3.29	.796	-5.51	-8.99, -2.02	**.002**	-4.76	-8.33, -1.19	**.009**
Abstinence	-0.43	-1.08, 0.22	.197	-0.43	-1.10, 0.23	.200	-1.21	-2.24, -0.18	**.022**	-1.07	-2.12, -0.02	**.045**
Freq use Try Dry	-0.33	-2.29, 1.62	.737	-0.35	-2.34, 1.64	.730	-	-	-	-	-	-
Freq use emails	-0.98	-2.86, 0.90	.307	-0.78	-2.73, 1.18	.434	-	-	-	-	-	-
Freq use Facebook group	-2.80	-5.80, 0.19	.067	-2.79	-5.85, 0.28	.075	-	-	-	-	-	-
Age				-0.04	-0.41, 0.32	.818				0.21	-0.29, 0.70	.413
Gender – Man				-5.38	-15.13, 4.37	.279				-1.61	-12.85, 9.63	.777
Ethnicity - non-white				-7.68	-27.99, 12.64	.458				-31.73	-56.89, -6.56	**.014**
Income				-1.43	-4.06, 1.20	.286				-1.65	-5.77, 2.48	.431
Post-18 education				2.63	-7.10, 12.37	.595				0.06	-14.07, 14.18	.994

* Models used transformed AUDIT-C at six months (6 months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

'Official': Model 1: $F(9, 281) = 18.18$, $p < .001$, $R^2 = 0.37$

'Official': Model 2: $F(14, 276) = 11.81$, $p < .001$, $R^2 = 0.37$

'Unofficial': Model 1: $F(6, 108) = 14.1$, $p < .001$, $R^2 = 0.44$

'Unofficial': Model 2: $F(11, 103) = 8.53$, $p < .001$, $R^2 = 0.48$

Table 5.8: Multiple linear regression models examining baseline psychological factors as predictors of AUDIT-C at six months (RQ4) for 'Official' and 'Unofficial' Dry January participants controlling for baseline consumption (Model 1) and demographic covariates (Model 2).

	AUDIT-C at 6-months*											
	'Official' Dry January (n=291)						**'Unofficial' Dry January (n=115)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.62	0.49, 0.74	**<.001**	0.63	0.50, 0.76	**<.001**	0.67	0.47, 0.87	**<.001**	0.73	0.52, 0.93	**<.001**
Baseline DRSE	0.76	-3.74, 5.26	.740	1.60	-3.15, 6.34	.508	-2.76	-9.29, 3.77	.404	-3.18	-9.74, 3.38	.339
Baseline Motivation	-4.26	-9.95, 1.43	.141	-4.19	-10.02, 1.63	.157	-3.92	-11.19, 3.35	.288	-6.28	-13.71, 1.15	.097
Baseline ASC	2.50	-0.84, 5.84	.142	2.68	-0.74, 6.10	.124	-1.71	-6.40, 2.98	.472	-0.91	-5.63, 3.81	.705
Age				-0.07	-0.43, 0.29	.700				0.29	-0.22, 0.79	.268
Gender – Man				-5.30	-15.47, 4.88	.307				-0.98	-13.31, 11.34	.875
Ethnicity - non-white				-7.17	-27.67, 13.34	.492				-41.52	-67.91, -15.13	**.002**
Income				-1.39	-4.08, 1.30	.310				-1.04	-5.33, 3.25	.632
Post-18 education				0.71	-9.22, 10.64	.888				2.00	-12.61, 16.61	.786

* Models used transformed AUDIT-C at six months (six months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

Results for 'Official' Dry January participants robust when controlling for inconsistencies in group membership (Supplementary Table 5.14)

'Official' Model 1: $F(4, 286) = 35.04$, $p < 001$, $R^2 = 0.33$

'Official' Model 2: $F(9, 281) = 15.72$, $p < 001$, $R^2 = 0.33$

'Unofficial' Model 1: $F(4, 110) = 15.21$, $p < .001$, $R^2 = 0.36$

'Unofficial' Model 2: $F(9, 105) = 8.49$, $p < .001$, $R^2 = 0.42$

Among ‘Unofficial’ Dry January participants, increased abstinence during January significantly predicted lower AUDIT-C at six months (RQ3, H6; Table 5.7). However, this was no longer significant when excluding data from participants with two or more group changes and controlling for sociodemographic covariates, or when excluding data from participants with any group changes (Supplementary Table 5.15.) Social Contagion significantly and substantively predicted AUDIT-C at six months indicating that feeling part of something bigger, connected to other participants, and part of a community during January was associated with reduced alcohol consumption (H10, H11, H12).

As with their ‘official’ counterparts, greater baseline AUDIT-C robustly predicted greater AUDIT-C at six months (Table 5.8.) After controlling for sociodemographic covariates and excluding data from participants reporting any change in group, baseline motivation was negatively associated with AUDIT-C at six months (Supplementary Table 5.16.)

Pathways of change

Structural model one examined the candidate mediators of change in AUDIT-C among ‘Official’ Dry January participants relative to the ‘No Dry January’ group (RQ3). All goodness-of-fit indices indicated that the model was a good fit (Table 5.9.) There was a direct effect of Dry January participation on AUDIT-C at six months (H3). Two statistically significant indirect effects were also identified (Table 5.10). Firstly, relative to not participating, ‘official’ participation in Dry January was associated with a pathway to increased DRSE which in turn was associated with lower AUDIT-C at six months. A second indirect effect incorporated level of abstinence. Compared to not taking part in Dry January, ‘official’ Dry January participation was associated with increased abstinence during January, which in turn predicted an increase in DRSE and finally lower AUDIT-C at six months.

A simpler model (1b; Table 5.11) including just pathways via abstinence and change in DRSE (Figure 5.4) had lower AIC and BIC scores than model one, suggesting an improved balance between model complexity and model fit (Lin et al., 2017). Model one was preferred as all other goodness of fit indices indicated that the simpler model was not a good fit (Table 5.9.)

Contrary to the multiple linear regression model results, these findings provide support for the hypotheses that changes in DRSE (H5) and degree of abstinence (H6) during January would predict AUDIT-C at six months. However, whilst structural model one was robust to the exclusion of data from participants with two or more changes in groups, exclusion of data from participants with any group change resulted in the direct effect no longer being statistically significant (Supplementary Table 5.18)

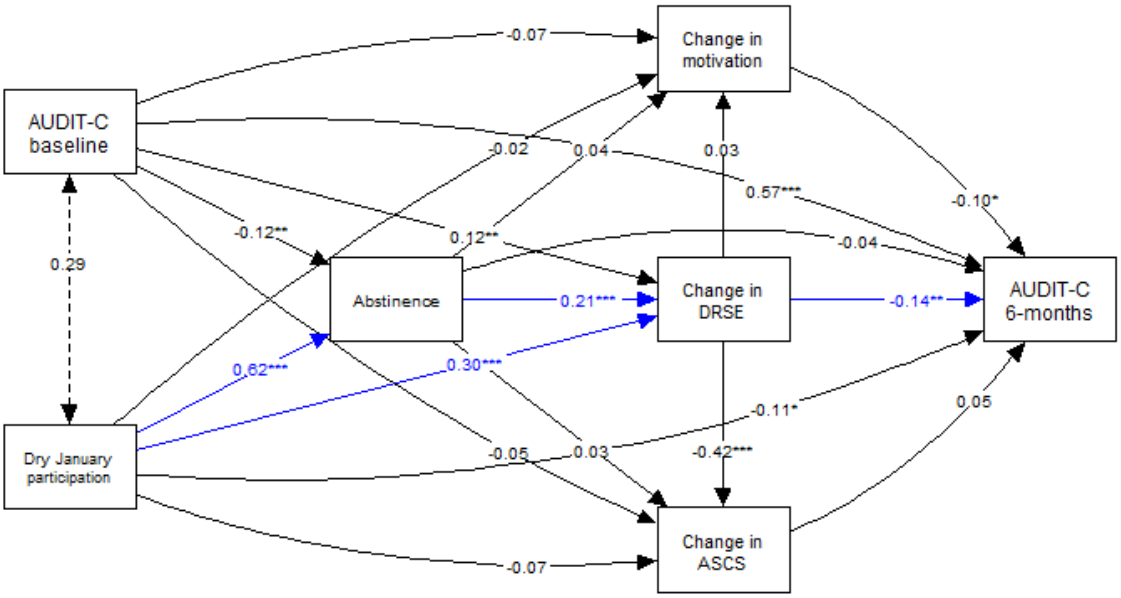

Figure 5.3 Structural model of relationship between 'official' Dry January participation (compared to no participation) and AUDIT-C at six months (Model 1.)Significant indirect paths (Table 5.10) are highlighted in blue. Parameter estimates significant at ***p<.001, **p<.01, *p<.05

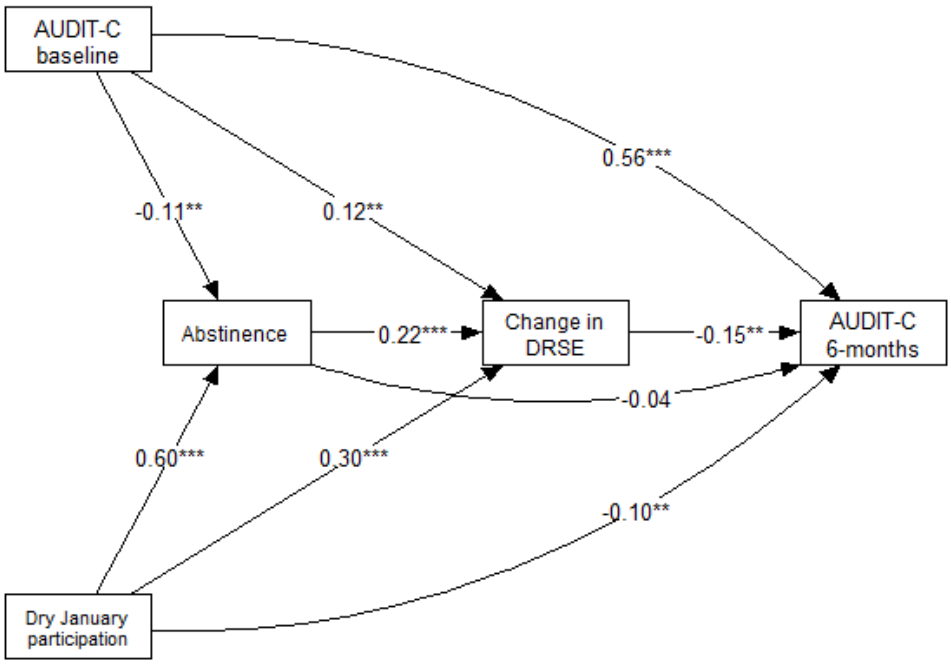

Figure 5.4 Structural model of relationship between 'official' Dry January participation (compared to no participation) and AUDIT-C at six months (Model 1b.) Parameter estimates significant at ***p<.001, **p<.01, *p<.05

Table 5.9: Model Fit indices for Structural Equation Models'

	χ^2	df	*p*	CFI	RMSEA	90% CI	TLI	SRMR	AIC	BIC
Model 1	0.09	1	.764	1.00	0.00	0.00, 0.08	1.03	0.002	9665.55	9788.69
Model 1b	45.31	1	<.001	0.93	0.29	0.22, 0.37	0.26	0.111	9390.67	9445.87
Model 2	5452.15	26	<.001	0.03	0.64	0.62, 0.65	−0.30	0.323	9196.31	9276.98

Robust to group inconsistency sensitivity analyses (Supplementary Table 5.17)

Structural model two examined the candidate moderators of change in AUDIT-C at six months among 'Official' Dry January participants (RQ4). As shown in Table 5.9 this model was a very poor fit by all indices. Alternative models excluding the hypothesised moderators were specified but none were significant or had an acceptable fit. As such these results are offered cautiously. Being more confident in one's ability to refuse a drink or identifying more strongly as a drinker was associated with Dry January being less effective at reducing AUDIT-C at six months (Table 5.12.) Conversely, increased motivation to change at baseline was associated with 'official' Dry January participation, relative to No Dry January, being more effective at reducing AUDIT-C. Greater motivation to change at baseline predicted lower alcohol consumption at six months.

Table 5.10: Direct and indirect effects of structural model one (RQ3)

Effects (Pathways to AUDIT-C at six months)	**Standardized**				
	β	**95% CI**	**SE**	**z**	***p***
Direct Effect Dry January participation (controlling for baseline AUDIT- C) → AUDIT-C at six months (H1, H2)	-0.11	−0.19, −0.02	0.04	−2.46	**.014**
Indirect Effects					
Dry January participation (controlling for baseline AUDIT-C) → Change in DRSE →AUDIT-C at six months	−0.04	−0.08, −0.01	0.02	−2.39	**.017**
Dry January participation (controlling for baseline AUDIT-C) → Abstinence →AUDIT-C at six months	−0.02	−0.07, 0.03	0.03	−0.85	.398
Dry January participation (controlling for baseline AUDIT-C) → Change in drinker identity →AUDIT-C at six months	−0.003	−0.01, 0.004	0.004	−0.84	.400
Dry January participation (controlling for baseline AUDIT-C) → Change in motivation →AUDIT-C at six months	0.002	−0.01, 0.01	0.01	0.34	.736
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in DRSE → AUDIT-C at six months	−0.02	−0.03, −0.003	0.01	−2.29	**.022**
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in motivation → AUDIT-C at six months	−0.002	−0.01, 0.01	0.004	−0.55	.581
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in ASC → AUDIT-C at six months	0.001	−0.003, 0.004	0.002	0.42	.674
Total Effect	−0.19	−0.26,−0.12	0.03	−5.60	**<.001**

Table 5.11: Direct and indirect effects of structural model 1b (RQ3)

Effects (Pathways to AUDIT-C at six months)	**Standardized**				
	B	**95% CI**	**SE**	**z**	***p***
Direct Effect Dry January participation (controlling for baseline AUDIT-C) → AUDIT-C at six months	-0.11	−0.19, −0.02	0.04	−2.46	**.014**
Indirect Effects					
Dry January participation (controlling for baseline AUDIT-C) → Change in DRSE →AUDIT-C at six months	−0.05	−0.08 — −0.01	0.02	−2.59	**.010**
Dry January participation (controlling for baseline AUDIT-C) → Abstinence →AUDIT-C at six months	−0.02	−0.07 — 0.03	0.03	−0.92	.360
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in DRSE → AUDIT-C at six months	−0.02	−0.04, −0.004	0.01	−2.44	**.015**
Total Effect	−0.19	−0.25, −0.13	0.03	−6.14	**<.001**

Table 5.12: Regressions for structural model two (RQ4)

		Standardized			
Predictors*	**β**	**95% CI**	**SE**	**z**	***p***
Baseline ASC	−0.10	−0.17, −0.03	0.03	−2.98	**.003**
Baseline AUDIT-C	0.49	0.42, 0.57	0.04	13.34	**<.001**
Dry January participation	−0.14	−0.21, −0.07	0.04	−3.97	**<.001**
Baseline DRSE	−0.13	−0.21, −0.06	0.04	−3.45	**<.001**
Baseline Motivation	0.08	0.01, 0.15	0.04	2.15	**.031**
Moderation effects					
Dry January participation X Baseline ASC	0.15	0.07, 0.24	0.04	3.58	**<.001**
Dry January participation X Baseline AUDIT-C	0.01	−0.08, 0.10	0.04	0.27	.789
Dry January participation X Baseline DRSE	0.14	0.05, 0.24	0.05	2.91	**.004**
Dry January participation X Baseline Motivation	−0.18	−0.26, −0.09	0.04	−4.26	**<.001**

*All continuous variables mean centred

Table 5.13: Summary of results of hypothesis testing

Hypothesis	**Outcome of hypothesis testing**	
1. People who participate in Dry January will have a reduction in extended AUDIT-C score six months later.	Hypothesis supported	
2. Reduction in extended AUDIT-C score six months after Dry January will be greater for 'official' Dry January participants than for people who do not take part in Dry January.	Hypothesis supported	
3. Reduction in extended AUDIT-C score six months after Dry January will be greater for 'official' than 'unofficial' participants.	Hypothesis partially supported	
	Official	**Unofficial**
4. Changes in motivation to change over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis partially supported.	Hypothesis not supported.
5. Changes in DRSE over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis partially supported.	Hypothesis not supported.
6. The extent to which participants remain abstinent throughout Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis partially supported.	Hypothesis partially supported.
7. Changes in drinker identity over the course of Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis not supported	Hypothesis not supported
8. Motivation to change their drinking prior to Dry January will predict extended AUDIT-C at six-month follow-up after controlling for other factors.	Inconclusive due to poor fitting model.	Limited/inconclusive support.
9. DRSE prior to Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Inconclusive for due to poor fitting model.	Hypothesis not supported
10. The extent to which participants feel "part of something bigger" during Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis not supported	Hypothesis partially supported *
11. The extent to which participants feel connected to others taking part in Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis not supported	Hypothesis partially supported *
12. The extent to which participants feel part of a community during Dry January will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis not supported	Hypothesis partially supported *
13. Baseline alcohol consumption will predict extended AUDIT-C score at six-month follow-up after controlling for other factors.	Hypothesis supported	Hypothesis supported

*Individual items not included in models so original hypotheses not tested. Support is for amalgamation of H10, H11, H12 i.e. that "feeling part of something bigger" and/or connected to others taking part and/or part of a community during January predicts extended AUDIT-C at six-month follow-up

Exploratory analysis

The results of all hypothesis testing is summarised in Table 5.13. I now move on to discuss results of the exploratory analyses.

Post-January changes

For both 'official' and 'unofficial' participants, average scores for DRSE and motivation to change increased slightly between Post-January and six month follow-up whilst ASC decreased slightly (Table 5.6). Changes in DRSE and ASC and frequency of use after January significantly predicted AUDIT-C at six months among 'Official' Dry January participants (Table 5.14.) An increase in someone's belief in their ability to refuse alcohol, identifying less strongly as a drinker, and more frequent use of the Try Dry app were all associated with a substantial reduction in consumption at six months.

The same analysis for 'unofficial' participants provided inconsistent results. Whilst change in motivation was negatively associated with six months consumption in the main analysis (Table 5.14) it was not significant after controlling for demographic covariates or in any sensitivity analyses (Supplementary Table 5.21.) ASC, not originally significant, became so after exclusion of data from participants reporting group changes.

Predictors of use of online supports

Age significantly predicted use of all three modes of support during January (Table 5.15). Being older was associated with being less likely to use any of the supports in January. The association between age and signing up to ACUK emails was not statistically significant after excluding data from participants reporting any change in groups (Supplementary Tables 5.22 & 5.23). Higher baseline AUDIT-C was associated with being less likely to use a Dry January Facebook group.

Table 5.14: Multiple linear regression model examining association between changes in psychological factors and use of online supports following Dry January on AUDIT-C at six months among 'Official' and 'Unofficial' participants controlling for baseline consumption

	AUDIT-C at 6 months*											
	'Official' Dry January (n=291)						'Unofficial' Dry January (n=115)					
	Model 1			Model 2			Model 1			Model 2		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.64	0.54, 0.74	**<.001**	0.64	0.54, 0.74	**<.001**	0.60	0.43, 0.78	**<.001**	0.65	0.47, 0.84	**<.001**
Change in DRSE after Jan	-7.36	-11.34, -3.38	**<.001**	-7.74	-11.80, -3.68	**<.001**	-4.86	-10.54, 0.81	.092	-4.49	-10.18, 1.19	.120
Change in Motivation after Jan	0.06	-4.88, 5.01	.980	-0.22	-5.21, 4.78	.932	-7.85	-15.54, -0.17	**.045**	-5.18	-13.05, 2.70	.195
Change in ASC after Jan	8.05	4.11, 11.99	**<.001**	8.00	4.04, 11.96	**<.001**	5.43	-1.04, 11.90	.099	6.35	-0.30, 12.99	.061
Freq use Try Dry after Jan	-2.05	-3.54, -0.57	**.007**	-2.12	-3.64, -0.59	**.007**	-	-	-	-	-	-
Freq use Facebook group after Jan	-3.04	-7.31, 1.24	.163	-2.66	-7.02, 1.71	.233	-	-	-	-	-	-
Age				-0.20	-0.51, 0.12	.225				0.37	-0.12, 0.85	.138
Gender – Man				-1.47	-10.26, 7.32	.742				2.37	-8.96, 13.69	.680
Ethnicity - non-white				-0.38	-18.81, 18.05	.968				-28.20	-53.37, -3.03	**.028**
Income				-0.46	-2.86, 1.93	.705				-0.80	-4.94, 3.33	.700
Post-18 education				4.89	-3.93, 13.72	.276				1.05	-13.03, 15.13	.883

* Models used transformed AUDIT-C at six months (6- months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

Results robust for 'official' participants when controlling for inconsistencies in group membership (Supplementary Table 5.20)

'Official' Model 1: $F(6, 284) = 43.12$, $p < .001$, $R^2 = 0.48$

'Official' Model 2: $F(11, 279) = 23.58$, $p < .001$, $R^2 = 0.48$

'Unofficial' Model 1: $F(4, 110) = 20.81$, $p < .001$, $R^2 = 0.43$

'Unofficial' Model 2: $F(9, 105) = 10.39$, $p < .001$, $R^2 = 0.47$

Table 5.15: Logistic regression models of predictors of using the Try Dry app in January, using a Dry January Facebook group in January or signing up to ACUK emails for Dry January among ' Official' Dry January participants

	Use of Try Dry App			**Use of Facebook Groups**			**Signing up to ACUK emails**		
Variable	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Baseline AUDIT-C	0.98	0.78, 1.22	.854	0.82	0.68, 0.97	**.024**	0.96	0.80, 1.15	.661
Baseline DRSE	0.92	0.59, 1.46	.718	1.23	0.89, 1.74	.217	1.00	0.68, 1.45	.987
Baseline Motivation	1.08	0.60, 1.88	.784	1.13	0.75, 1.70	.558	1.30	0.81, 2.15	.298
Baseline ASC	1.02	0.73, 1.41	.918	0.97	0.76, 1.24	.823	0.82	0.62, 1.07	.136
Age	0.96	0.93, 1.00	**.042**	0.96	0.93, 0.99	**.004**	0.97	0.94, 0.99	**.019**
Gender – Man	1.57	0.59, 5.04	.403	1.52	0.73, 3.37	.277	1.09	0.47, 2.39	.830
Ethnicity - non-white	0.94	0.16, 18.2	.958	1.47	0.34, 10.2	.640	0.75	0.11, 3.23	.725
Post-18 education	1.41	0.54, 3.34	.455	1.12	0.54, 2.22	.752	1.63	0.74, 3.94	.246
Income	1.10	0.86, 1.40	.467	1.03	0.85, 1.25	.732	0.87	0.70, 1.08	.199
AIC		219.48			327.92			289.58	
BIC		256.21			364.65			326.31	
Pseudo R^2		0.04			0.10			0.07	

Try Dry model: $\chi^2(9) = 6.30$, $p = .710$
Facebook group model: $\chi^2(9) = 19.91$, $p = .019$
Emails model: $\chi^2(9) = 12.56$, $p = .184$

Discussion

Dry January participation

People attempting any kind of Dry January were more likely to be a woman, have higher household income, consume more alcohol prior to January, be less confident in their ability to refuse alcohol, identify more strongly as a drinker, and be more motivated to change their drinking than participants not taking part. The same pattern of results was also seen when comparing 'official' and 'unofficial' participants. The sociodemographic characteristics of 'Official' Dry January participants closely reassembled that seen in previous studies of Dry January (de Visser & Lockwood, 2018; de Visser & Piper, 2020). Conclusions regarding between group differences are offered cautiously due to pragmatic use of different methods of recruitment. Observed differences may reflect differences according to route of recruitment rather than any inherent difference between those who registered for the campaign versus those who attempted an independent alcohol-free January.

Online supports were widely used among 'official' Dry January participants during January with the Try Dry app being the most popular. Use of each of the three online supports was more likely among younger participants reflecting wider patterns of use of digital health supports (Carroll et al., 2017; Bol et al., 2018). As anticipated, engagement with supports reduced post-January though a not insignificant proportion of people continued to make regular use of the app. Variation in the use of online supports and their various components reflects interviewee reflections about using tools in a way that works for them (Chapter IV).

Changes in alcohol consumption

Reductions in alcohol consumption at six months were observed among participants who registered for the 'official' Dry January campaign. This replicates findings from previous Dry January studies (de Visser et al., 2016; de Visser & Piper, 2020) and research into other TACs (Bovens et al., 2017; Thienpondt et al., 2017; Bovens et al., 2020). It also demonstrates the applicability of previous findings to heavy drinkers and addresses concerns that the campaign may attract and benefit those at the lowest risk of alcohol harm (Hamilton & Gilmore, 2016). Whilst it is important to be clear that, though reduced, average alcohol consumption remained at levels indicating increasing/higher risk of alcohol harm (Public Health England, 2017). A substantial reduction in the proportion of participants at the highest levels of risk harm suggests that participation in Dry January is an effective way of reducing consumption for heavy drinkers. Although beyond the scope and resources of the current study, future research should endeavour to follow participants over a longer period to examine how consumption changes over longer time periods.

A modest reduction in consumption was also observed among people who did not take part in Dry January. 'Official' Dry January participation predicted lower consumption at six months compared to not taking part in any type of Dry January. This is consistent with previous research (de Visser &

Lockwood, 2019; de Visser & Piper, 2020) and suggests that whilst there may be some seasonal variation in alcohol consumption, for example a reduction following increased consumption over the Christmas and New Year period (Lemmens & Knibbe, 1993; Uitenbroek, 1996; Cho et al., 2001), the changes associated with Dry January participation cannot entirely be attributed to this. Similarly, whilst some of the reduction may be due to regression to the mean, as previously observed (McCambridge et al., 2014), this does not account for the full extent of the reduction reported by Dry January participants.

A reduction in consumption was also seen among 'unofficial' Dry January participants, although again this was to a lesser degree than that experienced by 'official' participants. This suggests that whilst an independent Dry January is associated with mid-term reductions in alcohol consumption these are enhanced by registering for the official campaign and having access to the structured online supports provided. This aligns with findings that a greater proportion of those who registered for Dry January experienced at least a 10% reduction in AUDIT-C at baseline compared to those who attempted an unsupported Dry January (de Visser, 2019).

Psychological and social determinants of change

Several of the determinants that were hypothesised partially underpinned changes in alcohol consumption at six months. Different patterns of association were observed for 'official' and 'unofficial' participants. Results regarding psychological and social determinants of change among 'unofficial' participants were generally less robust.

For 'official' Dry January participants, motivation to change drinking, DRSE, drinker identity, degree of abstinence during January, and use of the Try Dry app post-January all played some part. Whilst only statistically significant in the sensitivity analyses a relatively small increase in motivation to change drinking over January was associated with a substantial reduction in alcohol consumption. Research has suggested that TAC participants are not homogenous and that there are distinct types of participant such as 'ordinary drinkers' and 'habitual drinkers with perceived control to refuse' (Kools et al., 2024). I found that the proportion of people intending to reduce their drinking post Dry January increased over the month suggesting that some people who began Dry January not intending to make ongoing changes did so by the end of the month. The substantive, yet not consistently significant, effect of motivation to change may therefore be indicative of a group of Dry January participants for whom an increase in motivation to change was particularly pertinent. For example, this could reflect those participants whose initial decision to participate in Dry January is not to initiate ongoing change but who, during the course of Dry January, became motivated to change their drinking

I identified pathways between Dry January participation, more abstinent days during January, a greater increase in DRSE, and lower six month alcohol consumption. Increased DRSE has been

observed following participation in Dry January and other TACs (de Ternay et al., 2022). De Visser and colleagues (2016) found that complete abstinence during Dry January was associated with increased DRSE which itself predicted lower alcohol consumption at six months. Greater abstinence being linked to a greater increase in DRSE supports arguments that changes to heavy drinking precedes change in DRSE (Wood et al., 2023). These findings also lend support to suggestions that the relationship between DRSE and alcohol consumption is a reciprocal one (Jenzer et al., 2021) with abstinence predicting increased DRSE which in turn predicts reduced consumption.

A significant pathway was also observed between Dry January participation, DRSE, and lower six month consumption notwithstanding level of abstinence during January. Maintaining abstinence when participating in Dry January may therefore not be the only factor which contributes to an increase in someone's belief in their ability to refuse a drink. De Visser & Piper (2020) previously observed increased DRSE over January among Dry January participants even when they did not maintain complete abstinence, albeit to a lesser degree. I postulate that for some individuals a lapse in temporary abstinence could, in the longer-term, prove beneficial. If an individual is able to avert the negative cognitions and affect associated with such lapses, avoid self-blame (Marlatt & Gordon, 1985; Curry et al., 1987), and return to their intended temporary abstinence, they can demonstrate to themselves their ability to overcome challenges and consequently may experience increased self-efficacy (Collins & Witkiewitz, 2020). Nonetheless, effect sizes for both pathways were small suggesting there are other key determinants yet to be measured and evaluated in respect to their role in TAC related reductions in alcohol consumption.

Increases in DRSE and frequency of use of the Try Dry app and reductions in drinker identity following January were also associated with reduced consumption at six months for 'official' participants. Use of the Try Dry app after January is likely to be more common among Dry January participants who are continuing to make changes to their drinking. Descriptive results indicate the components which facilitated self-monitoring, particularly monitoring of dry and drinking days, were those used most frequently following January. Self-monitoring of drinking behaviour and outcomes is one of the behaviour change techniques most commonly found in online interventions and apps (Crane et al., 2015; Humphreys et al., 2021). My earlier qualitative work found that some Dry January participants found the Try Dry app more useful following rather than during January when they returned to drinking and monitoring consumption became more pertinent (Chapter IV). This may explain why Try Dry use post-January appeared to have an effect on six month consumption whilst use within January did not.

At the end of Dry January, participants reported increased belief in their ability to refuse alcohol and identifying to a lesser degree with drinking. Whilst on average, this reverted slightly over the next few months such that DRSE reduced and drinker identity increased slightly there was still an overall

increase in DRSE and reduction in drinker identity between baseline and six month follow-up. These results suggest that for at least some participants, possibly those who continued to make/attempt to make changes to their alcohol consumption, the positive changes in DRSE and drinker identity during January may have also continued. Whilst these post-January changes were associated with lower alcohol consumption at six months, the nature of the analysis means we cannot draw conclusions as to direction or causality. Indeed some evidence suggests that changes in drinker identity may occur after reductions in alcohol consumption and thus be a marker, rather than cause, of changes in drinking (Lindgren et al., 2022). The changes in identity observed post-January may therefore be a consequence of abstinence or reduced consumption during January rather than its cause.

Among unofficial dry January participants, social contagion, level of abstinence, motivation to change, and drinker identity during January were also associated with consumption at six months. However, the association between almost all of these variable and consumption at the final follow-up was inconsistent and therefore these findings do not appear to be particularly robust. This may be partly attributable to responses from "unofficial" participants vacillating in terms of whether they stated they had taken part or not. The exception to this was social contagion, a relatively robust predictor of six month consumption among the 'unofficial' Dry January group. The existence of this relationship for 'unofficial' but not 'official' participants is initially somewhat unexpected. The 'official' Facebook groups enables participants to interact with others and facilitates SETs including normalizing the difficulty, supporting others, and obtaining support from others. Perhaps unsurprisingly, 'official' participants reported a greater sense of connection to other participants, feel part of a community, and part of something bigger. 'Unofficial' participants, who may be using alternative supports but who lack access to the Dry January specific structured supports available to 'official' participants, may be less likely to experience this. Consequently for those 'unofficial' participants who do experience greater social contagion the lasting impact may also be more substantial. In contrast, most 'official' Dry January participants may experience similar levels of social contagion to one another. Should the top of the scale have been perceived as implausible to describe the sense of connection, belonging, and community, one got from participating in Dry January (relative to family, a sports club, political movements for example) then the average score for 'official' participants may be much closer to the 'true' ceiling. Thus ceiling effects may have limited the variability in this measure of social contagion among the 'official' Dry January group.

Strengths and Limitations

A key strength of this study was its rigorous approach to hypothesis testing, with research questions, hypotheses, and an analytical plan preregistered and deviations from the intended analyses reported. Additionally, participant groups were well-matched according to baseline levels of consumption.

Restricting participation to individuals with AUDIT-C ≥ 5 enabled me to focus on heavy drinkers and replicate previous findings with more robust comparison groups. It also provided evidence to suggest concerns regarding Dry January primarily attracting and benefiting lower risk drinkers may be unfounded. Additionally, the study measured constructs not previously examined in the context of Dry January, or to my knowledge any TAC. A thorough, theory-informed analysis plan was followed and all analyses were well-powered increasing the reliability and applicability of the findings. Sensitivity analyses were conducted to address inconsistencies in reporting and increase the robustness of conclusions. Investigation of online support use extends previous research providing insight into use of structured online supports and, crucially, considering how the frequency of use of individual supports both during and following January is associated with ongoing changes to alcohol consumption.

This study also had a number of limitations. It was an observational study where participation in Dry January was self-selected thus limiting any causal claims which can be made. Whilst necessary to ensure both 'official' and 'unofficial' participants were recruited, variance was introduced by use of different routes of recruitment with different payment structures. Participants recruited via ACUK were predominantly in the 'official' Dry January group and those recruited via Prolific in the 'unofficial' or No Dry January groups. As such, conclusions regarding differences in group characteristics may instead reflect differences between individuals registered with ACUK and Prolific participants. I also observed a substantially greater proportion of inconsistent responses regarding group membership amongst participants recruited via Prolific compared to those recruited through ACUK. In conjunction with the reduction in 'unofficial' participants between baseline and post-January follow-up, this suggests that at least some inconsistent responses may have resulted from Prolific participants seeking to provide desirable responses to ensure they received invites to subsequent surveys. This occurred despite inclusion of three attention checks per survey, intended to deter as well as detect careless responding (Oppenheimer et al., 2009). Non-naivety of participants, whereby experienced research participants become familiar with methods and measures (Chandler et al., 2014), and the potential deleterious impact on data quality (Chandler et al., 2015) is a concern for researchers using participant recruitment platforms. Whilst Prolific has been suggested to provide higher quality data than comparable platforms (Peer et al., 2022) my experience highlights the need to be mindful of ongoing challenges to data integrity when conducting research online.

In summary, participation in the Dry January campaign is associated with reduced alcohol consumption up to six months later among heavy drinkers. These reductions are greater for those who register for the 'official' campaign and have access to structured online supports. Incorporating this evidence into campaign communications in the run up to January may encourage people to register and maximise the effectiveness of their Dry January. Changes in DRSE, motivation to change, drinker identity, and use of the Try Dry app all appear to be associated with changes in alcohol consumption

to some degree. Encouraging use of the Try Dry app following Dry January and incorporating brief interventions targeting these constructs may further enhance the enduring impact of Dry January participation. Finally, whilst I have identified pathways between DRSE and alcohol consumption at follow-up, the results suggest that other mechanisms of change underpinning ongoing changes in alcohol consumption remain to be discovered.

Chapter VI

Dry January participation among Try Dry app users: Reductions in consumption, 'rebound effects' and engagement with the app

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Contributions: I designed the study. All co-authors reviewed the study protocol and MF, IK, AS and JH provided feedback. AC supported with data sharing and variable clarification. I cleaned the data and conducted formal analysis. I wrote the original draft of the chapter. MF reviewed and provided comments on the draft.

Abstract

Findings from Chapter V suggest the Try Dry app is the most commonly used of ACUK's online supports both during and following Dry January. Using data from the app, the current study aimed to determine the extent to which 'rebound effects' are a valid concern, confirm reductions in consumption up to nine months post-January, and examine the impact of engagement with the app on reductions in consumption. User inputted and usage data from UK-based Try Dry users who participated in Dry January 2023 was analysed. On average, drinking days, weekly consumption, and heavy drinking days reduced and non-drinking days increased one, two, six, and nine months post-January. However, 'rebound effects' were observed in a substantial minority of users at one and two months. Lighter drinkers at baseline were more likely to exhibit increased consumption: this may be due to regression to the mean. Greater engagement with drinking metrics predicted greater reductions in consumption at six and nine months suggesting use of the Try Dry app may enhance benefits of Dry January participation.

Introduction

Of the digital supports available to 'Official' Dry January participants, the Try Dry smartphone app is the most widely used (de Visser & Lockwood, 2018; see also Chapter V). It was the support discussed most frequently by interviewees (Butters et al., 2025), the one most likely to be used post-January (Chapter V), and the one rated most helpful by users (de Visser & Lockwood, 2018). In general, evidence regarding the effectiveness of alcohol reduction smartphone apps such as Try Dry is inconclusive but broadly encouraging (Colbert et al., 2020; Oldham et al., 2024).

Access to and use of the Try Dry app can be mapped onto the COM-B model of behaviour. Having access to Try Dry at no cost provides *physical opportunity* and enables use of the drinking calendar for self-monitoring. Self-monitoring of behaviour is associated with positive changes to drinking behaviour (Michie et al., 2012) and is a common feature of alcohol reduction apps (Crane et al., 2015). Compelling evidence suggests that the mechanism of action underpinning self-monitoring is

behavioural regulation (Carey et al., 2018; Johnston et al., 2021). Thus by using Try Dry to record drinking (or non-drinking), users improve their behavioural regulatory ability thereby increasing their *psychological capability* for ongoing changes to their drinking.

In the previous chapter, I reported that more frequent use of the Try Dry app following January was associated with a reduction in consumption at six months. Here I utilise user inputted data and usage analytics from the Try Dry app to examine changes in alcohol consumption following participation in Dry January and the impact of app use on these changes. First, I respond to concerns that participation in Dry January could lead to a 'rebound effect': increased consumption in subsequent months (Hamilton & Gilmore, 2016), among some users. Whilst a minority of participants may exhibit increased consumption in the one or two months after January, I expect that, on average, there will be a mid-term reduction in consumption. As such, I aim to confirm the six-month reduction in consumption following participation in Dry January with a substantial sample and to extend the follow-up time frame to nine months. Next, I examine the extent to which engagement with the app's drinking metrics contribute to any changes in consumption. Finally, I conduct an exploratory analysis to examine whether specific groups of Try Dry users are more likely to report increased consumption following participation in Dry January.

Research Questions

RQ1. Is participation in Dry January associated with a 'rebound' effect i.e. increased alcohol consumption during:

a) February
b) March

RQ2. Is participation in Dry January associated with a reduction in alcohol consumption at six months and at nine months?

RQ3. Are changes in alcohol consumption at six months and at nine months associated with engagement with the Try Dry app as measured by

a) Frequency of use of drinking metrics
b) Depth of use of drinking metrics

Methods

Research questions and the planned analysis were preregistered on the OSF (osf.io/wxt2j). As this study uses secondary data, institutional ethical approval was automatically granted following self-declaration (no: 064167).

Dataset

This study uses individual-level, anonymised data from the Try Dry app for the period 1.12.22 to 30.11.23. Try Dry is available to download on commercial app stores and has an international user

base. The app is free to download and use but requires registration. It includes multiple components including drinking metrics, wellbeing metrics, and options to set goals and complete 'missions.' Here I primarily use drinking metrics and goal-setting data which are described in further detail in the 'Measures' section below. The dataset is not openly available and has been provided by ACUK for the purpose of this analysis.

Data from UK-based users who participated in Dry January 2023 was used in the analysis. For the main analysis, Dry January participation was categorised as having registered for the Try Dry app between 1.12.22 and 7.1.23 and/or set a goal to complete Dry January 2023 and/or having recorded drinking or non-drinking on the drinking calendar at least once during January. This is undoubtedly a broad definition of Dry January participation and as such sensitivity analyses were conducted using a more conservative definition of participation (setting a goal to complete Dry January 2023.) Users who recorded consuming more than 280 units of alcohol per week were excluded from analysis as this exceeds clinician estimates of the maximum realistic consumption (Stevely et al., 2023). Given that some app users only ever record non-drinking days (Butters et al., 2025) and my inability to determine whether missing data reflected drinking/non-drinking or just not recording, it was decided to not impute missing data. Data were only included for users with a measure of alcohol consumption available for the baseline period (1.12.22 – 7.1.23) and at least one of the follow-up months for each research question (RQ1a = February, RQ1b = March, RQ2a/RQ3a =July, RQ2b/RQ3b = October.)

Measures

Drinking calendar. Users can complete a daily drinking calendar indicating whether they 'stayed dry,' 'drank,' or 'drank as planned.' If 'drank' or 'drank as planned' is selected, users indicate the type, volume, alcohol percentage, cost per drink, quantity, and location of purchase of all drinks consumed that day. This is then converted to units in the app. To monitor and reflect on their progress, users are able to look back at two versions of the calendar. One showing whether they 'stayed dry,' 'drank,' or 'drank as planned' and one displaying units consumed per day.

Drinking risk quiz (AUDIT-C). Try Dry users are encouraged to complete a drinking risk quiz every three months. This is a three month adjusted (items ask about consumption with respect to the previous three months) version of the AUDIT-C (Babor et al., 2001) and provides users with feedback on drinking risk, together with the option to complete the full AUDIT.

Goals. The Try Dry app facilitates goal-setting by giving users the option to set different types of goals. Users can set a goal to complete a challenge, e.g. Dry January 2023, and/or to reduce/moderate or have a non-drinking streak. Challenge goals are prespecified but other goals can be customized to change the duration, amount of consumption permitted, or start day as relevant.

Demographics. Users' age, gender, country of residence, and their sign-up date are recorded.

Variables

Alcohol consumption. Information from the drinking calendar and the AUDIT-C was combined to produce four dependent variables to characterise alcohol consumption: number of **drinking days** per month**, number of non-drinking days** per month**, average weekly consumption** per month, and number of **heavy drinking days** (>6.0 units) per month. If a user completed the AUDIT-C more than once in a given month the last one completed was used. Amalgamation of drinking calendar and AUDIT-C data were intended to maximise the number of users included in the analyses, for example by including users who completed AUDIT-C at baseline and the drinking calendar in a follow-up month. Drinking and non-drinking days per month were included as separate variables as different usage patterns have been reported, with some users recording either drinking or non-drinking but not both (Butters et al., 2025). Inclusion of both variables ensured I captured different types of users and, again, maximised the data included in the analysis.

Baseline measures of consumption for all research questions were taken from the period 1.12.22 to 7.1.23 to facilitate inclusion of participants who began Dry January slightly late. The order of preference for using alcohol consumption measures to calculate the dependent variables was as follows.

If users recorded in the drinking calendar 15 or more times in a given month, then data from the drinking calendar was used (irrespective of whether they completed the AUDIT-C.)
If users completed the AUDIT-C and recorded in the drinking calendar less than 15 times in a given month, AUDIT-C responses were used.
If a user did not complete the AUDIT-C but recorded their drinking on the calendar at least four times that month then data from the drinking calendar was used.
If a user did not complete the AUDIT-C and recorded on the calendar fewer than four times in the relevant month they were excluded from the analysis.

Table 6.1 describes how estimates of the frequency of consumption/non-consumption, quantity of alcohol consumed, and frequency of heavy drinking were coded according to AUDIT-C responses and how the alcohol consumption dependent variables were calculated.

Table 6.1: Alcohol consumption dependent variables and calculation according to AUDIT-C and drinking calendar

Variables	Drinking calendar	AUDIT-C – coding of item responses (Drinking risk quiz)
Drinking days per month	Total no. of days where consumption > 0	Q1 responses coded as: Never = 0 Monthly or less = 1 2-4 times per month = 3 2-3 times per week = 10 4+ times per week = 22
Non-drinking days per month	Total no. days in month where consumption is 0.	No. days in month minus drinking days per month
Average weekly consumption per month	Drinking days per month * average consumption per drinking day / no weeks in month If drinking days = 0 but non-drinking days >0 then average weekly consumption is 0.	Q2 responses coded as 1 or 2 = 1.5 3 or 4 = 3.5 5 or 6 = 5.5 7-9 = 8 10+ = 10 (Drinking days per month * Q2 response) / no. weeks in month
Heavy drinking days per month	Total no. days where units consumed > 6.0	Q3 responses coded as Never = 0 Less than monthly = 0 Monthly = 1 Weekly = 4 Daily or almost daily = 25*

*Slightly conservative estimate to account for gap in response options between weekly (3) and almost daily (4).

For RQ3, dependent variables were **changes in drinking days** per month**, non-drinking days** per month**, average weekly consumption** per month, and **heavy drinking days** per month. These were calculated by subtracting baseline measures from the measure for the respective follow-up month e.g. change in drinking days at six months = drinking days in July – drinking days at baseline.

Frequency of use of drinking metrics. Frequency of use was calculated for the period 1.1.23 to 31.7.23 (six months post-January) and 1.1.23 to 30.9.23 (nine months post-January). Number of days recorded across all months was divided by total number of months in the given period to give an average frequency per month (max possible= 30.4).

Depth of use of drinking metrics. Depth of use was also calculated for the same periods. Number of days recorded per month was multiplied by the number of calendar options used: 'Stayed dry,' 'drank,' 'drank as planned' (1-3). Users who recorded every day in a month were assigned a score of

three to avoid underscoring individuals who only ‘stayed dry’ or only ‘drank as planned’ etc. Monthly scores were divided by the total number of months in the given period to obtain an average depth of use per month (max possible = 91.2)

Analysis

All analyses were conducted using RStudio/ R 4.4.1 (RStudio Team, 2020; R Core Team, 2024). For RQ1 and RQ2, Wilcoxon signed rank tests were used to compare drinking variables as assumptions of normality were not met. Bonferroni adjustments were used to account for multiple comparisons. The proportion of users reporting decreased, increased, and unchanged consumption at each timepoint (according to each alcohol consumption variable) was also calculated.

Multiple regression models were used to answer RQ3. Separate models were used for depth and frequency of use, for each dependent variable, and for each of the follow-up periods (six and nine months). Examination of model residuals revealed heteroskedasticity across all dependent variables. This was not improved by transformations of predictor or dependent variables. As such models with untransformed variables were used and robust standard errors obtained.

Sensitivity analyses were conducted for RQ1-3 using a more conservative definition of Dry January participation, with data excluded from users who did not set a goal to complete Dry January 2023. Conversion of AUDIT-C scores to frequency/amount of consumption resulted in a bimodal distribution for the alcohol consumption dependent variables used in RQ1 and RQ2. Therefore, and in addition to the use of non-parametric tests, I also conducted sensitivity analyses using only AUDIT-C scores (individual scores for each item) and only drinking calendar data (drinking days, non-drinking days, weekly consumption, heavy drinking days).

An exploratory analysis was conducted to attempt to identify Try Dry users who might be at increased likelihood of reporting increased consumption following participation in Dry January. Firstly, a Latent Class Analysis (LCA) was conducted using the *poLCA* R package (Linzer & Lewis, 2011) to establish whether different subgroups of users were observable. Indicators were scores for AUDIT items one to three from the baseline period. One to five class solutions were estimated and model fit statistics obtained and compared to determine the best class solution. This included BIC, suggested as the most reliable fit statistic (Nylund et al., 2007), AIC, goodness of fit (χ^2) and likelihood ratio/deviance statistic (G^2).

Logistic regression models were then used to evaluate factors associated with increased consumption in February, March, July, and August. Dummy coded binary dependent variables for these models were: increased (vs not increased) drinking days, average weekly consumption, and heavy drinking occasions, and decreased (vs not decreased) non-drinking days between baseline and follow-up. Separate models were used for each follow-up period and each dependent variable. Predictor variables

were latent classes (class one as reference category), gender (female as reference), and age. Chi-squared tests were used to assess model fit

Changes from preregistration

'Baseline drinking' was not used as a measure of alcohol consumption because data were not available to indicate when it was completed. Whilst users are encouraged to record this on sign up they can then update or change it as often as they choose. As such, this would not be a reliable measure of alcohol consumption for a particular month. As specified, data from the drinking calendar was used providing that users recorded drinking/non-drinking at least four times per month. In a deviation from the preregistration this was only preferred to AUDIT-C scores if the user recorded 15 or more times per month. Users who recorded every day during December 2022 but did not record any drinking days were excluded from analysis. Similarly, users who completed the AUDIT-C in December and responded "Never" to the first item (frequency of drinking) were also excluded. Multiple regression models were used instead of multivariate regression models for RQ3 to maximise the data available for each dependent variable.

Results

25,573 users met inclusion criteria and had a usable measure of alcohol consumption for the baseline period. Of these, 16,685 were new users who first signed up to Try Dry in December 2022/early January 2023. The majority, 22,380, set a goal to complete Dry January 2023 and the vast majority, 24,992, recorded drinking/non-drinking at least once in January.

Primary Analysis

There was a large and statistically significant reduction in drinking days, average weekly consumption, and heavy drinking days between baseline and February (RQ1a; Table 6.2). Non-drinking days significantly increased over this period though this was a very small effect size. This difference was not significant when users who did not set a goal to complete Dry January 2023 were excluded from the analysis (Supplementary Table 6.1). All other changes were robust to sensitivity analyses (Supplementary Tables 6.1, 6.2, 6.3.)

Between baseline and March there was a large reduction in drinking days per month and average weekly consumption in addition to a moderate reduction in heavy drinking occasions (RQ1b; Table 6.2.) There was a small but significant increase in non-drinking days with all results robust to sensitivity analyses (Supplementary Tables 6.1, 6.2, 6.3.) Whilst on average alcohol consumption reduced, a substantial minority of Try Dry users experienced an increase in drinking days, average weekly consumption and heavy drinking occasions and a reduction in non-drinking days between baseline and February and/or March (Table 6.3.)

Reductions in drinking days, weekly consumption and heavy drinking occasions were observed six (July) and nine months (October) post-January (RQ2a, RQ2b; Table 6.2) with medium to large effect sizes for all changes. Small to medium sized increases in non-drinking days per month were also observed. As in February and March, a substantial minority of users experienced increased consumption (Table 6.3). Again this was evident across all alcohol consumption dependent variables.

The proportion of users with changes in consumption greater than 10% (Supplementary Table 6.4) at February, March, July and/or October was relatively similar to the proportion of users with any change (Table 6.3) indicating that increases in consumption were not, in general, negligible. Comparable proportions of users with increased consumption were also observed when including only those who met the conservative definition of Dry January participation (Supplementary Table 6.5.) When using AUDIT-C responses only to examine changes in consumption (Supplementary Table 6.6) a greater proportion of users were categorised as "unchanged," potentially due to the limited response options (0-4) to the AUDIT-C items. When including only users who completed the drinking calendar 15 or more times in the relevant months the proportion of users with a reduction in non-drinking days was substantially smaller (Supplementary Table 6.7).

Table 6.2: Average alcohol consumption at baseline and February, March, July (six months) and October (nine months) and user demographics at each timepoint

	February N= 11428* (Consumption = 11106)					**March N = 8070* (Consumption = 7789)**					**July N=4542* (Consumption = 4348)**					**October N=4410* (Consumption = 4220)**				
Variable	**Mean**	**SD**	**Med**	**IQR**	**Difference**	**Mean**	**SD**	**Med**	**IQR**	**Difference**	**Mean**	**SD**	**Med**	**IQR**	**Difference**	**Mean**	**SD**	**Med**	**IQR**	**Difference**
Drinking days December	14.6	7.25	12	12		14.4	7.28	12	12		14.2	7.3	13	12		14.3	7.28	13	12	
Drinking days follow-up	6.39	5.68	5	8	z = 77.9, ***p* <.001**, r = .74	7.13	6.6	6	11	z = 58.9, ***p*<.001**, r = .67	7.65	7.37	6	13	z = 38.6, ***p*<.001**, r = .59	6.53	7	4	11	z = 43.9, ***p*<.001,** r= .68
Non-drinking days December	15.2	7.21	13	12		15.2	7.25	13	12		15	7.27	14	12		14.8	7.18	13	12	
Non-drinking days follow-up	15.7	8.17	16	14	z = -4.48 ***p* <.001**, r =.04	18.2	8.81	18	15	z=-25.5, ***p* <.001,** r=.28	17.6	8.72	17	15	z = -15.7, ***p*<.001**, r =.23	19	8.89	19	15	z = -26.2, ***p*<.001**, r= .39
Weekly consumption December	22.2	15.2	18.1	17		21.9	15.5	18.1	18.9		21.7	16	18.1	19.4		22.1	16.2	18.1	20	
Weekly consumption follow-up	10.3	12.5	6.23	13.5	z = 67.2, ***p*<.001**, r = .64	10.4	13	5.42	15.1	z= 54.6, ***p* <.001**, r = .62	10.9	14.8	4.4	16.9	z = 37.6, ***p*<.001** , r = .57	9.04	13.2	3.06	13.2	z = 43.2, ***p*<.001**, r =.67
Heavy drinking days December	7.74	9.15	4	7		7.58	8.98	4	8		7.42	8.68	4	9		7.62	8.82	4	9	
Heavy drinking days follow-up	2.79	3.9	1	4	z= 53.50, ***p* <.001**, r =.51	3.15	4.59	1	5	z=39.9, *p*<**.001**, r = .45	3.28	5.15	1	5	z = 29.2, ***p*<.001**, r = .44	2.73	4.73	0	4	z = 34.5, ***p*<.001**, r =.53
Age	43.7	10.6	43	15		44.2	10.7	44	16		44.8	10.7	45	15		44.7	10.8	44	15	
	No.		**%**			**No.**		**%**			**No.**		**%**			**No.**		**%**		
Gender																				
Female	7808		68.30%			5528		68.50%			3084		67.90%			2974		67.40%		
Male	2738		24%			1936		24%			1147		25.20%			1130		25.60%		
Other	10		0.10%			6		0.10%			2		0.04%			6		0.10%		
Rather not say	872		7.60%			600		7.40%			312		6.90%			300		6.80%		
Dry January 2021 goal	1733		15.20%			1292		16%			842		18.5%			855		19.40%		
Dry January 2022 goal	2032		17.80%			1569		19.40%			1075		23.70%			1075		24.40%		
Dry January 2023 goal	9422		82.40%			6357		78.80%			3301		72.60%			3191		72.40%		

* Indicates no. users with data for consumption (drinking days, average weekly consumption,) **or** non-consumption, Consumption indicates no. users with data for consumption.

Table 6.3: Percentage of users with increased, decreased or unchanged alcohol consumption in February, March, July and October.

		February N =11482 (Consumption = 11106)		**March N=8070 (Consumption = 7789)**		**July N=4545 (Consumption = 4351)**		**October N=4410 (Consumption = 4220)**	
Alcohol Consumption DV		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Drinking days	Decrease	9206	82.89%	6029	77.4%	3175	72.97%	3314	78.53%
	Increase	1445	13.01%	1380	17.72%	933	21.44%	715	16.94%
	Unchanged	455	4.1%	380	4.88%	243	5.58%	191	4.53%
Non-drinking days	Decrease	5432	47.53%	2878	35.66%	1717	37.78%	1388	31.47%
	Increase	5380	47.08%	4768	59.08%	2529	55.64%	2788	63.22%
	Unchanged	616	5.39%	424	5.25%	299	6.58%	234	5.31%
Average weekly consumption	Decrease	8874	79.9%	6142	78.85%	3345	76.88%	3480	82.46%
	Increase	2232	20.1%	1607	20.63%	970	22.29%	711	16.85%
	Unchanged	0	0%	40	0.51%	36	0.83%	29	0.69%
Heavy drinking days	Decrease	7170	64.56%	4790	61.5%	2683	61.66%	2758	65.36%
	Increase	2307	20.77%	1739	22.33%	891	20.48%	733	17.37%
	Unchanged	1629	14.67%	1260	16.18%	777	17.86%	729	17.27%

As previously described, multiple regression models were not robust to assumptions of homoskedasticity. Whilst robust standard errors were obtained, the following results are nonetheless offered cautiously. There was a significant association between both frequency of use of drinking metrics and depth of use of the drinking metrics and change in all dependent variables at six (RQ3a; Tables 6.4 & 6.5) and nine months (RQ3b; Tables 6.6 & 6.7.) Increased frequency of recording and increased depth of recording predicted a greater reduction in drinking days, weekly consumption and heavy drinking days and a greater increase in non-drinking days. Models only accounted for a relatively small amount of the variance in the dependent variables suggesting that frequency and depth of use of drinking metrics have a minor role in changes in alcohol consumption following participation in Dry January.

Age was a significant predictor of drinking days, non-drinking days, and weekly consumption at six months when frequency of use of drinking metrics was held constant. Older users reported a smaller reduction in drinking days and weekly consumption and a smaller increase in non-drinking days. When depth of use of drinking metrics was held constant being older was significantly associated with a smaller reduction in drinking and a smaller increase in non-drinking days. At nine months, when frequency of use was held constant, age was similarly associated with a smaller reduction in drinking days and heavy drinking days and a smaller increase in non-drinking days. However, it was only associated with a smaller reduction in drinking days when depth of use was held constant. Whilst statistically significant the effect of age was very small such that practically speaking it would be of negligible effect. Being male rather than female predicted a greater increase in change in drinking days and weekly consumption at six months but a smaller increase in change in non-drinking days. At nine months being male was only significantly associated with change in non-drinking days.

When excluding users who did not set a goal to complete Dry January there were some changes in the statistical significance of age and gender (male, other/rather not say) in both the frequency and depth of use models (Supplementary Tables 6.8-6.11.) . All other results were robust to sensitivity analyses excluding data from users who did not set a goal to complete Dry January 2023.

Table 6.4: Multiple regression models examining association between frequency of recording drinking and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and six months (July)

	Dependent variables: Changes from baseline to 6-months											
	Change in drinking days			**Change in non-drinking days**			**Change in weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Frequency of recording	0.45	0.41, 0.48	**<.001**	0.33	0.30, 0.36	**<.001**	0.69	0.62, 0.77	**<.001**	0.30	0.26, 0.34	**<.001**
Age	-0.08	-0.10, -0.06	**<.001**	0.06	0.03, 0.08	**<.001**	-0.05	-0.10, -0.01	**.018**	-0.02	-0.04, 0.00	.051
Gender -Male	0.73	0.13, 1.32	**.016**	-0.80	-1.44, -0.17	**.013**	0.10	-1.18, 1.37	.883	-0.16	-0.77, 0.45	.614
-Other or rather not say	0.03	-0.96, 1.02	.955	-0.31	-1.35, 0.72	.553	-0.53	-2.44, 1.38	.583	0.17	-0.85, 1.19	.740
R^2	0.15			0.08			0.10			0.07		
	F(4, 4346) =159.4, *p*<.001			F(4, 4539) = 105.7, *p* <.001			F(4, 4346) = 91.1, p <.001			F(4, 4346) = 54.16, p<.001		

Table 6.5: Multiple regression models examining association between depth of use of drinking metrics and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and six months (July)

	Dependent variables: Changes from baseline to 6-months											
	Change in drinking days			**Change in non-drinking days**			**Change in weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Depth of use of drinking metrics	0.19	0.18, 0.21	**<.001**	0.10	0.09, 0.11	**<.001**	0.30	0.27, 0.32	**<.001**	0.13	0.11, 0.14	**<.001**
Age	-0.06	-0.09, -0.04	**<.001**	0.05	0.03, 0.08	**<.001**	-0.03	-0.08, 0.02	.209	-0.01	-0.03, 0.01	.465
Gender -Male	0.87	0.25, 1.48	**.006**	-1.04	-1.70, -0.38	**.002**	0.38	-0.96, 1.72	.579	-0.12	-0.74, 0.50	.710
-Other or rather not say	0.21	-0.83, 1.25	.691	-0.30	-1.45, 0.84	.605	-0.01	-2.04, 2.01	.989	0.12	-0.91, 1.14	.825
R^2	0.19			0.05			0.11			0.09		
	F(4, 3711) = 247.6, p<.001			F(4, 3881) = 71.05, p<.001			F(4, 3711) = 123.1, p<.001			F(4, 3711) = 59.9, p<.001		

Table 6.6: Multivariate multiple regression examining association between frequency of recording drinking and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and nine months (October)

	Dependent variables: Changes from baseline to 9-months											
	Change in drinking days			**Change in non-drinking days**			**Change in weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***	**β**	**95% CI**	***p***
Frequency of recording	0.34	0.31, 0.37	**<.001**	0.26	0.23, 0.29	**<.001**	0.53	0.48, 0.59	**<.001**	0.25	0.22, 0.28	**<.001**
Age	-0.06	-0.08, -0.03	**<.001**	0.03	0.01, 0.06	**.012**	-0.03	-0.08, 0.01	.174	-0.03	-0.05, -0.01	**.014**
Gender -Male	0.56	-0.03, 1.14	.061	-0.81	-1.46, -0.16	**.014**	-0.74	-1.99, 0.51	.243	-0.29	-0.90, 0.33	.362
-Other or rather not say	0.86	-0.20, 1.92	.111	-1.03	-2.14, 0.08	.070	-0.03	-2.02, 1.96	.974	0.18	-0.88, 1.24	.743
R^2	0.12			0.06			0.08			0.06		
	F(4, 4215) = 127.3, *p*<.001			F(4, 4404) =70.26, *p*<.001			F(4, 4215) = 79.2, *p*<.001			F(4, 4215) = 53.89, *p* <.001		

Table 6.7: Multivariate multiple regression examining association between depth of use of drinking metrics and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and nine months (October

	Dependent variables: Changes from baseline to 9-months											
	Change in drinking days			**Change in non-drinking days**			**Change in weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**B**	**95% CI**	***p***	**β**	**95% CI**	***p***
Depth of use of drinking metrics	0.17	0.15, 0.18	**<.001**	0.08	0.07, 0.09	**<.001**	0.25	0.22, 0.28	**<.001**	0.11	0.09, 0.13	**<.001**
Age	-0.04	-0.07, -0.02	**.002**	0.03	0.00, 0.06	.053	0.00	-0.05, 0.05	.959	0.00	-0.03, 0.02	.749
Gender -Male	0.90	0.24, 1.55	**.008**	-1.24	-1.94, -0.54	**<.001**	-0.32	-1.73, 1.10	.662	-0.03	-0.70, 0.63	.923
-Other or rather not say	0.54	-0.60, 1.68	.354	-0.71	-1.99, 0.57	.277	-0.60	-2.79, 1.60	.595	0.08	-1.04, 1.20	.884
R^2	0.16			0.04			0.09			0.08		
	F(4, 3059) = 177.3, p<.001			F(4, 3204) = 40.07, p <.001			F(4, 3059) = 77.63, p<.001			F(4, 3059) = 41.04, p<.001		

Exploratory Analysis

Latent Class Analysis was conducted across users completing the AUDIT-C between 1.12.22 and 7.1.23 (N= 23572) and a four class solution identified. Model fit statistics indicated that the five-class solution was a slightly better fit however it included a class with an estimated population share of less than 5% (Table 6.8). As such, the four-class model (Figure 6.1) was preferred.

Table 6.8: Evaluating class solutions for one to five class models

Model	AIC	BIC	χ^2	G^2	Smallest average latent class posterior probability
One class model	177062.9	177151.7	35909.81	34729.52	1.00
Two class model	158715.2	158900.8	16004.89	16357.77	0.27
Three class model	148818.5	149100.9	10585.8	6437.11	0.26
Four class model	145656.4	146035.5	3392.10	3250.93	0.07
Five class model	143434.8	143910.8	1268.622	1005.40	0.04

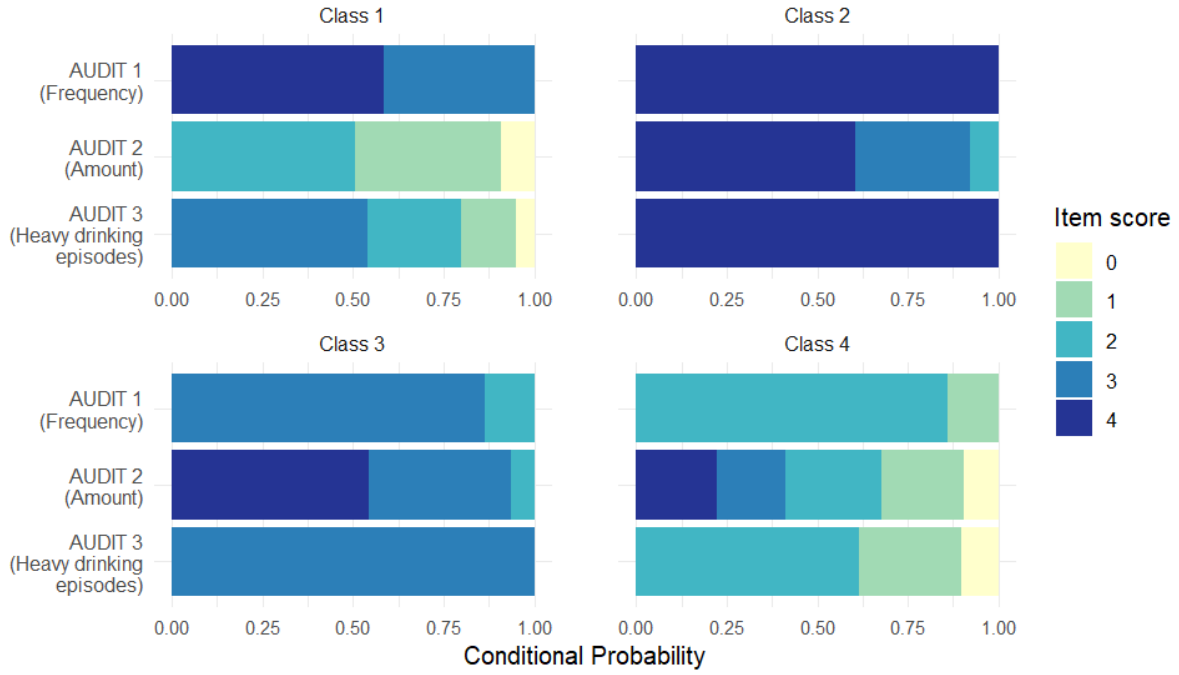

Figure 6.1: Conditional probabilities of indicators (AUDIT 1, AUDIT2, AUDIT 3) for four class solution *(Class 1: Frequent consumption, occasional heavy drinking; Class 2: Very frequent consumption, all drinking is heavy; Class 3: Regular consumption, mostly heavy drinking; Class 4: Less frequent consumption, occasional heavy drinking)*

Subgroups were named with respect to frequency of consumption and heavy drinking occasions. Class one had the largest population share (0.406). Try Dry users in this class frequently consumed alcohol typically drinking two or three drinks (<6 units) with the occasional heavy drinking day (*Frequent consumption, occasional heavy drinking*.) Users in the second class engaged in very

frequent alcohol consumption and all of their drinking occasions were heavy (*Very frequent consumption, all drinking is heavy;* population share =0.272). Users' in class three drank regularly with most drinking being heavy (*Regular consumption, mostly heavy drinking;* population share = 0.251). Class two and class three included similar proportions of users and together accounted for half of the Try Dry users who completed the AUDIT-C in the baseline period. The smallest class included the lightest drinkers of the four classes though this group of users did engage in occasional heavy drinking episodes (*Less frequent consumption, occasional heavy drinking;* population share =0.071).

Mean AUDIT-C for class one and class four drinkers placed them both in the 'increasing risk' category according to commonly used AUDIT-C cutoffs (Table 6.9). Whilst the classes were, numerically, at the upper and lower bounds of this category this does suggest that different patterns of consumption may be associated with similar levels of harm.

Table 6.9: Mean AUDIT-C, corresponding risk category, and demographics by class

	Class one: Frequent consumption, occasional heavy drinking (n = 9856)	**Class two: Very frequent consumption, all drinking is heavy (n= 6420)**	**Class three: Regular consumption, mostly heavy drinking (n = 5622)**	**Class four: Less frequent consumption, occasional heavy drinking (n = 1674)**
Mean AUDIT-C (SD)	7.31 (1.43)	11.5 (0.64)	9.41 (0.64)	5.59 (1.86)
AUDIT-C risk category	Increasing risk	Possible dependence	Higher risk	Increasing risk
Gender: n (%)				
Female	7091 (71.90%)	4032 (62.80%)	3433 (61.10%)	1177 (70.30%)
Male	1959 (19.90%)	1802 (28.10%)	1672 (29.70%)	346 (20.70%)
Other	13 (0.10%)	9 (0.10%)	8 (0.10%)	1 (0.10%)
Rather not say	793 (8.00%)	577 (9.00%)	509 (9.10%)	150 (9.00%)
Mean age(SD)	44 (11.10)	44.5 (9.70)	38.3 (9.77)	38.5 (10.80)
Dry January 2023 goal n (%)	8917 (90.5%)	5821 (90.7%)	5217 (92.7%)	1480 (88.40%)

Relative to class one users (*frequent consumption, occasional heavy drinking*), class two Try Dry users (*very frequent consumption, all drinking is heavy*) were significantly less likely to report increased drinking days, weekly consumption, or heavy drinking days or a decrease in non-drinking days between baseline and February (Table 6.10). Conversely, class three (*regular consumption, mostly heavy drinking)* and class four users (*less frequent consumption, occasional heavy drinking*) were, for the most part, more likely to report increased consumption. Try Dry users in class three were 2.77 times more likely to report increased drinking days, 1.19 times more likely to report increased weekly consumption, and 1.99 times more likely to report a reduction in non-drinking days. The opposite pattern was seen for heavy drinking days, where class three users were less likely than class one users to record an increase in heavy drinking days. Class four users were 4.94 times more likely to report increased drinking days, 2.25 times more likely to reported increase weekly consumption, and 2.56 times more likely to report decreased dry days relatively to class one users. Relative to

women, men were less likely to report decreased non-drinking days but more likely to report increased weekly consumption and heavy drinking days. Age was a statistically significant predictor of increased dry days but numerically was of negligible effect.

The same general pattern across classes of Try Dry users was evident between baseline and March, July, and October respectively with a few exceptions (Tables 6.11, 6.12, 6.13). Firstly, the association between class three and increased heavy drinking days was only significant in February. Additionally, the association between class three membership and increased weekly consumption was not significant in July (Table 6.12.) Finally the association between class 4 membership and increased heavy drinking days was not significant in July and October (Table 6.12 and 6.13.)

Men were significantly more likely than women to have increased weekly consumption and heavy drinking days for all time periods. A reduction in non-drinking days was only significantly more likely between baseline and February whilst an increase in drinking days was more likely between baseline and July. Associations between age and increased consumption according to any of the dependent variables were consistently small, even when statistically significant, and therefore of minimal substantive effect.

Table 6.10: Logistic regression analyses evaluating association between drinker type and likelihood of reporting increased alcohol consumption in February

Variable	Increase in drinking days			Decrease in dry days			Increase in weekly consumption			Increase in heavy drinking occasions		
	OR	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Class 2	0.30	0.22, 0.39	**<.001**	0.66	0.60, 0.73	**<.001**	0.33	0.28, 0.39	**<.001**	0.03	0.02, 0.05	**<.001**
Class 3	2.77	2.37, 3.23	**<.001**	1.99	1.79, 2.22	**<.001**	1.19	1.05, 1.35	**.008**	0.81	0.72, 0.91	**<.001**
Class 4	4.94	4.10, 5.95	**<.001**	2.56	2.18, 3.02	**<.001**	2.25	1.91, 2.65	**<.001**	0.98	0.83, 1.16	.798
Age	1.00	1.00, 1.01	.332	0.99	0.99, 0.99	**<.001**	1.00	1.00, 1.01	.808	1.00	1.00, 1.01	.067
Gender: Other or prefer not to say	0.92	0.72, 1.17	.529	0.96	0.82, 1.12	.567	0.91	0.74, 1.11	.374	0.82	0.66, 1.00	**.048**
Male	0.95	0.81, 1.11	.514	0.88	0.80, 0.97	**.011**	1.22	1.08, 1.38	**.001**	1.25	1.11, 1.42	**<.001**
Model Fit	$\chi^2(6) = 638.37$, $p < .001$			$\chi^2(6) = 558.01$, $p < .001$			$\chi^2(6) = 391.22$, $p < .001$			$\chi^2(6) = 1006.76$, $p < .001$		

Table 6.11: Logistic regression analyses evaluating association between drinker type and likelihood of reporting increased alcohol consumption in March

Variable	Increase in drinking days			Decrease in dry days			Increase in weekly consumption			Increase in heavy drinking occasions		
	OR	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Class 2	0.38	0.29, 0.49	**<.001**	0.75	0.66, 0.86	**<.001**	0.33	0.27, 0.41	**<.001**	0.05	0.03, 0.07	**<.001**
Class 3	2.60	2.20, 3.06	**<.001**	2.03	1.78, 2.31	**<.001**	1.20	1.03, 1.40	**.021**	0.89	0.77, 1.03	.125
Class 4	3.54	2.88, 4.34	**<.001**	1.68	1.41, 2.01	**<.001**	1.84	1.51, 2.23	**<.001**	0.91	0.74, 1.10	.332
Age	1.00	0.99, 1.01	.898	1.00	0.99, 1.00	.053	1.00	0.99, 1.00	.637	1.01	1.00, 1.01	.093
Gender: Other or prefer not to say	0.76	0.57, 1.00	.052	1.01	0.83, 1.22	.926	0.77	0.60, 0.99	**.049**	0.73	0.57, 0.93	**.011**
Male	1.18	1.00, 1.38	**.049**	0.97	0.86, 1.10	.684	1.23	1.06, 1.42	**.007**	1.41	1.22, 1.63	**<.001**
Model fit	$\chi^2(6) = 442.30$, $p < .001$			$\chi^2(6) = 233.53$, $p < .001$			$\chi^2(6) = 245.65$, $p < .001$			$\chi^2(6) = 690.26$, $p < .001$		

Table 6.12: Logistic regression analyses evaluating association between drinker type and likelihood of reporting increased alcohol consumption in July

Variable	Increase in drinking days			Decrease in dry days			Increase in weekly consumption			Increase in heavy drinking occasions		
	OR	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Class 2	0.35	0.25, 0.48	**<.001**	0.70	0.58, 0.85	**<.001**	0.35	0.26, 0.46	**<.001**	0.06	0.04, 0.10	**<.001**
Class 3	2.09	1.68, 2.59	**<.001**	1.68	1.40, 2.03	**<.001**	1.22	0.98, 1.51	.075	0.95	0.77, 1.17	.620
Class 4	3.24	2.48, 4.22	**<.001**	1.53	1.20, 1.95	**<.001**	2.02	1.55, 2.62	**<.001**	0.94	0.71, 1.24	.663
Age	1.00	0.99, 1.00	.377	0.99	0.99, 1.00	.110	1.01	1.00, 1.02	**.026**	1.00	1.00, 1.01	.250
Gender: Other or prefer not to say	0.80	0.54, 1.14	.232	1.03	0.78, 1.35	.830	0.94	0.66, 1.32	.735	0.93	0.65, 1.32	.703
Male	1.38	1.12, 1.69	**.002**	0.96	0.81, 1.13	.617	1.49	1.22, 1.82	**<.001**	1.60	1.30, 1.96	**<.001**
Model fit	$\chi^2(6) = 244.61$, $p = <.001$			$\chi^2(6) = 88.83$, $p = <.001$			$\chi^2(6) = 144.07$, $p = <.001$			$\chi^2(6) = 298.71$, $p <.001$		

Table 6.13: Logistic regression analyses evaluating association between drinker type and likelihood of reporting increased alcohol consumption in October

	Increase in drinking days			Decrease in dry days			Increase in weekly consumption			Increase in heavy drinking occasions		
Variable	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Class 2	0.38	0.26, 0.55	**<.001**	0.71	0.58, 0.86	**<.001**	0.35	0.25, 0.48	**<.001**	0.08	0.05, 0.12	**<.001**
Class 3	2.65	2.07, 3.39	**<.001**	1.85	1.53, 2.23	**<.001**	1.29	1.01, 1.64	**.044**	1.05	0.84, 1.32	.647
Class 4	4.36	3.23, 5.88	**<.001**	1.57	1.21, 2.03	**<.001**	2.38	1.77, 3.20	**<.001**	1.09	0.80, 1.47	.579
Age	1.01	1.00, 1.02	**.007**	1.00	1.00, 1.01	.221	1.01	1.00, 1.02	**.033**	1.01	1.00, 1.02	**.005**
Gender Other or prefer not to say	1.40	0.96, 2.01	.072	1.06	0.80, 1.41	.670	1.19	0.80, 1.72	.375	0.96	0.65, 1.39	.835
Male	1.24	0.98, 1.56	.068	1.00	0.84, 1.19	.980	1.64	1.31, 2.04	**<.001**	1.45	1.17, 1.80	**<.001**
Model fit	$\chi^2(6) = 227.05$, $p<.001$			$\chi^2(6) = 87.37$, $p <.001$			$\chi^2(6) = 131.19$, $p<.001$			$\chi^2(6) = 237.98$, $p <.001$		

Discussion

There was a reduction in alcohol consumption between December 2022 and February and March 2023 among Try Dry users who participated in Dry January. However, a sizeable proportion (min 13.01%) of users did experience increased consumption in February and/or March, suggesting that, for some, 'rebound effects' may be a legitimate concern. Significant reductions in alcohol consumption were also observed amongst users six and nine months after January. This aligns with previous research (de Visser et al., 2016; de Visser & Piper, 2020) and supports the findings from my second prospective survey study (Chapter V.) Again a substantial minority of users had increased consumption both six and nine months after Dry January. The proportion of users with increased drinking days, consumption, and heavy drinking days was comparable to previous research (de Visser et al., 2016). For a small proportion of users, use of different measures (drinking calendar or AUDIT-C) to obtain dependent variables at baseline and follow-up may have resulted in any change being exaggerated, nudging said user into the increased consumption category. However, comparable proportions of users with increased consumption were observed when examining increases or reductions greater than 10%. This suggests that, for the vast majority, apparent increases were not negligible and more likely to reflect actual change than be an artifact of using data from different measures at different timepoints.

Frequency and depth of engagement with the Try Dry drinking metrics predicted the extent to which alcohol consumption changed. More frequent engagement with the drinking metrics, i.e. recording alcohol consumption or non-consumption in the drinking calendar more frequently, during and after Dry January, was associated with a greater reduction in alcohol consumption at six and nine months. Similarly, deeper engagement with the drinking metrics, i.e. recording consumption and non-consumption and/or using the planned drinking option, also predicted a greater reduction in consumption at both follow-ups. This is in contrast to previous research which found that whilst self-monitoring drinking behaviour using the Drink Less alcohol reduction app partially mediated the effect of intervention on consumption, overall engagement with the app did not (Garnett et al., 2024). This may be explained by the fact that Garnett and colleagues examined engagement with the Drink Less app as a whole whilst, in the current study, I focussed only on engagement with the drinking metrics.

Additionally, measures were only included for two aspects of engagement– frequency and depth of use. Engagement with mobile apps has been conceptualised as multidimensional incorporating both behavioural and experiential factors (Perski et al., 2016). Therefore, the results of this study can more accurately be said to reflect *some* elements of behavioural engagement with the Try Dry app on changes in alcohol consumption. Nonetheless, they do suggest that engagement with drinking metrics may contribute to behaviour change following participation in Dry January.

Engagement with alcohol reduction apps has previously been shown to be initially high (e.g. after downloading/re-downloading the app) before reducing, with many users disengaging (Bell et al., 2020). In the current study, the number of users eligible for inclusion in analyses was substantially lower in March compared to February and in October compared to March. This reduction appears indicative of high levels of initial engagement which, for many people, is relatively short-lived. Furthermore, engagement with behaviour change apps is suggested to vary within as well as between users, according to both motivation and perceived usefulness of the app in question (Perski et al., 2019). Understanding patterns of engagement with Try Dry could help organisers identify key timepoints for promoting app use and discouraging disengagement. Future research should therefore examine trajectories of engagement (and disengagement) with the Try Dry app and its different components to attempt to identify patterns of use among Dry January participants.

Using baseline responses to AUDIT-C items I identified four distinct 'types' of drinker among Try Dry users. Previous research has used items from the AUDIT to identify patterns of consumption in UK drinkers (Smith & Shevlin, 2008) and identified subgroups of participants in the Dutch TAC 'IkPas' according to determinants of change in alcohol consumption (Kools et al., 2024). To the best of my knowledge, patterns of responses to AUDIT-C items have not previously been used to identify subgroups of Dry January participants. Whilst these typologies cannot be generalised beyond users of the app, my findings suggest that moving beyond the aggregate score to consider AUDIT-C item scores could offer additional insight into patterns of consumption.

Analyses of these latent subgroups demonstrated that, compared to frequent alcohol consumers who occasionally engaged in heavy drinking, increased consumption in February and March was more likely for regular alcohol consumers who engaged in mostly heavy drinking and less frequent drinkers who had occasional heavy drinking days. Drinkers who consumed alcohol most frequently and always or almost always had heavy drinking days were less likely to experience increased consumption in February and/or March. The same associations were observed with regards to increased consumption six and nine months after Dry January. Overall, the lighter drinking the user group, the greater likelihood of them reporting increased consumption relative to the user group with the largest population share. These findings are suggestive of regression to the mean, previously observed when alcohol consumption is measured over time (McCambridge et al., 2014). To elaborate, heavier drinkers were more likely to report reduced consumption over time whereas lighter drinkers more likely to report an increase in consumption, even when they were not participating in a behaviour change intervention (McCambridge et al., 2014). This suggest that at least some of the increases in consumption observed in the current study may be attributable to regression to the mean and could have occurred notwithstanding Dry January participation. Given this, and the lack of a control group of users not participating in Dry January, I suggest it is not possible to conclusively identify groups who are more likely to experience rebound effects after taking part in Dry January. However, it is

possible to conclude that regression to the mean may contribute to the increases and reductions in consumption observed following participation in Dry January. Here I focussed on identifying who was most at risk of experiencing unintended harms, i.e. 'rebound effects,' following participation in Dry January. Future research should also seek to develop an understanding of the mechanisms underpinning such harms with a view to reducing the likelihood of them occurring (Bonell et al., 2015).

Strengths of this study include its use of existing data which yielded a large sample size enabling statistically well-powered analyses confirming the association between participation in Dry January and enduring changes in consumption. Use of multiple measures of alcohol consumption maximised the sample size and ensured inclusion of users who used the app in diverse ways. In addition to confirming previous results, this analysis also contributes novel findings. To the best of my knowledge, this is the first study to examine association between engagement with the Try Dry app and alcohol consumption and the first to identify subgroups of Dry January participants according to AUDIT-C responses.

This study also had several limitations. Firstly, the nature of the data meant that it was not possible to identify and include a 'No Dry January' control group. As such, whilst my previous prospective study indicated that reductions in consumption among Dry January participants were not entirely attributable to seasonal variation in consumption (Chapter V) it is not possible to make that claim here. Additionally, only Try Dry users' who reported their alcohol consumption in the designated baseline period and at least one of the months of interest were included in the analysis. Whilst it was necessary to define a period from which to take baseline measures of consumption, Dry January participants who became aware of the app and downloaded it later in the month (from 8th January onwards) would not have been included in the analyses reported here. Similarly, users' who used the app during January but did not use the app (enough) in the follow-up periods would also have been excluded from analysis. Findings may therefore be biased according to users' longer-term patterns of use. Conversion of AUDIT-C item scores to measures of drinking days, non-drinking days, weekly consumption, and heavy drinking days maximised the number of users' data included in analysis but only provided estimates of drinking behaviour. However, robustness of results to sensitivity analyses does suggest we can have reasonable confidence in the findings. Finally, this study investigated UK-based Try Dry app users who participate in Dry January. As such findings may not be generalisable to users of other alcohol reduction apps or participants of other TAC's.

In summary, participation in Dry January by users of the Try Dry app is associated with reductions in alcohol consumption evident up to nine months after the end of January. Nonetheless, a substantial minority of users did experience increased consumption following Dry January. Increased frequency and depth of use of the app may be associated with greater reductions in consumption highlighting the

importance of maximising engagement and identifying times where disengagement is most likely. Different subgroups of Dry January participant can be identified according to patterns of consumption, with less frequent drinkers with limited heavy drinking occasions more likely to report increased consumption post-January. However, it is unclear to what degree this is a 'rebound effect' of Dry January participation and to what degree it reflects regression to the mean and would have occurred notwithstanding participation in Dry January. In consideration of this, future research should prioritise investigation of the mechanisms underpinning *all* Dry January outcomes, positive and negative, to provide knowledge to enable organisers to maximise the benefits and minimise potential harms as far as possible.

Chapter VII

General Discussion

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Contributions: I wrote the original draft of this chapter. MF and IK reviewed and provided feedback.

The overarching aim of this thesis was to establish the psychological and social changes underlying reductions in alcohol consumption following participation in Dry January by heavy drinkers. It employed a mixed methods approach, using prospective observational studies, semi-structured interviews, and secondary data analysis to address the following research questions.

RQ1 Does 'official' participation in Dry January result in enduring changes to alcohol consumption for people who are heavy drinkers?

RQ2 Are comparable changes in alcohol consumption for 'official' Dry January participants who are heavy drinkers also seen in:

a) Heavy drinkers who do not participate in Dry January

b) Heavy drinkers who attempt Dry January 'unofficially'

RQ3 Are enduring changes to alcohol consumption in 'official' and 'unofficial' Dry January participants who are heavy drinkers, relative to heavy drinkers who do not participate in Dry January, associated with (changes in) psychological or social determinants of alcohol consumption?

RQ4 What factors predict participation in Dry January by heavy drinkers?

Summary of results

Participation in Dry January was consistently and robustly associated with a reduction in alcohol consumption six months later (RQ1). Among Try Dry users, reductions were also evident nine months post-January. Reductions in consumption were also observed among those not participating in Dry January and those undertaking an 'unofficial' Dry January. There was convincing evidence of greater reductions in consumption for 'official' participants than those not participating in Dry January (RQ2a). Additionally, there was reasonable evidence of greater reductions in alcohol consumption for 'official' compared to 'unofficial' Dry January participants (RQ2b). A substantial minority of 'official' participants using the Try Dry app experienced an increase in consumption following Dry January participation. Lighter drinkers who infrequently engaged in heavy drinking were more likely to report increased consumption one or two months after Dry January.

Different psychological and social factors were associated with reductions in consumption for 'official' and 'unofficial' participants (RQ3). Among 'official' Dry January participants, greater reductions were associated with higher baseline alcohol consumption, increases in DRSE and, slightly less robustly, motivation to change during January. Significant indirect pathways linked 'official' participation to reduced consumption via increased DRSE and via level of abstinence and increased DRSE. Post-January, increases in DRSE, weakening of drinker identity, use of more SETs and greater frequency of use of the Try Dry app predicted greater reductions at six months. Findings regarding 'unofficial' Dry January participants were less robust and consequently, for the most part, cannot be considered conclusive. Perhaps the one exception to this is baseline alcohol consumption, higher levels of which were consistently associated with greater reductions in alcohol consumption. There was also partial, though inconclusive, support for an association between greater abstinence and greater social contagion. Despite distinct patterns of association between changes in psychological and social determinants and ongoing reductions in consumption, minimal differences in strategy use between 'official' and 'unofficial' participants were observed.

Relative to those not participating, people attempting Dry January had higher alcohol consumption, greater motivation to change, higher household income, and more strongly identified as a drinker at baseline (RQ4). Some evidence also suggested that they were younger and had lower DRSE at baseline. The same pattern was observed when comparing predictors of 'official' vs 'unofficial' participation, such that 'official' participants tended to have even greater consumption, were even more motivated to change, had an even higher household income, and an even stronger drinker identity at baseline. Again, some evidence indicated they were even younger with even lower baseline DRSE than their 'unofficial' counterparts.

Interpretation of results

Comparable reductions in median AUDIT-C score at six months were observed for 'official' Dry January participants in both prospective studies (reduction of one and a half, and two points in Chapter III and V respectively). On average, Try Dry users who participated in Dry January had seven fewer drinking days, three more non-drinking days, and three fewer heavy drinking days per month and a reduction in average weekly consumption of 13.7 units (Chapter VI). Together this provides convincing evidence that participation in Dry January is associated with reductions in consumption among heavy drinkers.

Concerns regarding potential 'rebound effects' appear to be valid. Whilst the majority of Try Dry users who participated in Dry January reduced or did not change their alcohol consumption following January, a significant minority experienced increased consumption, one, two, six, and nine months later (Chapter VI). Increased consumption following Dry January participation has been observed

previously. In one study, between eight and 14.8% of 'official' Dry January participants who remained fully abstinent, and 12.3%-17.2% of those who did not reported increased consumption six months later (de Visser et al., 2016). My findings corroborates the occurrence of 'rebound effects' for a proportion of participants suggesting that, for some people, taking part in Dry January has potentially deleterious effects. Lighter drinkers appeared more likely to report increases. Whilst this may be partially attributable to regression to the mean (McCambridge et al., 2014) it nonetheless indicates that there are people for whom Dry January participation is not beneficial. It also substantiates the importance of my efforts to recruit groups well-matched on baseline consumption in the prospective observational studies.

Greater reductions among 'official' compared to No Dry January participants (Chapter III and V) indicate that changes in consumption following Dry January participation are not fully attributable to seasonal variation in alcohol consumption. However, a small reduction in consumption among No Dry January participants in the second prospective study suggests that *a proportion* of the reductions in consumption observed in Dry January participants may be explained by seasonal variation in consumption. Unfortunately, my attempts to obtain pre-Christmas measures of alcohol consumption were unsuccessful (it was difficult to recruit participants in early December). This would have enabled me to determine whether this reduction reflected a return to typical levels of drinking following increased consumption over the festive period. Alternatively, with around 20 % of higher risk drinkers believed to be attempting to reduce their alcohol consumption at any time (de Vocht et al., 2016), small reductions in average consumption at six months may reflect attempts at behaviour change among members of the No Dry January group, for example, attempts to "cut down" in the New Year without committing to a Dry January. Nevertheless, the results presented in this thesis indicate that reductions in consumption for 'official' Dry January participants exceed any reductions, irrespective of the cause, reported by people who did not take part in Dry January.

Whilst I have concluded that greater reductions in consumption were observed for 'official' relative to 'unofficial' participants, it is important to note that there was some inconsistency in the results (Chapter III and V). No significant difference in reductions between 'official' and 'unofficial' participants was detected in the first prospective study. Greater reductions in consumption for 'official' participants were however found in the second prospective study. This may be explained by methodological, and consequently statistical, limitations of study one. In this study, there were only 18 participants in the 'unofficial' Dry January participant group: considerably lower than the intended group size of 140. This would have been insufficient to detect either the estimated effect size informing the power calculation, or the actual effect size observed in the second prospective study. As such, for this particular research question, I believe it is reasonable to draw conclusions based on the findings of the second prospective study only. Consequently, I conclude that greater reductions in

consumption among ‘official’ compared to ‘unofficial’ participants suggests that registering for Dry January and having access to structured online supports may enhance the benefits of participation.

Next, I offer interpretation regarding the psychological and social determinants of change associated with reductions in alcohol consumption following participation in Dry January. Given the limited consistency of findings regarding ‘unofficial’ participants, here I focus on elucidating mechanisms of change observed in ‘official’ participants. Figure 7.1 details the mechanisms through which different elements of Dry January lead to ongoing changes in alcohol consumption, mostly based on findings reported in my thesis.

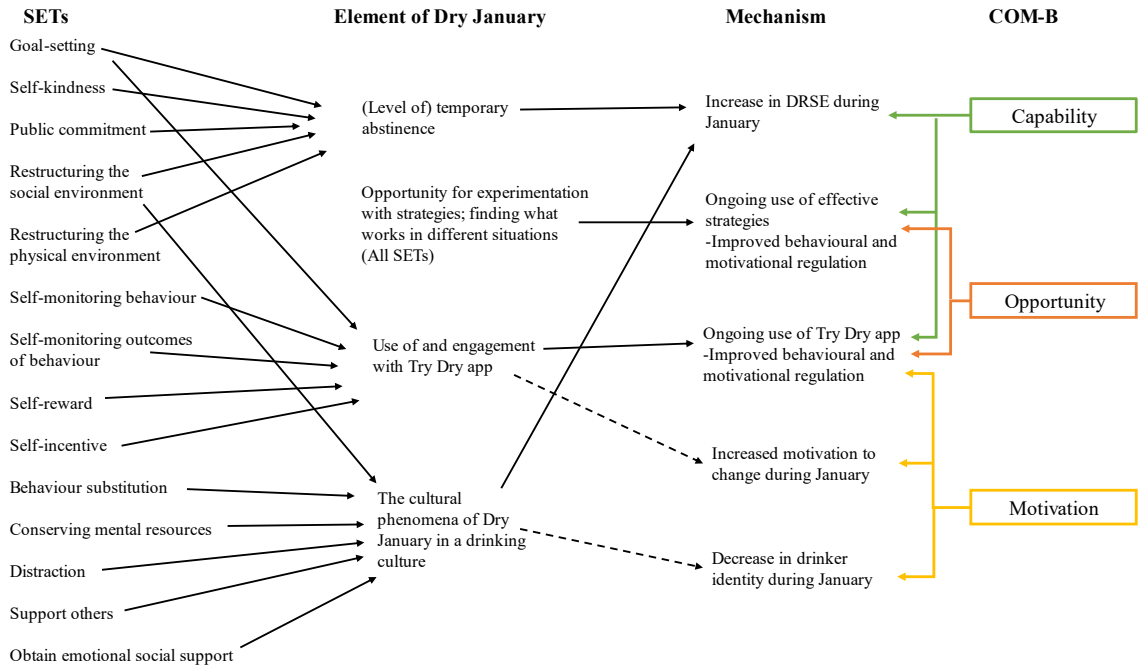

Figure 7.1: Logic Model illustrating the SETs used in each element of Dry January, the mechanisms through which individual elements lead to reductions in alcohol consumption at six months and the corresponding COM-B component for each mechanism. Dotted lines indicate theorised links that are not evidenced in the current thesis.

The extent to which people remain abstinent during Dry January predicted an increase in DRSE during January which in turn predicted a reduction in consumption at six months (Chapter V). This aligns with previous research (de Visser et al., 2016) and confirms that increased DRSE mediates mid-term reductions in alcohol consumption. Use of some SETs appeared to limit any consumption that occurred during January (Chapter III) whilst others contributed to a self-compassionate approach (Chapter IV) and ultimately to increased DRSE. Making a quasi-public commitment to abstinence during Dry January may have helped limit consumption due to the potential for social disapproval should people be observed drinking (Witvorapong & Watanapongvanich, 2020). Restructuring the social environment was also associated with reduced consumption during January. Participants reported modifying their social environments through changing the context and company in which

they socialised. Doing so resulted in changes to social influences, e.g. spending less time with certain people, which is believed to underpin behaviour change (Carey et al., 2019).Individual definitions of success and self-compassionate approaches influenced people's responses to lapses (Chapter IV) and may have contributed to increases in DRSE. Whilst behavioural goal-setting may be expected to be relatively consistent across Dry January participants – to abstain from alcohol for the month of January – it appears more nuanced. More flexible definitions of 'success' often accompanied a self-compassionate approach to lapses in abstinence. Responding to lapses with self-kindness, one of the main components of self-compassion (Neff, 2003), and reflecting on both the difficulties and effort involved in behaviour change "*in a kind and accepting way*" (Knittle et al., 2020) may have helped people avoid the negative cognitive and affective responses of an abstinence violation effect (AVE; Marlatt & Gordon, 1985; Curry et al., 1987). In addition to supporting perseverance with Dry January and maximising abstinence, this may also have served as a learning experience and increased self-efficacy (Marlatt & Gordon, 1985; Collins & Witkiewitz, 2020). With DRSE a domain specific example of self-efficacy, it is reasonable to extrapolate and suggest that successfully averting an AVE following a lapse, learning from this experience and, crucially, persisting in Dry January may contribute to an increase in DRSE.

This association also supports the notion that the relationship between DRSE and alcohol consumption is one of reciprocal determinism (Bandura & Walters, 1977; Jenzer et al., 2021), with DRSE both influenced by prior consumption and influencing future drinking. Jenzer and colleagues found evidence of such a relationship between drinking experiences and DRSE in US college students (2021). Negative drinking consequences and greater consumption were associated with reduced DRSE which subsequently predicted greater consumption and negative consequences. In the context of Dry January, this relationship might play out as follows. Increased abstinence in January predicts increased DRSE at the end of January. This facilitates moderation or continued abstinence which in turn predicts further increases in DRSE at six months. Several stages of this pathway have been evidenced in this thesis (Chapter III and V) including a significant relationship between change in DRSE in the six months after January, and consumption. Alongside structural equation models which demonstrated the association between level of abstinence, increased DRSE post-January, and consumption at six months, this provides reasonable support of reciprocal determinism as the foundation of the relationship between DRSE and alcohol consumption during and following Dry January.

Increased DRSE was also independently associated with enduring reductions in alcohol consumption, irrespective of the level of abstinence (Chapter V). Originally, I hypothesised that, during January, cultural norms would shift such that temporary abstinence became acceptable. My findings provide mixed evidence of this. The phenomenon that Dry January has become meant that, as previously reported (de Visser & Lockwood, 2018), it was widely recognised by those not taking part (Chapter

IV). However, recognition was not necessarily accompanied by acceptance thus increasing the challenge of not drinking for some participants. Being required to refuse alcohol in a (sometimes) unaccepting drinking culture may have also influenced increases in DRSE. Drink refusal training has been associated with increases in self-efficacy (Witkiewitz et al., 2012). Refusing alcohol in a drinking culture may have similar effects for Dry January participants as they repeatedly 'practice' and effectively train themselves in developing their ability to refuse alcohol. Recollections of one interviewee in Chapter IV who, when describing alcohol-free socialising, spoke of it becoming increasingly easier and requiring less preparation the more they did it, exemplifies this. Reactions to non-drinking during Dry January may also contribute to future drinking decisions in other ways. According to the motivational model of alcohol use, past drinking experiences are distal determinants of alcohol consumption which can influence future drinking decisions via people's affective expectations of consuming/not consuming alcohol (Cox & Klinger, 1988, 2004). People who experienced positive reactions to their abstinence during January might subsequently have reduced expectations of undesirable consequences from abstaining in the future, thereby increasing the likelihood of deciding not to drink. Mixed findings regarding the association between use of the Try Dry app during January and ongoing reductions in alcohol consumption (Chapter V and VI) may be explained by differential effectiveness depending on when the app was used (Chapter IV). Increased engagement throughout January and up to six months later was associated with greater reductions in consumption at six months (Chapter VI). However, when use during and following January were examined separately, there was no evidence that frequency of use of the app during January predicted consumption at follow-up (Chapter V). This may be due to some participants perceiving the app to be less useful during January, particularly with respect to self-monitoring, given the lack of variation in their alcohol consumption (Chapter IV). Conversely, after January, particularly during attempts to moderate consumption, there is greater scope for users to set personalised goals, record consumption and/or non-consumption, and monitor their progress. In this context, the app may be perceived as more helpful by users. Nevertheless some individuals did find the app helpful during January and were motivated by the rewards (acknowledgement, badges) it offered. The Try Dry app facilitates SETs targeting both self-regulation and motivation. It is possible that during January whilst the behavioural regulatory role is less relevant (for some users), the motivational role becomes more so. As such, I tentatively propose that use of Try Dry during January, whilst not directly associated with reductions in consumption, may contribute to increased motivation to change during the month.

Dry January was also a time for experimentation with different strategies, resources, and supports (Chapter IV). Dry January and other TACs have been conceptualised as embodied learning experiences (Robert, 2016; Yeomans, 2019) during which people learn how being alcohol-free influences them physically, psychologically, and socially and consequently the impact it could have on their lives (Robert, 2016). I postulate that this embodied learning extends to participants'

awareness, understanding, and use of SETs to change their drinking behaviour. Dry January provides an opportunity to experiment through trial and error, learning from others' experiences, or returning to tried and tested techniques. In doing so people learnt what did and did not work for them and understood the impact it had on both their alcohol consumption and other areas of their lives. It also afforded people the chance to identify alternative incentives to alcohol, e.g. meaningful social interactions, exercise, and to experience the benefits and positive affect associated with these incentives. On subsequent occasions when a decision to drink is being considered anticipation of expected benefits of other incentives may outweigh the expected benefits of consuming alcohol (Cox & Klinger, 2004) thereby reducing the likelihood of deciding to drink.

Experimentation during January also informed strategy use post-January, although strategy use also developed in respect of changing goals, e.g. moderation rather than abstinence (Chapter IV). A range of SETs encompassing both behavioural regulation (e.g. self-monitoring of behaviour) and motivation (e.g. self-incentive) (Michie et al., 2012) were used after January. Whilst there was no association between change in motivation following January and reduction in alcohol consumption, the use of SETs post-January may have contributed to maintenance of motivation. In some instances SETs typically considered to address self-regulation (Michie et al., 2012; Hennessy et al., 2020), for example self-monitoring behaviour or outcomes, also appeared to contribute to motivation (Chapter IV). However, average motivation to change was high at baseline and slightly increased over January (Chapter III and V). As such, there is also a possibility that subsequent increases in motivation or associations between change in motivation post-January and six month consumption may have been concealed by ceiling effects (Cramer & Howitt, 2004; Chyung et al., 2020). Additionally, both SET and Try Dry use post January may be indicators of intention and/or commitment to make ongoing changes to alcohol consumption. Use of SETs and/or Try Dry are more likely where people are actively attempting to make ongoing changes to their alcohol consumption. Therefore, it is possible that the number of SETs utilised and frequency of Try Dry use are *markers* rather than drivers of attempts to reduce alcohol consumption following Dry January participation.

The extent to which people identified as drinkers reduced during January. Change following January was predictive of greater reductions in alcohol consumption at six months (Chapter V). However, the aspect of Dry January participation driving this change remains unclear. Drinker identity was not discussed by interviewees (Chapter IV) and was not found to be part of any pathway of change during SEM (Chapter V). Nevertheless, it is possible to elaborate on my initial theories (Chapter II) regarding the *potential* role of drinker identity. As such, I propose a link between the phenomena of Dry January in a drinking culture and reductions in drinker identity. As described in the literature review in Chapter II, identity change is considered important in recovery from AUD (Dingle et al., 2015; Best et al., 2016; Best et al., 2018) and may also be relevant in reducing consumption in heavy drinkers (Geusens & Beullens, 2023). Non-conformity with the expectations and conventions of a drinking culture is challenging (Cherrier & Gurrieri, 2012) but may be easier during Dry January

when temporary abstinence is in the zeitgeist. For drinking identity change to occur, people need to have the ability to see themselves in an alternative identity, for example as a non-drinker (Lindgren et al., 2013). Dry January may increase the ease with which people are able to see themselves as a different type of drinker or non-drinker. Considering again Dry January as a time for embodied learning and experimentation, people can use this time to try out alternative drinking identities and examine their own and others' responses to this change. Where evaluations of this experiment are positive, the ability to see themselves in an alternative identity longer-term may contribute to a weakening of existing drinker identity.

The association between decrease in drinker identity following (but not during) January, and consumption at six month follow-up suggests that, while Dry January may be the time during which change is initiated, it is lasting identity change which is the important driver of sustained change. This speaks to the need for research considering long-term, rather than mid-term outcomes of Dry January participation and changes in potential determinants of change. To further elucidate mechanisms of change, changes in drinker identity should also be considered in conjunction with use of online communities. Development of a stronger recovery identity through engagement in online communities has been shown to predict retention in a recovery program (Bliuc et al., 2017). Whilst this is a different population to those participating in Dry January similar changes may occur. For example, engagement with an online community may prompt changes in drinker identity which in turn lead to longer term reductions in consumption. Originally, I intended to explore individual and collective identity change in the planned online ethnography. Had it been possible to continue this element of my thesis, this might have provided further insight into the role of drinker. Instead, future research, into Dry January specifically and drinking related behaviour change more broadly could and should examine if and how online communities contribute to changes in drinker identity.

Practical implications

These findings have a number of practical implications. Evidence of enhanced benefits for 'official' participants can be shared to encourage people intending to have an alcohol-free January to register for the official campaign and make use of the online supports provided. Similarly, evidence of the benefits of Try Dry use post January should be communicated to potential participants to encourage ongoing app use. Approaches which recognise that people may not have found the app particularly useful during Dry January itself but may find it helpful when trying to moderate their alcohol consumption post-January could also be considered.

Furthermore, my findings confirm that increases in DRSE during January mediate reductions in consumption at six months for Dry January participants. Whilst this aligns with previous evaluation of the UK Dry January it is inconsistent with evidence from other TACs (Esselink et al., 2024; Thienpondt, Van Cauwenberg, et al., 2025). Future work could compare different TACs and attempt to

systematically identify the similarities and differences between campaigns and outcomes, for example prospective observational studies which compare outcomes for participants from the UK Dry January and other temporary abstinence campaigns that run in January with a different focus (e.g. Dryathlon). Doing so would provide insight into the extent to which generalising findings between campaigns is reasonable.

Having identified constructs which are significantly associated with reductions in alcohol consumption it is possible to develop elements of online supports which target them. For example, Voogt and colleagues found that providing advice on how to resist alcohol in situations considered high risk for alcohol refusal increased social pressure DRSE in an intervention group relative to a control group (2014). Dry January organisers could consider incorporating similar, relatively simple, interventions in the Try Dry app.

Understanding who participates in Dry January and who registers for the 'official' campaign provides some insight as to who the campaign is reaching and also who it is not reaching. Whilst likely to be influenced by mode of participant recruitment, my findings suggest that the campaign may not be reaching or engaging with people from lower income households. People from lower SES backgrounds are disproportionately affected by alcohol harm even when consuming less alcohol than their more affluent peers (Bellis et al., 2016). As such, it is important for the campaign to effectively attract and connect with this population. Establishing why Dry January is failing to engage people from lower income households or barriers to participation is a necessary first step to making Dry January relevant to even more people. Conducting focus groups or interviews with individuals from lower SES households who have attempted to make changes to their alcohol consumption but who have never participated in Dry January would be the first step towards understanding, and ultimately addressing, these barriers.

Theoretical implications

This thesis contributes to the literature on TACs and ongoing behaviour change by providing robust evidence of reductions in alcohol consumption among heavy drinkers. Identification of factors that predict participation both confirms and extends previous work by examining the predictors of 'official' relative to 'unofficial' participation. Whilst these results should be interpreted with caution given the potential variance introduced by different routes of recruitment, they suggest that Dry January is reaching its intended audience. Reassuringly, they indicate that those who might most benefit from Dry January (heavier drinkers), are more likely to be engaging with the 'official' campaign and benefiting from the resources associated with this

It also contributes knowledge regarding the psychological and social factors that are associated with reductions in consumption following Dry January participation, which have been guided by the COM-B framework. (Michie, van Stralen, et al., 2011). Placing my findings within the COM-B framework

means that they can be used to investigate other candidate determinants of change and, in combination with the behaviour change wheel, to identify appropriate interventions to add to existing supports.

Results presented in this thesis may also enhance our understanding of self-guided drinking behaviour change beyond Dry January. Whilst the 'official' Dry January may be considered a Public Health intervention, for many people, particularly those taking part 'unofficially,' it may be more accurately described as self-guided behaviour change (Bishop, 2018; Knittle et al., 2020). Insights into the approaches taken by individuals to identify and enact strategies to modify their drinking behaviour after Dry January may apply to self-guided behaviour change more broadly. These findings demonstrate that, even when supports are designed to facilitate particular techniques, considerable variation in use means that they may not be utilised exactly how developers intended. This emphasizes the value of establishing not only which SET(s) is being used but also how they are being enacted (Hankonen, 2021) when attempting to identify the mechanisms underlying behaviour change. With self-guided change believed to account for the majority of drinking behaviour change (Bishop, 2018), it is important to develop a more comprehensive understanding of how people use techniques to attain these changes. My findings make a small but important contribution to this.

There are also additional implications for our understanding of SETs, particularly regarding categorisation of them as targeting self-regulation or motivation. My findings suggest that SETs which are primarily associated with self-regulation may also have a motivational role. Currently the motivational impact of self-regulation is not well understood, though researchers have highlighted the important of expanding our understanding of this (Hankonen, 2021). In the current thesis, self-monitoring, which is believed to contribute to behaviour change through behavioural regulation (Michie et al., 2012; Carey et al., 2019), was revealed to have a primarily motivational role in some contexts. This does not negate its regulatory role but suggests that, in some circumstances, its motivational contribution is equally or more important. It is important to note that the COM-B model does not contend that the different factors influencing behaviour are fully independent. Thus it is entirely plausible that in situations where self-monitoring has a regulatory and motivational role it would contribute to both the capability (psychological) and motivation (reflective) requirements of behaviour change. In the case of Dry January, engaging in effective behavioural regulation, e.g. regularly self-monitoring drinking during January on the app, may contribute to increasing psychological capability. The act of reflecting on the success of their self-monitoring and knowing they can continue to make use of it longer-term if they wish, may strengthen someone's belief in their ability to change behaviour over the longer-term and increase their optimism for ongoing change, thus also increasing reflective motivation. Where an SET impacts on several or all components of the COM-B model at once it arguably has a greater influence on behaviour change. People attempting to change their drinking behaviour may therefore benefit from being encouraged to employ this technique. Overall, my findings suggest we may need to reconsider our understanding of the

mechanisms of action through which some SETs influence behaviour and look to establish if, and when, different mechanisms are prioritised.

Identification of self-compassion as a potentially important construct with respect to Dry January also contributes to the broader, limited body of evidence regarding self-compassion and behaviour change. Whilst greater trait self-compassion has been associated with reduced alcohol consumption, evidence regarding the role of self-compassion in treatment outcomes is extremely limited and inconsistent (Berg et al., 2024). Future research could enhance our understanding of the role of self-compassion in drinking behaviour change by investigating self-compassion as a potential mediator and/or moderator of reductions in alcohol consumption in the context of Dry January participation and other behaviour change interventions. Examining the role of state as well as trait self-compassion would provide insight into daily fluctuations in self-compassion (Biehler et al., 2024). This may be particularly pertinent to Dry January given self-compassion's theorised role in responding to lapses in abstinence. Evidence from the wider behaviour change literature supports this, with self-compassion appearing to help people persist with weight loss goals following dietary lapses (Thøgersen-Ntoumani et al., 2021). Future research should therefore consider the role of both state, perhaps using ecological momentary assessment, and trait, through inclusion in prospective surveys, self-compassion to determine whether they respectively confer protective effects following lapses in abstinence and are associated with changes in alcohol consumption.

Finally, varying definitions of what constitutes a "successful" Dry January, and the observed association between *level* of abstinence and increased DRSE highlight the importance of avoiding false dichotomies. With a successful Dry January or TAC experience typically conceptualised as one in which total abstinence is maintained, these findings highlight the need to take a more nuanced view. Despite concerns around loss of information, increased risk of false positives, and loss of statistical power (Altman & Royston, 2006), there is often a pragmatic need for some form of dichotomization in research and practice. Indeed, the population who are the focus of the current thesis were identified through dichotomizing (heavy drinker/not heavy drinker.) However, my findings demonstrate that this runs the risk of confounding or concealing relationships. In addition to level of abstinence, *frequency of* Try Dry use, and *engagement* with drinking metrics provide valuable information which would have been lost were a binary variable (e.g. used Try Dry/did not use Try Dry) employed instead. This has implications for our understanding of the mechanisms behind Dry January and the practical application of this knowledge. Oversimplification therefore not only does a disservice to individual experiences, but, in focussing on absolutes, we increases the risk of obscuring potentially important relationships.

Strengths and limitations

This thesis has a number of strengths, firstly in presenting research which confirms and extends findings from prior studies of Dry January. A rigorous approach was taken to hypothesis testing with all quantitative studies preregistered to ensure transparency. Key results regarding change in consumption were replicated across multiple studies increasing the validity and reliability of these findings and lending credibility to claims that participation in Dry January is associated with reductions in alcohol consumption. Limitations of previous research were addressed, for example through use of well-matched comparison groups. Furthermore, constructs not previously investigated in the context of TACs were examined and other potential determinants of change highlighted for investigation in future work. Finally, this thesis, and indeed this subject, benefits from a mixed-methods approach. Integration of quantitative and qualitative findings provides insight into not only the what and who but also the how and why of Dry January associated behaviour change. This contributes to development of a more nuanced understanding of the association between Dry January participation and ongoing changes to alcohol consumption.

This thesis also has a number of limitations. It is limited by recruitment difficulties and poor retention (Chapter III), potentially fraudulent participants (Chapter IV), and inconsistent reporting (Chapter V). Data from 'unofficial' participants was disproportionately affected by issues with retention. This reduced the robustness of findings regarding the psychosocial factors associated with change in alcohol consumption among this group. Different routes of recruitment were used to attempt to resolve these issues in later studies, for example using Prolific which has been found to produce higher quality data than other platforms (Douglas et al., 2023). Despite this, inconsistent responses in Chapter V suggest some participants misrepresented themselves to be included in the study and receive payment (Kan & Drummey, 2018). Similarly, a small number of interviewees (Chapter IV) displayed characteristics indicating they were not genuine Dry January participants (Pellicano et al., 2023; Ridge et al., 2023). Whilst actions were taken to maintain data integrity – instructional manipulation checks, sensitivity analyses, and exclusion of data – this nonetheless remains a limitation. Future research should aim to deter fraudulent participation, for example by only including research platform recruited participants with high reputation, or issuing warnings against dishonesty (Newman et al., 2021). Additionally, pragmatic decisions were necessary to limit the scope of studies and ensure feasibility, e.g. the number of SETs examined, but may have prevented relevant SETs, constructs, or mechanisms being examined. Finally, all quantitative data were observational with participation in Dry January self-selected. To definitively establish causality between Dry January participation and subsequent changes in alcohol consumption alternative methodologies, for example randomised controlled trials, should be employed.

Future directions

Throughout this chapter I have indicated areas where additional research would be beneficial including establishing the barriers to participation for people from lower SES households, and further examination of other potential determinants of change as highlighted by the current work, e.g. self-compassion. There are also a number of other areas where further research is necessary. Firstly, whilst this thesis provides evidence of mid-term reductions in alcohol consumption following Dry January participation it remains unclear if changes are maintained long-term. Whilst a focus on behaviour change initiation rather than maintenance is common, establishing the potential for and mechanisms of prolonged change is vital (Kwasnicka et al., 2016). Future research should therefore attempt to determine the long-term effects of Dry January participation, establish whether repeat participation result in cumulative benefits, or enhances any 'rebound effects,' and explore the mechanisms contributing to maintaining reductions in alcohol consumption. Finally, the psychological and social changes associated with 'unofficial' Dry January participation require further elucidation. Whilst they may not be participating in the intervention of Dry January as envisioned by organisers it is still necessary to understand the experience of 'unofficial' participants. Confirming how mechanisms of change differ between 'official' and 'unofficial' participants would at the very least provide insights into the changes which are unique to 'official' participation. An ambitious but potentially informative study would be an RCT randomising people interested in reducing their alcohol consumption to an 'official' Dry January, 'unofficial' Dry January or non-abstinence (but directing them toward alternative support e.g. NHS advice). This would yield valuable evidence regarding the impact of Dry January participation, and how this differs for 'official' and 'unofficial' participants, that could inform government advice and the specifics of future campaigns. This evidence could also be used to encourage registration and, hopefully, increase the number of people experiencing the enhanced benefits associated with 'official' Dry January participation.

The work presented in this thesis both confirms and, crucially, extends previous findings. Through rigorous evaluation, I have provided the first demonstration that, in heavy drinkers, participation in Dry January was robustly associated with reduced consumption six months later. I also demonstrated that this reduction goes beyond change resulting from seasonal variation in consumption and that outcomes vary according to whether people register and have access to online supports or do not. Evidence of a pathway of change from abstinence to increased DRSE to greater reduction in consumption offers confirmation of earlier findings. Finally, I presented novel results evidencing the role of determinants of change that had not been investigated in previous research. I considered their role both during and after Dry January and reflected on how these factors can be exploited and enhanced to maximise the enduring benefits of Dry January participation for heavy drinkers.

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Appendix 1: Methodological information for Chapter III

1A: Measures included at each timepoint

Timepoint	**Measures**
T0 Screening	AUDIT-C Motivation questions Sociodemographic
T1 Baseline	AUDIT (six-month adjusted) Motivation questions DRSEQ Dry January Sociodemographic Social contagion*
T2 (Mid-January)	AUDIT-C (two-week adjusted) Motivation questions DRSEQ Social Contagion Abstinence
T3 Post-January/Post-January equivalent	AUDIT-C (one-month adjusted) Motivation questions DRSEQ SETs Social Contagion Abstinence Dry January/ Dry January equivalent COVID Impact
T4 (three-month follow-up)	AUDIT-C (three-month adjusted) Motivation questions DRSEQ
T5 (six-month follow-up)	AUDIT (six-month adjusted) Motivation questions DRSEQ SETs

*For people recruited via ACUK only as they did not complete the mid-Jan

1B: Measures

Dry January participation

Are you planning to take part in Dry January 2022?

Yes

No

Unsure

Have you registered for the official Dry January campaign?

Yes
No

AUDIT

Next we are going to ask some questions about your alcohol consumption in the last six months?
How often have you had a drink containing alcohol in the last six months?

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

How many units of alcohol have you drank on a typical day when you were drinking in the last six months?

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

Q37 How often have you had 6 or more units (if you are female), or 8 or more (if you are male), on a single occasion in the last 6 months?

Never
Less than monthly
Monthly
Weekly
Daily or almost daily

Q51 How often during the last six months 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 last six months have you failed to do what was normally expected from you because of your drinking?

Never
Less than monthly
Monthly
Weekly
Daily or almost daily

How often during the last six months have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?
Never
Less than monthly
Monthly
Weekly
Daily or almost daily

How often during the last six months have you had a feeling of guilt or remorse after drinking?
Never
Less than monthly
Monthly
Weekly
Daily or almost daily

How often during the last six months have you been unable to remember what happened the night before because you had been drinking?

Never
Less than monthly
Monthly
Weekly
Daily or almost daily

Have you or somebody else been injured as a result of your drinking?
No
Yes, but not in the last six months
Yes, during the last six months

Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?
No
Yes, but not in the last six months
Yes, during the last six months

DRSE
Please use the scale to indicate how easy it would be for you to refuse alcohol in each situation (if this does not apply to you or you have no opinion please choose the middle option)

	Very easy to refuse	Easy to refuse	Somewhat easy to refuse	Neither/ unsure	Somewhat difficult to refuse	Difficult to refuse	Very difficult to refuse
When my friends are drinking	○	○	○	○	○	○	○
When I feel upset	○	○	○	○	○	○	○
When I am listening to music or reading	○	○	○	○	○	○	○
When my spouse or partner is drinking	○	○	○	○	○	○	○
When I am worried	○	○	○	○	○	○	○
When I first arrive home	○	○	○	○	○	○	○
Please select 'Easy to refuse' in response to this statement	○	○	○	○	○	○	○
When I am at a pub or club	○	○	○	○	○	○	○
When I feel nervous	○	○	○	○	○	○	○
When I am watching TV	○	○	○	○	○	○	○

Motivation

Please select the response which most reflects how you feel about each statement.

	Not at all	A little	A moderate amount	A lot	A great deal
To what extent are you actively trying to avoid drinking more alcohol than is good for you?	○	○	○	○	○
To what extent do you intend to keep drinking within safe limits?	○	○	○	○	○
To what extent do you want to avoid drinking more than is good for you rather than just thinking that you should?	○	○	○	○	○
To what extent do you want to keep your drinking within safe limits?	○	○	○	○	○
Please select 'A moderate amount' in response to this statement	○	○	○	○	○
Nowadays how concerned, if at all, are you about drinking more units of alcohol than is good for you?	○	○	○	○	○

Abstinence

So far this month, on how many days have you consumed alcohol?

0 to 31

How many days is it since you last had an alcoholic drink?

0 - I had a drink today ... 50+

Dry January specific

For how long were you thinking about not drinking in January before you actually decided to take part in Dry January?

Less than a week
1 -2 weeks
2 - 4 weeks
1 - 6 months
More than 6 months

In the past, how many times have you tried to temporarily abstain from alcohol for one week or more?

Never
Once
Twice
Three times
Four or more times

Has anyone you know decided to join you in not drinking alcohol during January?

Nobody
Partner
Other family member(s)
Friend(s)
Work colleague(s)
Other _____

Which of the following best describes your plans for after January?

Drink as much as I used to

Drink less than I used to

Drink more than I used to

Stop drinking

Unsure

Attention check

This is a question to check that you are reading the questions and responding carefully. Please type the word "purple" into the box below.

Based on the instructions above, type the name of a colour in the box below.

_____

Social contagion

Sometimes people who are taking part in a challenge or making a lifestyle change say that they feel "part of something bigger" if they do it at the same time as other people.

To what extent do you agree or disagree with the following statement:
'Taking part in Dry January makes me feel part of something bigger'

Strongly disagree
Disagree
Somewhat disagree

Neither agree or disagree
Somewhat agree
Agree
Strongly agree

To what extent do you agree or disagree with the following statement:
"I feel connected to other people who are also taking part in Dry January"
Strongly disagree
Disagree
Somewhat disagree
Neither agree or disagree
Somewhat agree
Agree
Strongly Agree

To what extent do you agree or disagree with the following statement:
"Taking part in Dry January makes me feel part of a community"
Strongly disagree
Disagree
Somewhat disagree
Neither agree or disagree
Somewhat agree
Agree
Strongly agree

Sociodemographics

Finally, we would like to ask you a few questions about yourself.

What best describes your gender?
Man
Woman
Non-binary
Prefer to self-describe _____
Prefer not to say

How old are you?
18 ... Prefer not to say

What is the highest level of education you have completed?
No formal qualifications
Secondary education
A-levels
Professional/vocational
Undergraduate degree e.g. BSc, BA
Postgraduate degree e.g. MA, MBA, MSc

Doctorate degree e.g. PhD
Prefer not to say/ Don't know

What is your annual household income? This means the total income per year, for everybody who lives in your household.
0 - £26,999
£27,000- £38,999
£39,000 - £54,999
£55,000 - £78,999
£79,000 +
Prefer not to say/ Don't know

COVID impact

What impact did COVID-19, or the COVID-19 restrictions in place in January have on your efforts to not drink alcohol?
Made significantly more difficult
Made more difficult
Made slightly more difficult
No effect/ unsure
Made slightly easier
Made easier
Made significantly easier

To what extent did COVID-19 or the COVID-19 restrictions in place in January impact on other areas of your life (e.g. work, finances, relationships) during January?
Not at all
A little
A moderate amount
A lot
A great deal

Which country do you live in?
England
Northern Ireland
Scotland
Wales

SETs

Finally, we would like to ask some questions about the strategies you may have used to stay dry during January.

You may have used some of these before Dry January began and others during the month itself.
For each question please indicate how often you used each strategy.
Did you…

	Never	Once	2 or 3 times	Weekly	Several times per week	Daily	Several times per day
Set yourself a goal related to not drinking. For example, setting a goal to not drink alcohol during the week or to not drink any alcohol at all during January.	○	○	○	○	○	○	○
Set yourself a goal that you wanted to achieve as a result of not drinking. For example, setting a goal to lose weight, save money, improve sleep, feel physically better or improve a relationship.	○	○	○	○	○	○	○
Monitor and record your alcohol consumption/abstinence during the month. For example, using an app to record alcohol consumption each day or recording "dry" days.	○	○	○	○	○	○	○
Monitor and record the outcomes of not drinking during January. For example, recording weight change, money saved, sleep, mood or improvement to your relationships.	○	○	○	○	○	○	○
Look for, or remind yourself of, information about the health benefits of not drinking alcohol for a month. For example, searching online for information about the health benefits associated with a break from alcohol.	○	○	○	○	○	○	○
Make a public commitment to not drink alcohol during Dry January. For example, telling friends and family about your intention to take part, or posting about it on social media.	○	○	○	○	○	○	○

Observe other people who had successfully completed Dry January to give yourself someone to aspire to or to copy. For example, reading a blog by someone who had successfully completed Dry January in a previous year.	○	○	○	○	○	○	○
Substitute drinking with a different behaviour. For example, drinking non-alcoholic alternatives instead of alcohol or doing something else (e.g. going for a run) instead of having a drink.	○	○	○	○	○	○	○
Remind yourself that stopping drinking is not easy and recognise that the challenges you face are also faced by others. For example, reminding yourself that other people are also finding it difficult to avoid drinking during Dry January, and that is normal.	○	○	○	○	○	○	○
Identify factors which might prevent you from staying dry and come up with strategies to overcome these barriers. For example, identifying situations or times of the day where you might find it hard not to drink, and putting a plan in place for what you would do to avoid drinking in these situations.	○	○	○	○	○	○	○
Distract yourself from wanting to drink by focussing on other things. For example, trying to keep yourself busy at a time when you wanted to drink or would usually drink.	○	○	○	○	○	○	○
Change your social environment to create barriers to drinking. For example, arranging social activities to take place in environments where you wouldn't typically drink alcohol; or avoiding certain people.	○	○	○	○	○	○	○

Support others who were also taking part in Dry January. For example, offering encouragement to other people, either in real life or online, who were also taking part in Dry January.	○	○	○	○	○	○	○
Get emotional or social support to avoid drinking. For example, friends encouraging you not to drink, or getting support and encouragement from people online.	○	○	○	○	○	○	○
Please select Weekly in response to this statement.	○	○	○	○	○	○	○

Information sheet and consent forms

Participant Information Sheet
Project title: Seasonal variation in alcohol consumption

You are being invited to take part in a research project about seasonal variation in alcohol consumption. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the project's purpose? This aim of this project is to investigate how peoples' alcohol consumption changes across the year including during attempts to reduce consumption or stop drinking. We are also interested in understanding more about the psychological and social changes that may occur following any attempt to change drinking.

Why have I been chosen?

You can take part in this project if you are:

• Aged 18+

• A regular drinker (you consume alcohol at least once per week)

• Living in the UK

• Interested in completing further follow-up surveys

You should not take part in this research if you have ever received treatment for alcohol problems because this study requires you to reflect on your relationship with alcohol, something that might cause distress to people who have received treatment.

Do I have to take part?

Taking part in this project is voluntary. If you decide to take part, you can withdraw without giving a reason at any time. We explain how you can withdraw from the study below.

What will happen to me if I take part? What do I have to do?

If you choose to take part in this study you will be asked to complete a short survey about yourself, your alcohol consumption and how you currently feel about your drinking. It should take around 10 minutes to complete. After you complete this initial survey, we will store your responses and your contact details so that we can invite you to participate in follow-up surveys at a later date. Not everyone will be invited to take part in these additional surveys and if you are invited, there is no obligation to take part. The additional surveys vary in length each taking between 5 and 20 minutes to complete.

What if I start the study and then decide that I no longer want to take part?

You can withdraw from the study by either closing your internet browser (if you are midway through the survey), or by sending an email to the lead researcher () at any other time before you complete the final survey. After you complete the final survey, your responses will be fully anonymised so it will not be possible to identify your data for removal. Please note that participation in this research is voluntary and does not constitute a legally binding agreement, nor is it intended to create an employment relationship between you and the University of Sheffield.

What are the possible disadvantages and risks of taking part?

Thinking about your alcohol consumption may cause you some discomfort. If you feel distressed whilst completing the survey, then remember that you can withdraw from the study by closing your internet browser. If you are concerned about your drinking, then you should contact your GP to discuss this with them. You can also consult the NHS alcohol support webpages (www.nhs.uk/live-well/alcohol-support/) for more information.

What are the benefits of taking part?

If you take part in this survey, you will be entered into a prize draw for the opportunity to win one of two £50 Love2Shop vouchers. If you are invited and agree to take part in follow-up surveys then you will be entered into additional prize draws, with opportunities to win up to £150 in vouchers for each round of the survey that you complete. If you do not complete a survey or do not respond thoughtfully to the survey questions, for example speeding through or responding without reading questions, then you will not be eligible for entry into the prize draws.

Will my taking part in this project be kept confidential?

Your responses will be anonymised and aggregated with those from other respondents so that we can look at overall trends in the data. You will not be identifiable in any reports or publications, and your personal details will not be shared with other researchers.

What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice https://www.sheffield.ac.uk/govern/data-protection/privacy/general.
What will happen to the data collected, and the results of the research project? The data will be analysed by a postgraduate researcher and their supervisors, with the results forming part of a PhD thesis. During data collection your survey responses will be stored separately to identifiable personal data (your email address) in order to maintain confidentiality. When data collection is complete, or if

you withdraw from the study, all of your identifiable personal data will be destroyed. Anonymised data will be shared with other researchers in a data archive. A summary of the findings will be published in an academic journal, a report, on the Alcohol Change UK webpage, or presented at a conference.

Who is organising and funding the research?

The research is organised by the University of Sheffield and funded by Alcohol Change UK and the Economic and Social Research Council White Rose Doctoral Training Centre.

Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

Who has ethically reviewed the project?

This project has received ethical approval from the University of Sheffield's Research Ethics Committee, as administered by the Psychology department. The ethics approval number is 043682.

What if something goes wrong and I wish to complain about the research or report a concern or incident?

If something goes wrong or you are dissatisfied with any aspect of the research and wish to make a complaint, please contact_____, the primary supervisor of this project (____) in the first instance. You should also contact _____ if you wish to report an incident or concern regarding potential abuse or harm relating to the research. If you feel your complaint or report has not been handled in a satisfactory way you can contact the Head of the Department of Psychology (psy-hod@sheffield.ac.uk). If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint in the University's Privacy Notice: https://www.sheffield.ac.uk/govern/data-protection/privacy/general

Contact for further Information:

Seasonal Variation in Alcohol Consumption Consent Form Please tick the appropriate boxes

	Yes	No
Taking part in the project I have read and understood the project information sheet. I understand the nature of the procedures involved in this study. (If you answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)	○	○
I have been given contact information to ask questions or discuss the study (contact details can be found at the bottom of this page).	○	○
I understand that taking part will involve answering some questions about myself and my alcohol consumption. This initial survey will take 10 minutes. I may then be invited to take part in a series of follow-up surveys over the next 10 months.	○	○
I understand that my taking part is voluntary and that I can withdraw from the current study at any time by closing the browser. I understand that if I wish to withdraw my responses from any of the surveys I can do so by emailing the researcher at any time up until I complete the final survey. After I complete the final survey, my responses will be anonymised and it will not be possible to identify my data for withdrawal. If I choose to withdraw, I do not have to give a reason and there will be no negative consequences of doing so.	○	○
How my information will be used during and after the project I understand that my responses will be anonymised. This means that I will not be identifiable in report(s) that results from the research.	○	○
I give permission for the anonymised data that I provide to be deposited in relevant openly-accessible data repositories so it can be used for future research and learning.	○	○

Project contact details for further information:

Short information sheet and consent

(Shown at all timepoints after baseline)

Thank you for taking part in this study.
There is no time limit so please take your time to read each question and answer honestly. There will also be some questions that are intended to check that you are reading each question properly, and responding carefully.

In this survey you will be asked questions about yourself, your alcohol consumption and how you feel about your drinking.
It should take around 5 - 10 minutes to complete and if you decide to take part you will be entered into a prize draw with a chance to win one of two £50 gift vouchers.

There is no time limit so please take your time to read each question and answer honestly. There will

also be some questions that are intended to check that you are reading each question properly, and responding carefully.

If you wish to view the full information sheet and consent form that you previously completed you can do so here or by copying the url below into your browser.
https://sheffieldpsychology.eu.qualtrics.com/jfe/form/SV_7393NZiCddpxYcm

Do you consent to take part in this survey?

Yes

No

End of survey consent

We have no more questions for you at this time but may invite you to take part in further surveys. If you are invited, you will be under no obligation to take part. Do you consent to us using the email you have provided above to contact you with information about follow-up surveys?

Yes

No

Appendix 2: Additional results from Chapter III

Supplementary Table 2.1: Dry January related characteristics of final sample

	Official Dry January (N= 58)		**Unofficial Dry January (N=18)**	
	No.	**%**	**No.**	**%**
Registration				
- Via Try Dry App	11	18.97%	-	-
-Via the Website	27	46.55%	-	-
-Via the Website & the App	10	17.24%	-	-
- No answer*	10	17.24%%	-	-
Decision to participate				
- Less than a week	18	31.03%	10	55.56%
- 1-2 weeks	4	6.90%	2	11.11%
- 2-4 weeks	12	20.69%	3	16.67%
- 1-6 months	12	20.69%	1	5.56%
-More than 6 months	12	20.69%	2	11.11%
Post-January intentions (at baseline)				
-Drink as much	0	0	0	0
- Drink less	43	74.14%	9	50.00%
- Drink more	0	0	0	0
- Stop drinking	10	17.24%	7	38.89%
- Unsure	5	8.62%	2	11.11%
Post-January intentions (at Post-January)				
-Drink as much	1	1.72%	2	11.11%
- Drink less	36	62.07%	9	50.00%
- Drink more	0	0	0	0

- Stop drinking	8	13.79%	1	5.56%
- Unsure	3	5.17%	0	0
- No answer*	10	17.24%	6	33.33%
Participated with others:				
- Nobody	22	37.93%	9	50.00%
- Partner	21	36.21%	6	33.33%
- Other family member(s)	5	8.62%	0	0
- Friend(s)	7	12.07%	3	16.67%
- Work colleague(s)	2	3.45%	0	0
-Other	1	1.72%	0	0

* Only participants who completed Post-January survey saw and responded to this question

Supplementary Table 2.2: Sensitivity analyses of multiple regression models using imputed datasets to answer RQ3 and RQ4 for 'Official Dry January' participants showing predictor variables adjusted by 5%, 10% and 15%

	Model 1									Final model								
	5 % Adjustment			10% Adjustment			15% Adjustment			5 % Adjustment			10% Adjustment			15% Adjustment		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C	0.96	0.48, 1.44	**<.001**	0.99	0.50, 1.48	**<.001**	0.94	0.47, 1.41	**<.001**	0.96	0.62, 1.29	**<.001**	0.96	0.63, 1.29	**<.001**	0.96	0.63, 1.29	**<.001**
AUDIT-C Post-January	0.06	-0.27, 0.39	.711	0.01	-0.25, 0.27	.926	0.04	-0.16, 0.24	.702									
Baseline DRSE	0.39	-0.71, 1.49	.480	0.38	-0.73, 1.49	.490	0.27	-0.79, 1.34	.607									
DRSE Post-January	0.02	-0.98, 1.02	.965	0.09	-1.04, 1.21	.876	0.12	-1.02, 1.26	.827									
Baseline Motivation	-0.07	-1.70, 1.56	.930	-0.16	-1.83, 1.51	.847	-0.15	-1.76, 1.45	.848									
Motivation Post-January	-0.34	-2.02, 1.34	.684	-0.32	-2.05, 1.42	.714	-0.31	-2.04, 1.41	.714									
Abstinence	-0.75	-3.22, 1.72	.533	-0.83	-3.29, 1.62	.482	-0.81	-2.83, 1.21	.422									
SETs used in January	0.05	-0.48, 0.58	.845	0.12	-0.34, 0.58	.598	0.07	-0.35, 0.49	.732									
SETs used after January	-1.28	-1.93, -0.63	**<.001**	-1.34	-2.00, -0.68	**<.001**	-1.31	-1.96, -0.66	**<.001**	-1.32	-1.84, -0.79	**<.001**	-1.33	-1.86, -0.81	**<.001**	-1.34	-1.86, -0.81	**<.001**
Feeling part of something bigger	0.48	-0.48, 1.44	.313	0.48	-0.37, 1.33	.263	0.50	-0.55, 1.55	.336									
Feeling connected	-0.38	-1.44, 0.67	.456	-0.40	-1.44, 0.63	.420	-0.29	-1.75, 1.17	.654									
Part of a community	0.08	-1.20, 1.37	.890	0.05	-1.07, 1.17	.930	-0.05	-1.36, 1.26	.939									

Model 1: 5% pooled $R^2 = 0.58$
Model 1: 10% pooled $R^2 = 0.58$
Model 1: 15% pooled $R^2 = 0.58$

Final model 5% pooled $R^2 = 0.51$
Final model 10% pooled $R^2 = 0.51$
Final model 15% pooled $R^2 = 0.51$

Supplementary Table 2.3: Sensitivity analyses of multiple regression models using imputed datasets to answer RQ3 and RQ4 for 'Unofficial Dry January' participants showing predictor variables adjusted by 5%, 10% and 15%

	5 % adjustment				10% Adjustment				15% Adjustment			
Variable	**β**	**95% CI**	**SE**	***p***	**β**	**95% CI**	**SE**	***p***	**β**	**95% CI**	**SE**	***p***
Baseline AUDIT-C	1.69	-26.88, 30.26	1.72	.520	1.61	-9.74, 12.95	1.39	.424	1.56	-2.59, 5.72	1.31	.319
AUDIT-C Post-January	0.03	-9.70, 9.76	0.56	.968	0.11	-2.14, 2.36	0.33	.790	-0.15	-0.92, 0.62	0.25	.593
Baseline DRSE	1.92	-22.30, 26.14	2.47	.567	0.95	-11.37, 13.28	2.35	.731	-0.05	-26.56, 26.46	3.83	.992
DRSE Post-January	-0.92	-14.52, 12.69	2.35	.743	0.59	-6.25, 7.43	2.12	.800	0.34	-25.14, 25.81	3.86	.941
Baseline Motivation	0.73	-6.58, 8.04	1.92	.736	0.27	-5.43, 5.97	1.69	.885	1.24	-15.50, 17.99	3.15	.738
Motivation Post-January	3.11	-10.97, 17.20	3.18	.433	3.46	-4.81, 11.73	2.67	.282	0.33	-49.68, 50.34	6.70	.967
Abstinence	-0.73	-39.22, 37.76	4.87	.901	-2.59	-19.75, 14.57	4.45	.613	-5.94	-45.71, 33.82	8.34	.557
SETs used in January	0.36	-15.77, 16.50	0.75	.724	0.55	-1.04, 2.13	0.48	.342	0.16	-10.87, 11.19	1.21	.913
SETs used after January	-1.54	-3.57, 0.49	0.59	.091	-1.37	-4.32, 1.58	0.63	.174	-1.19	-3.09, 0.71	0.62	.145
Feeling part of something bigger	-0.04	-2.95, 2.87	0.90	.966	-0.13	-3.79, 3.52	0.95	.900	1.01	-3.73, 5.75	1.44	.539
Feeling connected	0.26	-4.40, 4.92	1.19	.845	0.06	-4.57, 4.69	1.27	.964	0.95	-6.23, 8.14	1.96	.666
Part of a community	-0.58	-4.07, 2.92	1.05	.624	-0.63	-5.44, 4.18	1.36	.678	-2.00	-8.05, 4.04	2.01	.386

5% Model pooled R^2 = 0.88
10% Model pooled R^2 = 0.89
15% Model pooled R^2 = 0.87

Supplementary Table 2.4: Frequency of use of Self-Enactable Techniques by 'Official' Dry January participants

	Frequency of use						
Self-enactable technique	**Never**	**Once**	**2 or 3 times**	**Weekly**	**Several times per week**	**Daily**	**Several times per day**
Behavioural goal-setting	4.76%	32.38%	10.48%	12.38%	4.76%	31.43%	3.81%
Outcome goal-setting	19.05%	25.71%	10.48%	20.95%	5.71%	16.19%	1.90%
Self-monitoring of behaviour	10.48%	0%	2.86%	1.90%	2.86%	80%	1.90%
Self-monitoring outcomes of behaviour	22.86%	6.67%	6.67%	13.33%	9.52%	38.1%	2.86%
Obtain information about health consequences	5.71%	7.62%	23.81%	19.05%	26.67%	14.29%	2.86%
Public commitment	13.33%	15.24%	38.1%	15.24%	7.62%	9.52%	0.95%
Observe demonstration of behaviour	29.52%	6.67%	27.62%	18.10%	10.48%	7.62%	0%
Behaviour substitution	8.57%	1.90%	13.33%	23.81%	23.81%	26.67%	1.90%
Normalize difficulty	28.57%	2.86%	24.76%	7.62%	20.95%	14.29%	0.95%
Problem solving	20.00%	6.67%	23.81%	20.00%	16.19%	12.38%	0.95%
Distraction	19.05%	3.81%	17.14%	18.10%	22.86%	19.05%	0%
Restructuring social environment	53.33%	12.38%	17.14%	11.43%	1.90%	3.81%	0%
Support others	49.52%	4.76%	14.29%	10.48%	12.38%	7.62%	0.95%
Get emotional or social support	61.9%	6.67%	15.24%	4.76%	7.62%	2.86%	0.95%

Supplementary Table 2.5: Logistic regressions showing predictors of using SETs (only SETs with at least one statistically significant predictor are shown)

SET	**Variables included in final model**	**β**	**OR**	**95% CI**	***p***
Behavioural goal-setting	Man	-2.99	0.05	0.002, 0.49	**.022**
	Education	1.09	2.98	1.25, 11.01	**.035**
			$\chi 2(2) = 10.65$, ***p*=.005**		

Outcome goal-setting	Baseline motivation	0.85	2.35	1.09, 5.09	**.030**
	Baseline SP DRSE	-0.43	0.65	0.45, 0.95	**.027**
			$\chi2(2) = 9.88$, ***p*=.007**		
Self-monitoring outcomes of behaviour	Baseline motivation	1.40	4.05	1.75, 9.40	**.001**
	Age	-0.05	0.95	0.90, 0.99	**.023**
			$\chi2(2) = 17.78$, ***p*= <.001**		
Public commitment	Baseline DRSE	-0.88	0.41	0.23, 0.75	**.004**
			$\chi2(1) = 9.05$, ***p*=.003**		
Normalize difficulty	Education	-0.54	0.58	0.38, 0.90	**.014**
	Baseline O DRSE	0.50	1.65	1.07, 2.56	**.024**
	Baseline SP DRSE	-0.56	0.57	0.39, 0.85	**.006**
			$\chi2(3) = 17.15$, ***p*<.001**		
Problem solving	Baseline DRSE	-0.61	0.54	0.33, 0.89	**.016**
			$\chi2(1) = 6.02$, ***p*=.014**		
Distraction	Baseline motivation	1.74	5.72	1.98, 16.52	**.001**
	Income	-0.77	0.46	0.26, 0.83	**.010**
	Baseline SP DRSE	-0.63	0.53	0.34, 0.85	**.008**
			$\chi2(3) = 29.74$, ***p*<.001**		
Restructuring social environment	Baseline DRSE	-0.45	0.64	0.42, 0.97	**.037**
			$\chi2(1) = 4.67$, ***p*=.031**		

Each SET was included as a separate model due to the number of SETs compared to sample size and EPV restrictions. The following SETs had no significant predictors of use: ‘Self-monitoring of behaviour’, ‘Obtain information about health consequences’, ‘Observe demonstration of behaviour’, ‘Behaviour substitution’, ‘Support others’, ‘Get emotional or social support

Appendix 3: Methodological information for Chapter IV

Appendix 3A: Interview Guide

Prior to Dry January

1. So to start with could you tell me what made you decide to take part in Dry January this year?

Follow-up:

Have you taken part before?

2. How did you prepare for Dry January?

Follow-up:

How did you go about doing this?
Can you recall why you decided to do this?

During Dry January

Now I'd like to move on to talk about your experience during Dry January itself.

3. How did you find taking part?

(Prompt) Did it meet your expectations??

Follow-up:

If mention difficulties/challenges:
What did you find particularly challenging?
Did you do anything to try and deal with these challenges?
Did it help?
Why did you decide to do this?
If mention easy/easier than expected
What do you think made it easy/easier than expected?
What helped you stop drinking during Dry January?

4. Did you do anything (else) to help you avoid drinking during January?

Follow-up:

How did you go about doing this?
Did you need any particular resources or support?
What made you decide to do this?
Do you think it helped?
In what way?

5. Do you think that taking part in Dry January had an effect on any other areas of your life?

Follow-up:

When people take part in Dry January this sometimes leads to changes in their lives beyond just how much they drink. Can you describe to me how Dry January affected your life on the whole, beyond how much you drink?
Did you make any changes to other areas of your life (beyond not drinking alcohol?)
Could you tell me about these changes?
What? Why?

6. How did you change the way you did activities which could involve drinking alcohol? For example, having a drink whilst watching TV, cooking, eating dinner, going out with friends.

Follow- up:

Could you tell me about these changes?
Did you stop doing any activities you previously did?

After Dry January

And finally I'd like to talk about what happened after Dry January

6. So when Dry January finished what were your plans or thoughts around drinking going forward?

- (prompt) Did you plan to make any changes to your drinking?

Follow-up:

Did you continue using/doing X after January at all?
Why?
How has that affected drinking?
How has that affected other areas of your life?

7. Thinking back to those activities that could involve drinking that we discussed before. Since Dry January have you changed the way you do these activities or stopped any activities you previously used to do?

Follow-up:

Could you tell me about these changes?
What? Why?
Have you stopped any activities you previously used to do?

8. Sometimes people come into an interview with an expectation of what we'll talk about. Is there anything you thought we'd discuss that we haven't covered yet?

Appendix 3B: Analytic Procedure

Following familiarisation through re-reading of transcripts and listening back to sections of the interviews, coding was undertaken using NVivo12**.** This was an iterative process with codes being adapted and renamed as coding progressed. Following initial coding of all transcripts, the list of codes was revisited and condensed. Potential themes were then generated and reviewed to evaluate their significance and points of crossover. At this stage it was decided to construct themes according to the common challenges that people described. Theme and subtheme names were then reconsidered and changed if appropriate. Finally, we revisited each subtheme reading through the corresponding data extracts to identify any notable differences between the experiences of 'official' and 'unofficial' interviewees. All points of difference are highlighted and discussed in the results and discussion section. Illustrative quotations were selected for each subtheme and are shown alongside interviewee pseudonyms. Quotations have been edited and repetitions and hesitancies removed to improve readability as is common practice in qualitative research (Corden & Sainsbury, 2006).

Appendix 3C: First author reflexivity and positionality statement

I had prior knowledge of the topic from reviewing the literature and the first study of my PhD. This facilitated the development of the research questions and interview guide. Having an in depth understanding of the resources available to 'official' participants enabled me to probe in detail about use of strategies incorporating these tools. However, I also remained aware that this prior knowledge could potentially increase my focus on certain concepts, for example strategies associated with use of the Try Dry app, during the interview and analysis. During interviewing I also reflected on my perception that my status as a female PhD student in her early thirties with a relatively strong regional accent may be influencing the dynamics of the interviews. The influence age, gender and social class can have on interview dynamics and consequently the data produced is well-documented (Richards & Emslie, 2000; Manderson et al., 2006; Mellor et al., 2014). For the current study I felt that this meant people generally seemed happy to provide full and detailed explanations but it also raised concerns that some interviewees wanted to ensure they gave a simple and straightforward account which would be helpful for my PhD work. To manage this I discussed these concerns with the senior author, reminded interviewees that I wanted to hear the full, nuanced story of their Dry January experience and kept this in mind during interpretation of the data.

Appendix 4: Methodological information for Chapter V

Appendix 4A: Measures included in baseline, Post-January, three- and six month follow-up surveys

Timepoint	**Measures**
T1 Baseline	AUDIT-C (six-month adjusted) Motivation questions DRSEQ ASCS Dry January (Items 1,2,3,4,6) Sociodemographic
T2 Post-January/Post-January equivalent	AUDIT-C (one-month adjusted) Motivation questions DRSEQ ASCS Social Contagion Abstinence Dry January (Items 1,2,4,5) Online support use (Try Dry, Facebook, Emails)
T3 (three month follow-up)	AUDIT-C (three-month adjusted) Motivation questions DRSEQ Dry January (Item 1)
T4 (six month follow-up)	AUDIT-C (six-month adjusted) Motivation questions DRSEQ Online support use (Try Dry, Facebook) Dry January (Item 1)

4B: Measures

AUDIT-C

Next we are going to ask some questions about your alcohol consumption **in the last six-months.**
How often do you have a drink containing alcohol?
Never
Monthly or less
2- 4 times per month
2 -3 times per week
4-5 times per week
6+ times per week

How many units of alcohol do you drink on a typical day when you are drinking?
0- 2 , 3-4, 5-6, 7 -9 10-12, 13-15, 16+

How often have you had 6 or more units on a single occasion in the last six months?
Never
Less than monthly
Monthly
Weekly
Daily or almost daily

DRSE

Please use the scale to indicate how easy it would be for you to refuse alcohol in each situation (if this does not apply to you or you have no opinion please choose the middle option)

	Very easy to refuse (7)	Easy to refuse (6)	Somewhat easy to refuse (5)	Neither/ unsure (4)	Somewhat difficult to refuse (3)	Difficult to refuse (2)	Very difficult to refuse (1)
When my friends are drinking (1)	○	○	○	○	○	○	○
When I feel upset (2)	○	○	○	○	○	○	○
When I am listening to music or reading (3)	○	○	○	○	○	○	○
When my spouse or partner is drinking (4)	○	○	○	○	○	○	○
When I am worried (5)	○	○	○	○	○	○	○

When I first arrive home (6)	○	○	○	○	○	○	○
Please select 'Easy to refuse' in response to this statement (7)	○	○	○	○	○	○	○
When I am at a pub or club (8)	○	○	○	○	○	○	○
When I feel nervous (9)	○	○	○	○	○	○	○
When I am watching TV (10)	○	○	○	○	○	○	○

ASCS

Please indicate the extent to which you agree with each of the following statements

	Strongly Disagree (1)	Disagree (2)	Slightly Disagree (3)	Neither Agree or Disagree (4)	Slightly Agree (5)	Agree (6)	Strongly Agree (7)
Drinking alcohol is part of my self-image (1)	○	○	○	○	○	○	○
Drinking alcohol is who I am (2)	○	○	○	○	○	○	○
Drinking alcohol is part of my personality (3)	○	○	○	○	○	○	○
Drinking alcohol is a large part of my daily life (4)	○	○	○	○	○	○	○
Others view drinking alcohol as part of my personality (5)	○	○	○	○	○	○	○

Motivation

Please select the response which most reflects how you feel about each statement.

	Not at all (1)	A little (2)	A moderate amount (3)	A lot (4)	A great deal (5)
To what extent are you actively trying to avoid drinking more alcohol than is good for you? (1)	○	○	○	○	○
To what extent do you intend to keep drinking within safe limits? (2)	○	○	○	○	○
To what extent do you want to avoid drinking more than is good for you rather than just thinking that you should? (3)	○	○	○	○	○
To what extent do you want to keep your drinking within safe limits? (4)	○	○	○	○	○
Please select 'A moderate amount' in response to this statement (6)	○	○	○	○	○
Nowadays how concerned, if at all, are you about drinking more units of alcohol than is good for you? (7)	○	○	○	○	○

Dry January

1)Are you taking part in Dry January 2023, that is trying not to drink alcohol for the month of January?
Yes (1)
No (2)

2)Have you registered for Dry January (either by signing up through the Alcohol Change UK website or the Try Dry app?)
Yes - through the App (1)
Yes - through the website (2)
Yes - through both the website and the App (3)
No (4)

3)For how long were you thinking about not drinking in January before you actually decided to take part in Dry January?
Less than a week (1)
1 -2 weeks (2)
2 - 4 weeks (3)
1 - 6 months (4)
More than 6 months (5)

4) Which of the following best describes your plans for after January?
Drink as much as I used to (1)
Drink less than I used to (2)

Drink more than I used to (3)
Stop drinking (4)
Unsure (5)

5) Did anyone you know decide to join you in not drinking alcohol during January?
Nobody (1)
Spouse/Partner (2)
Other family member(s) (3)
Friend(s) (4)
Colleague(s) (5)
Other (6)

6) In the past, how many times have you tried to temporarily abstain from alcohol for one week or more?
Never
Once
Twice
Three times
Four or more times

Social Contagion
Sometimes people who are taking part in a challenge or making a lifestyle change say that they feel "part of something bigger" if they do it at the same time as other people.
To what extent do you agree or disagree with the following statement:
'Taking part in Dry January makes me feel part of something bigger'
Strongly disagree
Disagree
Somewhat disagree
Neither agree or disagree
Somewhat agree
Agree
Strongly agree

To what extent do you agree or disagree with the following statement:
"I feel connected to other people who are also taking part in Dry January"
Strongly disagree
Disagree
Somewhat disagree

Neither agree or disagree

Somewhat agree

Agree

Strongly Agree

To what extent do you agree or disagree with the following statement:
"Taking part in Dry January makes me feel part of a community"
Strongly disagree
Disagree
Somewhat disagree
Neither agree or disagree
Somewhat agree
Agree
Strongly agree

Abstinence

On how many days during January did you have a drink?

0 - I didn't drink at all to 31

Online Supports

We would like to ask you some questions about your use of the online supports provided by Alcohol Change UK during January.

[App] Did you use the Try Dry mobile phone app during January?
Never (2)
Once (3)
2 or 3 times (4)
Weekly (5)
Several times per week (6)
Most days (7)
Daily or more often (8)

Please tell us how often you used the Try Dry app for each of these activities.
How often did you...

	Never (1)	Once (2)	2 or 3 times (3)	Weekly (4)	Several times per week (5)	Most days (6)	Daily or more often (7)
Use the calendar to record the days when you didn't drink, i.e. 'stayed dry', during January? (1)	○	○	○	○	○	○	○
Use the calendar to record the days when you drank, i.e. 'drank', during January? (2)	○	○	○	○	○	○	○
Use the calendar to record days when you drank as	○	○	○	○	○	○	○

planned, i.e. ‘drank as planned’, during January? (3)							
Look back at the calendar to see the number of days you stayed dry in January? (4)	○	○	○	○	○	○	○
Look back at the calendar to see the number of days you drank during January? (5)	○	○	○	○	○	○	○
Look at the progress chart to see the number of units you saved during January? (6)	○	○	○	○	○	○	○
Look at the progress chart to see the calories or money you saved during January? (7)	○	○	○	○	○	○	○
Claim any mission badges e.g. Sports fan, Dry Drinker, Party-goer, during January? (8)	○	○	○	○	○	○	○

Did you set a goal on the app to do Dry January 2023?
Yes

No

How many other goals did you set?
0, 1, 2, 3, 4, 5 , 6+

To what extent did reflecting on your progress using the app give you a sense of achievement?
Not at all
A little
A moderate amount
A lot
A great deal

To what extent did receiving acknowledgement via the app, e.g. “Great work, you stayed dry” when entering ‘stayed dry’ on the calendar or receiving a badge for achieving a goal, give you a sense of achievement?
Not at all
A little
A moderate amount
A lot

A great deal

Did you choose to receive daily emails from Alcohol Change UK during Dry January?
Yes
No

How often did you...

	Never (1)	Once (2)	2 or 3 times (3)	Weekly (4)	Several times per week (5)	Nearly every day (6)	Daily or more often (7)
Read the emails you received during January? (1)	○	○	○	○	○	○	○
Click the links in the emails to read articles/blogposts on the Alcohol Change UK website? (2)	○	○	○	○	○	○	○

Did you join a Dry January Facebook group(s)?
Yes
No

Are you a member of the Alcohol Change UK Dry January Facebook group(s) (Dry January Community Group or Dry January and Beyond) or another Dry January Facebook group(s)?
Alcohol Change UK group(s)
Another Dry January group(s)
Both type of group(s)

Please tell us how often you used the Facebook group for each of these activities.
How often did you...

	Never (1)	Once (2)	2 or 3 times (3)	Weekly (4)	Several times per week (5)	Most days (6)	Daily or more often (7)
Post or comment in the group(s) during January? (1)	○	○	○	○	○	○	○
Read posts in the group(s) during January? (3)	○	○	○	○	○	○	○

Post/comment/read posts in the group(s) to share ideas for alternative activities that didn't involve drinking during January? (4)	○	○	○	○	○	○	○
Post/comment/read posts in the group(s) to distract yourself from drinking or wanting to drink during January ? (5)	○	○	○	○	○	○	○
Compare yourself to others in the group(s) who were also taking part in Dry January? (6)	○	○	○	○	○	○	○
Use the group(s) to get support from other members of the group during January? (7)	○	○	○	○	○	○	○
Use the group(s) to support other members of the group during January? (8)	○	○	○	○	○	○	○

Sociodemographic

Finally, we would like to ask you a few questions about yourself.

What best describes your gender?

Man

Woman

Non-binary

Prefer to self-describe

Prefer not to say

How old are you?

18 to 100 (dropdown)

Prefer not to say

What is your ethnic group?

Bangladeshi

Chinese

Pakistani

Any other Asian background, please describe

Indian

African

Caribbean

Any other Black/African/Caribbean background, please describe

White and Asian

White and Black African

White and Black Caribbean

Any other Mixed/Multiple ethnic background, please describe
British/ English/ Northern Irish/ Scottish / Welsh
Irish
Gypsy or Irish Traveller
Any other white background, please describe
Other ethnic group
Arab
Prefer not to say

What is the highest level of education you have completed?
No formal qualifications
Secondary education
A-levels
Professional/vocational
Undergraduate degree e.g. BSc, BA
Postgraduate degree e.g. MA, MBA, MSc
Doctorate degree e.g. PhD
Prefer not to say/ Don't know

What is your annual household income? This means the total income per year, for everybody who lives in your household.
0 - £26,999
£27,000- £38,999
£39,000 - £54,999
£55,000 - £78,999
£79,000 +
Prefer not to say/ Don't know

Standalone Attention Check
This is a question to check that you are reading the questions and responding carefully. Please type the word "blue" into the box below.

Based on the instructions above, type the name of a colour in the box below

---

Information sheets and consent forms

(Full information and consent shown at baseline survey, available via a link in subsequent surveys)

Project name: Variation in alcohol consumption
You are being invited to take part in a research project about alcohol consumption over time. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the project's purpose?
The aim of this project is to investigate how peoples' alcohol consumption changes across the year including during attempts to reduce consumption or stop drinking. We are also interested in understanding more about the psychological and social changes that may occur following any attempt to change drinking.

Why have I been chosen?

You can take part in this project if you are:
• Aged 18+
• A regular drinker (you consume alcohol at least once per week)
• Living in the UK
• Interested in completing further follow-up surveys
You should not take part in this research if you have ever received treatment for alcohol problems, because the questions ask you to think about your relationship with alcohol.

Do I have to take part?
Taking part in this project is voluntary. If you decide to take part, you can withdraw without giving a reason at any time. We explain how you can withdraw from the study below.

What will happen to me if I take part? What do I have to do?
If you choose to take part in this study you will be asked to complete a survey about yourself, your alcohol consumption, your thoughts around your alcohol consumption and your participation in Dry January. This initial survey should take around 10 minutes to complete. After you complete this initial survey, we will store your responses and your email address so that we can invite you to participate in follow-up surveys. Not everyone will be invited to take part in these additional surveys and if you are invited, there is no obligation to take part. Invitations to the additional surveys will be sent in the first week of February, first week of May and first week of August.

What if I start the study and then decide that I no longer want to take part?
You can withdraw from the current survey by either closing your internet browser (if you are midway through the survey), or withdraw from the study completely by sending an email to the lead researcher (email provided) at any other time before you complete the final survey. After you complete the final survey, your responses will be fully anonymised so it will not be possible to identify your data for removal. Please note that participation in this research is voluntary and does not constitute a legally binding agreement, nor is it intended to create an employment relationship between you and the University of Sheffield.
What are the possible disadvantages and risks of taking part?
Thinking about your alcohol consumption may cause you some discomfort. If you feel distressed whilst completing the survey, then remember that you can withdraw from the study by closing your internet browser. If you are concerned about your drinking, then you should contact your GP to discuss this with them. You can also consult the NHS alcohol support webpages (www.nhs.uk/live-well/alcohol-support/) for more information.

What are the benefits of taking part? If you take part in this initial survey you will be entered into a prize draw for the opportunity to win one of two £50 Amazon vouchers. If you are invited to and agree to take part in follow-up surveys then you will receive a £7 Amazon gift voucher after completion of the final survey. If you do not complete a survey or do not respond thoughtfully to the

survey questions, for example speeding through or responding without reading questions, then you will not be eligible for entry into the prize draw or to receive the gift voucher.

Will my taking part in this project be kept confidential?
Your responses will be anonymised and aggregated with those from other respondents so that we can look at overall trends in the data. You will not be identifiable in any reports or publications, and your personal details will not be shared with other researchers.

What is the legal basis for processing my personal data?
According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice https://www.sheffield.ac.uk/govern/data-protection/privacy/general.'

What will happen to the data collected, and the results of the research project?
The data will be analysed by a postgraduate researcher and their supervisors, with the results forming part of a PhD thesis. When the study is ongoing your survey responses will be stored separately to identifiable personal data (your email address) in order to maintain confidentiality. When data collection is complete, or if you withdraw from the study, all of your identifiable personal data will be destroyed. Anonymised data will be shared with other researchers in a data archive. A summary of the findings will be published in an academic journal, a report, on the Alcohol Change UK webpage, or presented at a conference.

Who is organising and funding the research?
The research is organised by the University of Sheffield and funded by Alcohol Change UK and the Economic and Social Research Council White Rose Doctoral Training Centre.

Who is the Data Controller?
The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

Who has ethically reviewed the project?
This project has received ethical approval from the University of Sheffield's Research Ethics Committee, as administered by the Psychology department. The ethics approval number is 050198.

What if something goes wrong and I wish to complain about the research or report a concern or incident?
If something goes wrong or you are dissatisfied with any aspect of the research and wish to make a complaint, please contact the primary supervisor of this project (email provided) in the first instance. If you feel your complaint has not been handled in a satisfactory way you can contact the Head of the Department of Psychology (email provided). If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint in the University's Privacy Notice: https://www.sheffield.ac.uk/govern/data-protection/privacy/general

Contact for further Information:
Researcher: Supervisor:

Consent Form

Please tick the appropriate boxes

	Yes (1)	No (2)
Taking part in the project I have read and understood the project information sheet. I understand the nature of the procedures involved in this study. (If you answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.) (1)	○	○
I have been given contact information to ask questions or discuss the study. (2)	○	○
I understand that taking part will involve answering some questions about myself and my alcohol consumption. This initial survey will take about ten minutes. I may then be invited to take part in three follow-up surveys. (3)	○	○
I understand that my taking part is voluntary and that I can withdraw from the current survey at any time by closing the browser. I understand that if I wish to withdraw my responses from any of the surveys I can do so by emailing the researcher at any time up until I complete the final survey. After I complete the final survey, my responses will be anonymised and it will not be possible to identify my data for withdrawal. If I choose to withdraw, I do not have to give a reason and there will be no negative consequences of doing so. (4)	○	○
How my information will be used during and afer the project I understand that my responses will be anonymised. This means that I will not be identifiable in report(s) that results from the research. (5)	○	○
I give permission for the anonymised data that I provide to be deposited in relevant openly-accessible data repositories so it can be used for future research and learning. (6)	○	○

Project contact details for further information:

[Consent for Post-January, three month follow-up and six-month follow-up surveys]

In this survey you will be asked questions about yourself, your alcohol consumption and how you feel about your drinking. It will take around 12 minutes to complete.

There is no time limit so please take your time to read each question and answer honestly. There will also be some questions that are intended to check that you are reading each question properly and responding carefully.

If you wish to view the full information sheet and consent form that you previously completed you can do so here or by copying the url below into your browser.
https://sheffieldpsychology.eu.qualtrics.com/jfe/form/SV_1MS3BOSGQnmKg7Q

Contact for further Information:

Researcher: Supervisor:

Do you consent to take part in the survey?

Yes

No

Appendix 4C: Components of Try Dry, Emails and Facebook Groups according to the main self-enactable technique(s) facilitated and element of the COM-B model targeted.

Online Support	Element of online support	Self-enactable technique(s)	COM-B
Try Dry App	Recording non-drinking or 'dry' days	Self-monitoring behaviour	Psychological capability
	Record drinking days	Self-monitoring behaviour	Psychological capability
	Record drinking as planned days	Self-monitoring behaviour	Psychological capability
	Look back at number of dry days	Reflecting on self-monitoring of behaviour	Reflective motivation
	Look back at number of drinking days	Reflecting on self-monitoring of behaviour	Reflective motivation
	Look at progress chart – units saved	Reflecting on outcomes of behaviour	Reflective motivation
	Look at progress chart – calories or money saved	Reflecting on outcomes of behaviour	Reflective motivation
	Claim any mission badges	Self-monitoring of behaviour, self-reward (behaviour)	Reflective motivation
	Goal to do Dry January*	Goal-setting	Reflective motivation
	Number of other goals set	Goal-setting	Reflective motivation
	Sense of achievement from reflecting on progress	Reflect on desire to perform behaviour, Positive re-framing, Looking back	Automatic motivation
	Sense of achievement from acknowledgement from the app	Self-reward(behaviour), self-praise (behaviour)	Automatic motivation
Emails	Reading emails	Credible source, normalize difficulty	Social opportunity, Psychological capability
	Following links to read articles/blogs on ACUK	Credible source, obtain information about health consequences, social and environmental consequences, emotional consequences	Psychological capability, Reflective motivation

Facebook	Posting or commenting	Normalize difficulty, Social reward	Social opportunity
	Reading posts	Normalize difficulty, Find meaning in target behaviour	Social opportunity Reflective motivation
	Posting/commenting/reading to share ideas for alternative non-drinking activities	Behaviour substitution	Physical opportunity Psychological capability
	Posting/commenting/reading for distraction	Distraction	Physical opportunity
	Compare self to others	Social Comparison, Normalize difficulty	Social opportunity
	Get support from group members	Obtain emotional social support, obtain practical social support	Social opportunity
	Give support to other group members	Support others, Identification of self as role model	Social opportunity Reflective motivation

Access to online supports as physical opportunity

Appendix 5: Additional results from Chapter V

Supplementary Table 5.1: Participant characteristics according to number of follow-ups completed

	Number of follow-ups completed									
	0		**1**		**2**		**3**		**Differences**	**Post-Hoc Tests**
Variable	**Med**	**IQR**	**Med**	**IQR**	**Med**	**IQR**	**Med**	**IQR**		
Baseline AUDIT-C	9.00	4.00	10.00	3.00	9.00	2.00	9.00	3.00	F(3, 328.94) = 5.87, ***p*<.001**	Significant differences: 0 and 1(p =.002) 1 and 3(p =.002)
Baseline DRSE	3.89	1.45	3.73	1.59	3.84	1.59	4.00	1.34	F(3, 1027) = 2.48, p = .060	
Baseline motivation	4.00	1.40	4.00	1.00	4.00	1.20	3.80	1.40	F(3, 1027) = 4.64, ***p* = .003**	Significant differences: 0 and3 (p =.029) 2 and 3 (p = .010)
Baseline ASC	-0.20	2.40	0.00	2.00	-0.20	2.20	-0.40	2.40	F(3, 1027) = 1.21, p = .304	
Age	47.00	13.00	46.50	15.25	49.50	15.50	48.00	19.00	F(3, 1027) = 1.09, p = .352	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		
Group										
Official Dry January	153	26.89%	104	18.31%	73	12.68%	239	42.08%	$\chi^2(6) = 80.37$, ***p*<.001**	
Unofficial Dry January	16	10.96%	14	9.59%	16	10.96%	100	68.49%		
No Dry January	68	21.52%	14	4.43%	24	7.59%	210	66.46%		
Route of recruitment										
ACUK	161	67.93%	111	84.09%	73	64.60%	222	40.44%	$\chi^2((3) = 112.40$***, p*<.001**	

Prolific	76	32.07 %	21	15.91 %	40	35.40%	327	59.56%	
Gender									Fishers Exact ***p* <.001**
Man	74	31.22 %	36	27.27 %	27	24.11%	229	41.71%	
Woman	160	67.51 %	96	72.73 %	86	76.11%	318	57.92%	
Non-binary	0	0	0	0%	0	0%	0	0%	
Prefer to self-describe	1	0.42%	0	0%	0	0%	1	0.18%	
Prefer not to say	2	0.84%	0	0%	0	0	1	0.18%	
Education									
No formal qualifications	2	0.84%	1	0.76%	0	0%	1	0.18%	Fisher's Exact Test $p = .246$
Secondary education	28	11.81 %	13	9.85%	13	11.50%	56	10.2%	
A-levels	33	13.92 %	20	15.15 %	17	15.04%	56	10.2%	
Professional/vocational	42	17.72 %	13	9.85%	15	13.27%	87	15.85%	
Undergraduate degree	77	32.49 %	52	39.39 %	37	32.74%	228	41.53%	
Postgraduate degree	51	21.52 %	30	22.73 %	26	23.01%	105	19.13%	
Doctorate degree	3	1.27%	2	1.52%	5	4.42%	15	2.73%	
Prefer not to say/ Don't know	1	0.42%	1	0.76%	0	0%	1	0.18%	
Ethnicity									
Asian	3	1.27%	1	0.76%	1	0.88%	3	0.55%	Fisher's Exact Test $p = .245$
Black	0	0%	2	1.52%	1	0.88%	2	0.36%	
Mixed Ethnicity	5	2.11%	5	3.80%	1	0.88%	11	2.00%	
White	225	94.94 %	124	93.94 %	110	97.34%	532	96.9%	
Prefer not to say	4	1.69%	0	0%	0	0%	1	0.18%	
Income									
0-£26,999	38	16.03 %	20	15.15 %	15	13.27%	92	16.76%	$\chi^2(df = 15) = 15.45$, $p = .420$

£27,000 - £38,999	32	13.5%	18	13.64 %	18	15.93%	83	15.12%
£39,000 - £54,999	51	21.52 %	28	21.21 %	18	15.93%	108	19.67%
£55,000 - £78,999	36	15.19 %	28	21.21 %	26	23.01%	119	21.68%
£79,000 +	64	27%	30	22.73 %	34	30.09%	127	23.13%
Prefer not to say/ Don't know	16	6.75%	8	6.06%	2	1.77%	20	3.64%

Supplementary Table 5.2: Baseline measures and sociodemographic covariates by group

	Official Dry January (n = 291)			**Unofficial Dry January (n=115)**			**No Dry January (n=225)**		
Variable	**Med (IQR)**	**Mean (SD)**		**Med IQR**	**Mean (SD)**		**Med (IQR)**	**Mean (SD)**	
AUDIT-C (0-12)									
Baseline	10.00 (3.00)	9.44 (1.92)		9.00 (3.00)	8.63 (1.97)		8.00 (3.00)	8.26 (1.96)	
DRSE (overall) (1-7) Baseline	3.67 (1.33)	3.65 (0.97)		4.00 (1.29)	4.01 (1.07)		4.33 (1.44)	4.38 (1.09)	
-Baseline Emotional Regulation DRSE (1-7)	3.33 (2.17)	3.57 (1.45)		3.67 (2.00)	3.91 (1.56)		4.67 (2.67)	4.39 (1.63)	
-Baseline Opportunistic DRSE (1-7)	5.00 (2.00)	4.95 (1.29)		5.67 (1.66)	5.42 (1.22)		6.00 (1.67)	5.71 (1.13)	
-Baseline Social Pressure DRSE (1-7)	2.33 (1.33)	2.44 (1.09)		2.33 (1.66)	2.70 (1.31)		3.00 (1.67)	3.03 (1.33)	
Baseline Motivation (1-5)	4.20 (0.80)	4.14 (0.68)		3.60 (1.20)	3.56 (0.83)		3.20 (1.20)	3.24 (0.83)	
Baseline ASC (-3 to 3)	0.00 (2.00)	-0.10 (1.37)		-1.00 (2.30)	-0.69 (1.51)		-0.60 (2.40)	-0.58 (1.39)	
	Med (IQR)	**Mean (SD)**	**Range**	**Med (IQR)**	**Mean (SD)**	**Range**	**Med (IQR)**	**Mean (SD)**	**Range**
Age	49.00 (16.50)	49.10 (11.15)	21-79	45.00 (17.50)	45.09 (11.46)	21-78	48.00 (20.00)	47.91 (14.01)	19-81
	No.	**%**		**No.**	**%**		**No.**	**%**	
Gender									
Man	56	19.24%		61	53.04%		136	60.44%	
Woman	234	80.41%		54	46.96%		88	39.11%	
Prefer to self-describe	0	0%		0	0%		1	0.44%	
Prefer not to say	1	0.34%		0	0%		0	0%	
Ethnicity					%				
Asian	3	1.03%		0	0%		1	0.44%	
Black	3	1.03%		0	0%		0	0%	

Mixed	4	1.37%	7	6.09%	2	0.89%
White	280	96.22%	108	93.91%	222	98.67%
Prefer not to say	1	0.34%	0	0%	0	0%
Education						
No formal qualifications	1	0.34%	0	0%	0	0%
Secondary education	27	9.28%	15	13.04%	25	11.11%
A-levels	30	10.31%	11	9.57%	29	12.89%
Professional/vocational	51	17.53%	16	13.91%	30	13.33%
Undergraduate degree	114	39.18%	48	41.74%	96	42.67%
Postgraduate degree	54	18.56%	23	20%	42	18.67%
Doctorate degree	13	4.47%	2	1.74%	3	1.33%
Prefer not to say/Don't know	1	0.34%	0	0%	0	0%
Income	31		21	18.26%	53	23.56%
0 - £26,999		10.65%				
£27,000 - £38,999	41	14.09%	18	15.65%	40	17.78%
£39,000 - £54,999	51	17.53%	28	24.35%	40	17.78%
£55,000 - £78,999	59	20.27%	23	20.00%	54	24.00%
£79,000 +	92	31.62%	24	20.87%	36	16.00%
Prefer not to say/ Don't know	17	5.84%	1	0.87%	2	0.89%

Supplementary Table 5.3: Dry January participation, previous temporary abstinence experience and post-January intentions at Baseline (T1) and Post-January follow-up (T2)

		Official Dry January		Unofficial Dry January		No Dry January	
Variable		**No.**	**%**	**No.**	**%**	**No.**	**%**
Baseline							
Participated in Dry January	Yes	291	100%	110	95.65%	110*	48.89%
	No	0	0%	5	4.35%	115*	51.11%
Registered for Dry January	Yes - app	175	60.14%	1*	0.91%	8*	7.27%
	Yes -website	39	13.4%	4*	3.64%	3*	2.73%
	Yes - website + app	67	23.02%	0	0%	1*	0.91%
	No	10	3.44%	105	95.45%	98*	89.09%
Time to decision to participate in Dry January	Less than a week	58	19.93%	22	20%	29*	26.36%
	1-2 weeks	51	17.53%	29	26.36%	27*	24.55%
	2-4 weeks	62	21.31%	24	21.82%	37*	33.64%
	1-6 months	77	26.46%	23	20.91%	15*	13.64%
	More than 6-months	43	14.78%	12	10.91%	2*	1.82%
Drinking intentions following January	Drink as much as I used to	2	0.69%	5	4.55%	8*	7.27%
	Drink less than I used to	165	56.7%	61	55.45%	72*	65.45%
	Drink more than I used to	1	0.34%	0	0%	0*	0%
	Stop drinking	87	29.9%	28	25.45%	24*	21.82%
	Unsure	36	12.37%	16	14.55%	6*	5.45%
Previous attempts at 1+ weeks of temporary abstinence	Never	23	7.9%	12	10.43%	64	28.44%
	Once	18	6.19%	8	6.96%	22	9.78%
	Twice	35	12.03%	14	12.17%	22	9.78%
	Three times	43	14.78%	16	13.91%	20	8.89%
	Four or more times	172	59.11%	65	56.52%	97	43.11%
Post-January							

Participated in Dry January?	Yes	261	100%	105	100%	-	-
	No	-	-	-	-	221	100%
Registered for Dry January?	Yes - app	188	72.03%	-	-	-	-
	Yes -website	33	12.64%	-	-	-	-
	Yes - website + app	40	15.33%	-	-	-	-
	No	-	-	105	100%	-	-
Plans for after January	Drink as much as I used to	6	2.3%	7	6.67%	-	-
	Drink less than I used to	210	80.46%	76	72.38%	-	-
	Drink more than I used to	0	0%	0	0%	-	-
	Stop drinking	39	14.94%	13	12.38%	-	-
	Unsure	6	2.3%	9	8.57%	-	-
Who did you participate with?**	Nobody	128	49.04%	44	41.9%	-	-
	Spouse/Partner	73	27.97%	39	37.14%	-	-
	Other family member(s)	22	8.43%	5	4.76%	-	-
	Friend(s)	30	11.49%	14	13.33%	-	-
	Colleague(s)	6	2.3%	3	2.86%	-	-
	Other	2	0.77%	0	0%	-	-
		Mean (SD)	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**
No. days abstinence		27.33 (6.48)	31 (4)	26.85 (5.89)	29 (5)	16.29 (9.13)	19 (15)

* Responses from the 'No Dry January' group which suggest they did participate in Dry January are due to inconsistencies in group responses. Participants "main" group was determined according to their response at Post-January follow-up however if, at baseline, they reported being an 'official' or 'unofficial' participant they would have answered these questions.

** Note: Due to researcher error participants were only able to give one response rather than select all applicable responses

Supplementary Table 5.4: Frequency of use of different elements of online supports during Dry January by 'Official' Dry January participants

	Never		Once		2 or 3 times		Weekly		Several times per week		Most days		Daily or more often	
Online support	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Try Dry App:														
Use of Try Dry app	30	11.49	4	1.53	10	3.83	5	1.92	9	3.45	52	19.92	151	57.85
Calendar to record dry days	8	3.46	3	1.3	5	2.16	3	1.3	12	5.19	48	20.78	152	65.8
Calendar to record drinking days	94	40.69	12	5.19	17	7.36	1	0.43	9	3.9	24	10.39	74	32.03
Calendar to record drank as planned days	141	61.04	12	5.19	14	6.06	3	1.3	6	2.6	13	5.63	42	18.18
Look back at calendar to see dry days	16	6.93	6	2.6	11	4.76	16	6.93	24	10.39	52	22.51	106	45.89
Look back at calendar to see drinking days	80	34.63	10	4.33	9	3.9	11	4.76	14	6.06	44	19.05	63	27.27
Look at progress chart to see units saved	34	14.72	15	6.49	29	12.55	19	8.23	24	10.39	39	16.88	71	30.74
Look at progress chart to see money or calories saved	38	16.45	7	3.03	36	15.58	25	10.82	24	10.39	44	19.05	57	24.68
Claimed mission badges	95	41.13	29	12.55	55	23.81	24	10.39	11	4.76	6	2.6	11	4.76
	Yes		**No**											
Goal to do DJ	179	77.49	52	22.51										
	0		**1**		**2**		**3**		**4**		**5**		**6+**	
No. other goals	149	64.5	67	29	8	3.46	5	2.16	0	0	0	0	2	0.87
	Not at all		**A little**		**A moderate amount**		**A lot**		**A great deal**					
To what extent did reflecting on progress give a sense of achievement	8	3.46	25	10.82	42	18.18	65	28.14	91	39.39				
To what extent did receiving acknowledgement from the app give you a sense of achievement	18	7.79	36	15.58	48	20.78	66	28.57	63	27.27				
	Yes		**No**											

Emails:				
Sign up to emails	209	80.08	52	19.92

	Never		**Once**		**2 or 3 times**		**Weekly**		**Several times per week**		**Most days**		**Daily or more often**	
Read emails	1	0.48	3	1.44	21	10.05	22	10.53	45	21.53	67	32.06	50	23.92
Follow links to posts on ACUK website	17	8.13	8	3.83	61	29.19	32	15.31	47	22.49	30	14.35	14	6.7

	Yes		**No**	
Facebook Group:				
Join Facebook Group	67	25.67	194	74.33

	ACUK group		**Another Dry January group**		**Both types of group(s)**	
Type of Group	36	53.73	16	23.88	15	22.39

	Never		**Once**		**2 or 3 times**		**Weekly**		**Several times per week**		**Most days**		**Daily or more often**	
Post or comment	32	47.76	3	4.48	18	26.87	5	7.46	5	7.46	3	4.48	1	1.49
Read posts	2	2.99	1	1.49	6	8.96	5	7.46	11	16.42	23	34.33	19	28.36
Share ideas for alternative activities	26	38.81	7	10.45	14	20.9	4	5.97	10	14.93	4	5.97	2	2.99
Post/comment as a distraction	35	52.24	4	5.97	9	13.43	7	10.45	5	7.46	4	5.97	3	4.48
Compare self to others	13	19.4	0	0	22	32.84	4	5.97	7	10.45	12	17.91	9	13.43
For support from others	35	52.24	1	1.49	18	26.87	2	2.99	4	5.97	5	7.46	2	2.99
To give support to others	30	44.78	1	1.49	15	22.39	5	7.46	8	11.94	6	8.96	2	2.99

Supplementary Table 5.5: Frequency of use of different elements of online supports after Dry January (Feb-August) by 'Official' Dry January participants

	Never		Once		2 or 3 times		Weekly		Several times per week		Most days		Daily or more often	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Try Dry:														
Use of Try Dry app	113	38.83	39	13.4	14	4.81	14	4.81	18	6.19	43	14.78	50	17.18
Calendar to record dry days	5	2.81	8	4.49	29	16.29	21	11.8	23	12.92	35	19.66	57	32.02
Calendar to record drinking days	22	12.36	12	6.74	37	20.79	20	11.24	21	11.8	29	16.29	37	20.79
Calendar to record drank as planned days	44	24.72	12	6.74	35	19.66	19	10.67	21	11.8	22	12.36	25	14.04
Look back at calendar to see dry days	7	3.93	8	4.49	34	19.1	50	28.09	30	16.85	29	16.29	20	11.24
Look back at calendar to see drinking days	23	12.92	9	5.06	33	18.54	46	25.84	31	17.42	20	11.24	16	8.99
Look at progress chart to see units saved	39	21.91	10	5.62	54	30.34	31	17.42	13	7.3	18	10.11	13	7.3
Look at progress chart to see money or calories saved	52	29.21	16	8.99	49	27.53	25	14.04	10	5.62	19	10.67	7	3.93
Claimed mission badges	67	37.64	22	12.36	69	38.76	15	8.43	1	0.56	2	1.12	2	1.12
	0		**1**		**2**		**3**		**4**		**5**		**6+**	
Goals set	50	28.09	43	24.16	39	21.91	21	11.8	11	6.18	8	4.49	6	3.37
	Not at all		**A little**		**A moderate amount**		**A lot**		**A great deal**					
To what extent did reflecting on progress give a sense of achievement	7	3.93	27	15.17	60	33.71	44	24.72	40	22.47				
To what extent did receiving acknowledgement from the app give you a sense of achievement	19	10.67	39	21.91	53	29.78	35	19.66	32	17.98				
	Yes		**No**											
Facebook Groups:	73	25.09	218	74.91										

Member of Facebook group														
	ACUK group		**Another Dry January group**		**Both types of group(s)**									
Type of group	35	47.95	25	34.25	13	17.81								
	Never		**Once**		**2 or 3 times**		**Weekly**		**Several times per week**		**Most days**		**Daily or more often**	
Post or comment	46	63.01	7	9.59	15	20.55	4	5.48	0	0	1	1.37	0	0
Read posts	6	8.22	0	0	24	32.88	16	21.92	11	15.07	10	13.7	6	8.22
Share ideas for alternative activities	42	57.53	2	2.74	18	24.66	6	8.22	0	0	4	5.48	1	1.37
Post/comment as a distraction	46	63.01	5	6.85	9	12.33	7	9.59	3	4.11	3	4.11	0	0
Compare self to others	25	34.25	1	1.37	27	36.99	11	15.07	4	5.48	5	6.85	0	0
For support from others	46	63.01	7	9.59	13	17.81	3	4.11	1	1.37	3	4.11	0	0
To give support to others	46	63.01	2	2.74	14	19.18	5	6.85	2	2.74	4	5.48	0	0

Supplementary table 5.6: Comparison of the characteristics of people not participating in Dry January (n=316) and those taking part in any type of Dry January (n=715) (RQ6)

	No Dry January (n=316)		**Any type of Dry January (n=715)**		
Variable	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**
Baseline AUDIT-C	8.30 (2.07)	8.00 (3.00)	9.16 (2.10)	9.00 (3.00)	z= -6.52, **p <.001**, r = .20
Baseline DRSE	4.34 (1.06)	4.33 (1.44)	3.75 (1.01)	3.78 (1.44)	t(581.16) = 8.40, **p <.001**, d = .57
Baseline motivation	3.25 (0.81)	3.20 (1.00)	4.00 (0.76)	4.00 (1.00)	z = -12.98, **p <.001**, r = .40
Baseline ASC	-0.59 (1.38)	-0.60 (2.40)	-0.23 (1.43)	-0.20 (2.20)	t(622.78) = -3.81, **p <.001**, d = -.26
Age	47.10 (13.80)	46.50 (20.00)	47.90 (11.40)	48.00 (15.00)	t(511.94) = -1.01, p<.313, d = -.07
	No.	**%**	**No.**	**%**	
Gender					
Man	187	59.18%	179	25.03	Fishers Exact test **p<.001**
Woman	128	40.51%	532	74.41	
Prefer to self-describe	1	0.32%	1	0.14	
Prefer not to say	0	0%	3	0.42	
Ethnicity					
Asian	2	0.63%	6	0.84%	Fisher's Exact Test p = .463
Black	0	0.00%	5	0.70%	
Mixed	4	1.27%	18	2.52%	
White	309	97.78%	682	95.38%	
Prefer not to say	1	0.32%	4	0.56%	
Education					
No formal qualifications	0	0%	4	0.56%	Fisher's Exact Test p = .142
Secondary education	34	10.76%	76	10.63%	
A-levels	47	14.87%	79	11.05%	
Professional/vocational	43	13.61%	114	15.94%	
Undergraduate degree	131	41.46%	263	36.78%	
Postgraduate degree	57	18.04%	155	21.68%	

Doctorate degree	4	1.27%	21	2.94%	
Prefer not to say/ Don't know	0	0.00%	3	0.42%	
Income					
0-£26,999	73	23.10%	92	12.87%	$\chi 2$ (5) = 38.67, **p<.001**
£27,000 - £38,999	55	17.41%	96	13.43%	
£39,000 - £54,999	61	19.30%	144	20.14%	
£55,000 - £78,999	70	22.15%	139	19.44%	
£79,000 +	52	16.46%	203	28.39%	
Prefer not to say/ Don't know	5	1.58%	41	5.73%	

Data included from all participants who completed at least baseline survey (T1)

Supplementary Table 5.7: Sensitivity analyses for RQ6 analysis comparing characteristic of people not participating in Dry January and those participating in any type of Dry January

	Without participants reporting 2+ group changes					**Without participants reporting any group change**				
	No Dry January (n =299)		**Any type of Dry January (n= 703)**			**No Dry January (n=189)**		**Any type of Dry January (n=642)**		
Variable	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**
Baseline AUDIT-C	8.30 (2.10)	8.00 (3.00)	9.17 (2.09)	9.00 (3.00)	z= -6.36, ***p*<.001**, r= .20	8.22 (2.2)	8.00 (3.00)	9.21 (2.14)	10.00 (3.00)	z= -5.82, ***p*<.001**, r= .20
Baseline DRSE	4.33 (1.06)	4.33 (1.50)	3.75 (1.01)	3.78 (1.44)	t(534.85) =8.04, ***p*<.001**, *d* = .56	4.41 (1.14)	4.33 (1.44)	3.75 (1.01)	3.78 (1.41)	t(280.10) = 7.21, ***p*<.001**, *d*=.62
Baseline motivation	3.23 (0.81)	3.20 (1.20)	4.01 (0.75)	4.00 (1.00)	z=-13.15, ***p* <.001**, r= .42	3.12 (0.81)	3.20 (1.00)	4.04 (0.74)	4.10 (1.00)	z=-12.58, ***p* <.001**, r=.44
Baseline ASC	-0.57 (1.39)	-0.6 (2.40)	-0.23 (1.42)	-0.20 (2.20)	t(574.93) = -3.55, ***p*<.001**, *d*= -.24	-0.55 (1.43)	-0.60 (2.40)	-0.19 (1.42)	0 (2.15)	t(306.50) = -3.04, ***p*<.001**, *d*= -.25
Age	47.40 (13.70)	48.00 (19.00)	47.80 (11.40)	48.00 (15.00)	t(479.10) = -0.53, *p*=.595, *d* = -.04	49.60 (13.90)	50.00 (18.00)	48.30 (11.10)	49.00 (15.00)	t(263) = 1.13, *p*= .262, *d* =.10
	No.	**%**	**No.**	**%**	**Differences**	**No.**	**%.**	**No.**	**%**	**Differences**
Gender: Man	176	58.86%	171	24.32	Fisher's Exact test ***p*<.001**	125	66.14%	149	23.28%	Fisher's Exact Test ***p* <.001**
Woman	122	40.80%	528	75.11		64	33.86%	487	76.09%	
Non-binary	0	0%	0	0		0	0%	0	0%	
Prefer to self-describe	1	0.33%	1	0.14		0	0%	1	0.16%	
Prefer not to say	0	0.00%	3	0.43		0	0%	3	0.47%	
Ethnicity: Asian	2	0.67%	6	0.85%	Fisher's Exact test *p*=.546	2	1.06%	6	0.94%	Fisher's Exact Test *p* = .919
Black	0	0.00%	5	0.71%		0	0%	4	0.62%	
Mixed	4	1.34%	17	2.42%		3	1.59%	15	2.34%	
White	292	97.66%	671	95.45%		183	96.83%	611	95.47%	

Prefer not to say	1	0.33%	4	0.57%		1	0.53%	4	0.62%	
Education: No formal qualifications	0	0%	4	0.57%	Fisher's Exact Test p=.267	0	0%	4	0.62%	Fisher's Exact Test p = .322
Secondary education	32	10.70%	74	10.53%		21	11.11%	69	10.78%	
A-levels	45	15.05%	79	11.24%		29	15.34%	72	11.25%	
Professional/vocational	42	14.05%	110	15.65%		28	14.81%	106	16.56%	
Undergraduate degree	122	40.8%	260	36.98%		78	41.27%	228	35.62%	
Postgraduate degree	54	18.06%	154	21.91%		29	15.34%	139	21.72%	
Doctorate degree	4	1.34%	19	2.70%		4	2.12%	19	2.97%	
Prefer not to say/ Don't know	0	0%	3	0.43%		0	0%	3	0.47%	
Income: 0-£26,999	69	23.08%	91	12.94%	$\chi 2$ (5) = 36.78, ***p*<.001**	49	25.93%	81	12.66%	$\chi 2$ (5) =33.17, ***p*< .001**
£27,000 - £38,999	51	17.06%	94	13.37%		35	18.52%	81	12.66%	
£39,000 - £54,999	58	19.4%	142	20.20%		31	16.40%	126	19.69%	
£55,000 - £78,999	67	22.41%	135	19.20%		36	19.05%	125	19.53%	
£79,000 +	49	16.39%	200	28.45%		35	18.52%	187	29.22%	
Prefer not to say/ Don't know	5	1.67%	41	5.83%		3	1.59%	40	6.25%	

Data included from all participants who completed at least baseline survey (T1)

Supplementary Table 5.8: Comparison of the characteristics of 'Official' (n=569) and 'Unofficial' Dry January participants (n=146) (RQ7)

	Official Dry January (n =569)		**Unofficial Dry January (n =146)**		
Variable	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**
Baseline AUDIT-C	9.36 (2.01)	10 (3.00)	8.39 (2.27)	9 (3.00)	z= -4.64, ***p*<.001**, r=.17
Baseline DRSE	3.67 (0.98)	3.67 (1.33)	4.06 (1.08)	4.11 (1.23)	t(210.8) = -3.97, ***p* <.001,** *d*=-.38
Baseline motivation	4.1 (0.71)	4.20 (1.20)	3.60 (0.80)	3.6 (1.00)	z=-6.82, ***p*<.001**, r = .26
Baseline ASC	-0.08 (1.38)	0 (2.00)	-0.80 (1.50)	-1.2 (2.35)	z=-5.35, ***p*<.001**, r=.20
Age	48.8 (11)	49 (15)	44.8 (12.1)	45 (18.8)	z=-3.46**, *p*<.001**, r=.13
	No.	**%**	**No.**	**%**	**Differences**
Gender					
Man	106	18.63%	73	50.00%	Fisher's Exact Test ***p*<.001**
Woman	459	80.67%	73	50.00%	
Prefer to self-describe	1	0.18%	0	0%	
Prefer not to say	3	0.53%	0	0%	
Ethnicity					
Asian	5	0.88%	1	0.68%	Fisher's Exact Test *p* = .110
Black	4	0.70%	1	0.68%	
Mixed	10	1.76%	8	5.48%	
White	546	95.96%	136	93.15%	
Prefer not to say	4	0.70%	0	0%	
Education					
No formal qualifications	4	0.70%	0	0%	Fisher's Exact Test *p* =.637
Secondary education	58	10.19%	18	12.33%	
A-levels	63	11.07%	16	10.96%	
Professional/vocational	96	16.87%	18	12.33%	
Undergraduate degree	204	35.85%	59	40.41%	
Postgraduate degree	122	21.44%	33	22.60%	
Doctorate degree	19	3.34%	2	1.37%	

Prefer not to say/ Don't know	3	0.53%	0	0%	
Income					
0-£26,999	65	11.42%	27	18.49%	$\chi 2$ (5) = 11.90, ***p*=.036**
£27,000 - £38,999	75	13.18%	21	14.38%	
£39,000 - £54,999	111	19.51%	33	22.60%	
£55,000 - £78,999	108	18.98%	31	21.23%	
£79,000 +	174	30.58%	29	19.86%	
Prefer not to say/ Don't know	36	6.33%	5	3.42%	

Data included from all participants who completed at least baseline survey (T1)

Supplementary Table 5.9: Sensitivity analyses for RQ7 comparing characteristic of participants who took part in an 'Official' Dry January with those participating in an 'Unofficial' Dry January

	Without participants reporting 2+ group changes					**Without participants reporting any group change**				
	Official Dry January (n =567)		**Unofficial Dry January (n= 136)**			**Official January (n=530)**		**Unofficial Dry January (n=97)**		
Variable	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Differences**
Baseline AUDIT-C	9.35 (2.01)	10.00 (3.00)	8.38 (2.25)	9.00 (3.00)	z=-4.57, ***p* <.001**, r=.17	9.36 (2.03)	10.00 (3.00)	8.37 (2.39)	9.00 (3.00)	z=-3.71, ***p*<.001**, r=.15
Baseline DRSE	3.67 (0.98)	3.67 (1.33)	4.08 1.04)	4.11 (1.26)	t(196.7)=-4.23, ***p*<.001**, *d* = -.41	3.67 (0.98)	3.67 (1.30)	4.13 (1.05)	4.22 (1.34)	t(128.2)=-3.99, ***p*<.001**, *d*=-.45
Baseline motivation	4.11 (0.70)	4.20 (1.20)	3.61 (0.81)	3.60 (1.00)	z=-6.51, ***p*<.001**, r=.25	4.11 (0.70)	4.20 (1.20)	3.64 (0.84)	3.80 (1.20)	z=-5.19, ***p* <.001**, r=.21
Baseline ASC	-0.09 (1.38)	0 (2.00)	-0.84 (1.45)	-1.20 (-1.20)	z=-5.50, ***p*<.001**, r=.21	-0.08 (1.37)	0 (2.00)	-0.82 (1.52)	-1.20 (2.20)	z=-.49, ***p*<.001**, r=.18
Age	48.70 (11.00)	49.00 (15.00)	44.10 (12.00)	44.00 (18.00)	z=-3.96, ***p*<.001**, r= .15	48.70 (10.90)	49.00 (14.80)	45.40 (12.10)	47.00 (17.00)	z=-2.23, ***p*=.026**, r=.09
	No.	**%**	**No.**	**%**	**Differences**	**No.**	**%.**	**No.**	**%**	**Differences**
Gender:					Fisher's Exact Test					Fisher's Exact Test
Man	105	18.52	66	48.53	***p*<.001**	93	17.55	48	49.48	***p*<.001**
Woman	458	80.78	70	51.47		433	81.7	49	50.52	
Non-binary	0	0	0	0		0	0	0	0	
Prefer to self-describe	1	0.18	0	0		1	0.19	0	0	
Prefer not to say	3	0.53	0	0		3	0.57	0	0	
Ethnicity:					Fisher's Exact Test					Fisher's Exact Test
Asian	5	0.88	1	0.74	*p*=.172	5	0.94	1	1.03	*p*=.432
Black	4	0.71	1	0.74		3	0.57	1	1.03	
Mixed	10	1.76	7	5.15		10	1.89	4	4.12	
White	544	95.94	127	93.38		508	95.85	91	93.81	

Prefer not to say	4	0.71	0	0		4	0.75	0	0	
Education:										
No formal qualifications	4	0.71	0	0	Fisher's Exact Test *p*=.311	4	0.75	0	0	Fisher's Exact Test p=.648
Secondary education	58	10.23	16	11.76		53	10	12	12.37	
A-levels	63	11.11	16	11.76		59	11.13	11	11.34	
Professional/vocational	96	16.93	14	10.29		93	17.55	11	11.34	
Undergraduate degree	203	35.8	57	41.91		186	35.09	40	41.24	
Postgraduate degree	122	21.52	32	23.53		115	21.7	22	22.68	
Doctorate degree	18	3.17	1	0.74		17	3.21	1	1.03	
Prefer not to say/ Don't know	3	0.53	0	0		3	0.57	0	0	
Income:					$\chi 2$ (5) = 10.62, *p*=.060					$\chi 2$ (5) = 7.93, *p*=.160
0-£26,999	65	11.46	26	19.12		59	11.13	18	18.56	
£27,000 - £38,999	75	13.23	19	13.97		67	12.64	12	12.37	
£39,000 - £54,999	111	19.58	31	22.79		101	19.06	24	24.74	
£55,000 - £78,999	108	19.05	27	19.85		103	19.43	17	17.53	
£79,000 +	172	30.34	28	20.59		165	31.13	21	21.65	
Prefer not to say/ Don't know	36	6.35	5	3.68		35	6.6	5	5.15	

Data included from all participants who completed at least baseline survey (T1)

Supplementary Table 5.10: Sensitivity analyses for Wilcoxon signed rank tests of difference in AUDIT-C at baseline and 6-month follow up for Official (RQ1), Unofficial and No Dry January groups. Excluding participants reporting changing group twice or more over the course of the study and reporting changing group at all

		Baseline		Post-January		3-months		6-months		
Group	**Sensitivity Analysis**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Median (IQR)**	**Mean (SD)**	**Difference between baseline and 6-months**
Official Dry January	Excluding 2+ group changes (n =289)	10 (3)	9.42 (1.91)	1 (6)	3.12 (3.59)	8 (5)	7.35 (3.14)	8 (4)	7.62 (3.02)	*z* = -10.42, ***p* <.001**, *r* =.61
	Excluding any group changes (n = 258)	10 (3)	9.44 (1.92)	1 (6)	2.9 (3.55)	8 (5)	7.27 (3.14)	8 (4)	7.58 (3.07)	*z* = -9.78, ***p* <.001**, *r* =.61
Unofficial Dry January	Excluding 2+ group changes (n =105)	9 (3)	8.63 (1.92)	3 (6.25)	3.66 (3.56)	8 (4)	7.58 (3.03)	8 (4)	7.61 (2.79)	*z* = -4.03, ***p* <.001**, *r* =.39
	Excluding any group changes (n = 70)	9 (3)	8.74 (1.95)	2.5 (6)	3.31 (3.48)	8 (4.75)	7.74 (3.09)	8 (4)	7.74 (2.77)	*z* = -3.21, ***p* = .001**, *r* =.38
No Dry January	Excluding 2+ group changes (n = 208)	8 (3)	8.25 (1.99)	8 (4.25)	7.23 (2.76)	8 (4)	7.97 (2.27)	8 (4)	7.81 (2.24)	*z* = -3.33, ***p* = .001**, *r* =.23
	Excluding any group changes (n =114)	8 (3)	8.17 (2.07)	8 (4)	7.45 (2.51)	8 (3)	7.79 (2.24)	8 (3)	7.75 (2.19)	*z* = -2.86, ***p* = .004,** *r* =.27

Supplementary Table 5.11: Sensitivity analysis for regression models (Table 5.4) answering RQ2a excluding data from participants reporting two or more group changes and any group changes

	AUDIT-C at 6-months*											
	Excluding data from 2+ group changes (SA1)						Excluding data from participants with any group changes (SA2)					
	Model 1			Model 2			Model 1			Model 2		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.68	0.60, 0.76	**<.001**	0.67	0.59, 0.75	**<.001**	0.67	0.58, 0.76	**<.001**	0.67	0.58, 0.77	**<.001**
Group (No Dry January)	12.81	7.20, 18.42	**<.001**	12.29	5.81, 18.76	**<.001**	12.55	5.39, 19.71	**<.001**	14.52	5.70, 23.35	**.001**
Age				-0.08	-0.30, 0.14	.467				-0.11	-0.39, 0.16	.426
Gender – Man				0.66	-5.52, 6.85	.833				-3.13	-11.19, 4.93	.446
Ethnicity - non-white				-2.05	-18.38, 14.28	.805				-2.31	-20.66, 16.04	.804
Income				0.08	-1.78, 1.94	.934				-0.30	-2.51, 1.90	.786
Post-18 education				-1.46	-8.07, 5.16	.666				2.37	-5.72, 10.45	.565

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(2, 494) = 147.50$, $p < .001$, $R^2 = 0.374$

SA1 Model 2: $F(7, 489) = 41.89$, $p < .001$, $R^2 = 0.375$

SA2 Model 3: $F(2, 369) = 104.5$, $p < .001$, $R^2 = 0.362$

SA2 Model 4: $F(7, 364) = 29.82$, $p < .001$, $R^2 = 0.364$

Supplementary Table 5.12: Sensitivity analysis for regression models (Table 5.5) answering RQ2b excluding data from participants reporting two or more group changes and any group changes

	AUDIT-C at 6-months*											
	Excluding data from participants with 2+ group changes (SA1)						Excluding data from participants with any group changes (SA2)					
	Model 1			Model 2			Model 1			Model 2		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.65	0.56, 0.75	**<.001**	0.67	0.57, 0.77	**<.001**	0.64	0.54, 0.75	**<.001**	0.67	0.56, 0.77	**<.001**
Group (Unofficial Dry January)	7.76	0.34, 15.17	**.040**	8.45	0.27, 16.63	**.043**	8.76	-0.19, 17.71	.055	10.89	1.06, 20.72	**.030**
Age				-0.03	-0.33, 0.26	.824				-0.13	-0.46, 0.21	.454
Gender – Man				-3.16	-10.90, 4.58	.423				-7.40	-16.54, 1.73	.112
Ethnicity - non-white				-17.10	-33.39, -0.81	**.040**				-11.27	-29.60, 7.06	.227
Income				-1.53	-3.80, 0.73	.184				-1.35	-3.89, 1.20	.299
Post-18 education				2.37	-5.87, 10.61	.571				5.19	-4.26, 14.63	.281

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(2, 391) = 92.08$, $p<.001$, $R^2 = 0.320$

SA1 Model 2: $F(7, 386) = 27.25$, $p <.001$, $R^2 = 0.331$

SA2 Model 1: $F(2, 325) = 71.93$, $p<.001$, $R^2=0.307$

SA2 Model 2: $F(7, 320) = 21.41$, $p<.001$, $R^2= 0.319$

Supplementary Table 5.13: Sensitivity analysis for linear regression models (Table 5.7) examining association between changes in psychological factors at one month, social contagion, abstinence and use of online supports during Dry January on AUDIT-C at 6-months 'Official' Dry January participants (RQ3, RQ5) excluding data from participants reporting 2 or more group changes (n=289) or any changes (n=258).

	AUDIT-C at 6-months*											
	Excluding data from 2+ changes						**Excluding data from participants with any changes**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.66	0.55, 0.77	**<.001**	0.67	0.56, 0.79	**<.001**	0.63	0.51, 0.75	**<.001**	0.65	0.52, 0.77	**<.001**
Change in DRSE at 1M	-3.15	-7.39, 1.08	.144	-3.41	-7.69, 0.87	.118	-3.33	-7.80, 1.14	.144	-3.48	-8.01, 1.04	.131
Change in Motivation at 1M	-6.35	-12.14, -0.56	**.032**	-6.45	-12.31, -0.59	**.031**	-7.13	-13.39, -0.86	**.026**	-7.28	-13.62, -0.93	**.025**
Change in ASC at 1M	1.08	-3.25, 5.42	.623	1.15	-3.21, 5.51	.603	1.33	-3.28, 5.94	.570	1.45	-3.18, 6.08	.538
Social Contagion	1.01	-1.89, 3.90	.495	0.74	-2.20, 3.67	.621	0.95	-2.12, 4.01	.544	0.62	-2.48, 3.72	.695
Abstinence	-0.23	-0.92, 0.46	.518	-0.22	-0.92, 0.48	.541	-0.31	-1.08, 0.46	.426	-0.35	-1.13, 0.43	.381
Freq use Try Dry	-0.32	-2.28, 1.64	.750	-0.31	-2.30, 1.68	.757	0.07	-2.19, 2.34	.949	-0.02	-2.32, 2.28	.985
Freq use emails	-1.01	-2.89, 0.87	.290	-0.79	-2.75, 1.16	.425	-1.56	-3.64, 0.53	.142	-1.21	-3.36, 0.94	.268
Freq use Facebook group	-2.97	-5.96, 0.03	.053	-2.99	-6.06, 0.08	.056	-2.60	-5.74, 0.54	.104	-2.39	-5.60, 0.83	.145
Age				-0.04	-0.40, 0.33	.837				-0.12	-0.52, 0.28	.545
Gender – Man				-6.13	-15.93, 3.68	.220				-7.25	-18.40, 3.90	.202
Ethnicity - non-white				-7.13	-27.40, 13.14	.489				-8.30	-30.02, 13.41	.452
Income				-1.58	-4.21, 1.05	.239				-1.16	-4.01, 1.69	.425
Post-18 education				2.29	-7.43, 12.00	.644				5.62	-5.06, 16.30	.301

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(9, 279) = 17.64$, $p < .001$, $R^2 = 0.36$

SA1 Model 2: $F(14, 274) = 11.51$, $p < .001$, $R^2 = 0.37$

SA2 Model 1: $F(9, 248) = 14.92$, $p < .001$, $R^2 = 0.35$

SA2 Model 2: $F(14, 243) = 9.81$, $p < .001$, $R^2 = 0.36$

Supplementary Table 5.14: Sensitivity analyses for multiple linear regression models (Table 5.8) examining baseline psychological factors as predictors of AUDIT-C at 6-months among 'Official' Dry January participants (RQ4) controlling for baseline consumption (Model 1) and demographic covariates (Model 2) excluding data from participants reporting 2 or more group changes (n=289) or any changes (n=258).

	AUDIT-C at 6-months*											
	Excluding data from participants with 2+ group changes (SA1)						**Excluding data from participants with any group changes (SA2)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.61	0.48, 0.73	**<.001**	0.62	0.49, 0.75	**<.001**	0.61	0.48, 0.75	**<.001**	0.64	0.50, 0.78	**<.001**
Baseline DRSE	0.90	-3.61, 5.41	.695	1.89	-2.86, 6.65	.434	2.02	-2.92, 6.96	.421	3.10	-2.08, 8.29	.240
Baseline Motivation	-3.55	-9.40, 2.31	.234	-3.27	-9.26, 2.73	.284	-5.16	-11.61, 1.30	.117	-5.00	-11.63, 1.64	.139
Baseline ASC	2.56	-0.79, 5.90	.134	2.80	-0.62, 6.22	.108	2.51	-1.10, 6.11	.172	2.57	-1.09, 6.24	.168
Age				-0.10	-0.46, 0.26	.598				-0.12	-0.52, 0.28	.545
Gender - Man				-5.68	-15.90, 4.55	.275				-9.18	-20.75, 2.38	.119
Ethnicity - non-white				-6.98	-27.47, 13.51	.503				-6.80	-28.83, 15.23	.544
Income				-1.57	-4.27, 1.12	.251				-1.15	-4.08, 1.78	.439
Post-18 education				0.44	-9.48, 10.37	.930				3.97	-6.94, 14.88	.474

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(4, 284) = 33.56$, $p < .001$, $R^2 = 0.32$

SA1 Model 2: $F(9, 279) = 15.15$, $p < .001$, $R^2 = 0.33$

SA2 Model 1: $F(4, 253) = 27.70$, $p < .001$, $R^2 = 0.30$

SA2 Model 2: $F(9, 248) = 12.70$, $p < .001$, $R^2 = 0.32$

Supplementary Table 5.15: Sensitivity analysis for linear regression models (Table 5.7) examining association between changes in psychological factors at 1-month, social contagion, abstinence and use of online supports during Dry January on AUDIT-C at 6-months for 'Unofficial' Dry January participants (RQ3, RQ5c) excluding data from participants reporting 2 or more group changes (n=105) or any changes (n=70).

	AUDIT-C at 6-months*											
	Excluding data from 2+ group changes (SA1)						**Excluding data from any group changes (SA2)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variables	**B**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.76	0.57, 0.94	**<.001**	0.85	0.64, 1.05	**<.001**	0.73	0.50, 0.97	**<.001**	0.84	0.58, 1.11	**<.001**
Change in DRSE	-5.72	-13.00, 1.56	.122	-7.11	-14.34, 0.11	.054	-6.69	-15.39, 2.01	.129	-8.16	-17.10, 0.79	.073
Change in Motivation	0.85	-6.22, 7.92	.812	2.65	-4.48, 9.78	.462	2.31	-6.93, 11.56	.618	3.95	-5.83, 13.73	.422
Change in ASC	2.97	-3.95, 9.88	.396	2.83	-4.01, 9.67	.413	-0.59	-9.41, 8.23	.894	0.03	-9.15, 9.20	.996
Social Contagion	-5.68	-9.19, -2.16	**.002**	-5.14	-8.73, -1.56	**.005**	-5.60	-10.40, -0.80	**.023**	-5.47	-10.42, -0.52	**.031**
Abstinence	-1.15	-2.26, -0.03	**.045**	-0.94	-2.05, 0.16	.093	-1.50	-3.26, 0.27	.094	-1.33	-3.14, 0.48	.147
Age				0.12	-0.38, 0.63	.625				-0.01	-0.72, 0.69	.970
Gender - Man				-5.49	-17.11, 6.12	.350				-12.58	-28.33, 3.16	.115
Ethnicity - non-white				-37.52	-64.17, -10.87	**.006**				-26.86	-62.09, 8.36	.132
Income				-2.17	-6.27, 1.92	.295				-1.93	-7.35, 3.48	.478
Post-18 education				1.28	-13.18, 15.74	.861				5.19	-14.68, 25.06	.603

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(6, 98) = 14.43$, $p < .001$, $R^2 = 0.47$

SA1 Model 2: $F(11, 93) = 9.01$, $p < .001$, $R^2 = 0.52$

SA2 Model 1: $F(6, 63) = 9.07$, $p < .001$, $R^2 = 0.46$

SA2 Model 2: $F(11, 58) = 5.30$, $p < .001$, $R^2 = 0.50$

Supplementary Table 5.16: Sensitivity analyses for multiple linear regression models (Table 5.8) examining baseline psychological factors as predictors of AUDIT-C at 6-months among 'Unofficial' Dry January participants (RQ4) controlling for baseline consumption (Model 1) and demographic covariates (Model 2) excluding data from participants reporting 2 or more group changes (n=105) or any changes (n=70).

	AUDIT-C at 6-months*											
	Excluding data from 2+ changes (SA1)						**Excluding data from participants with any group changes (SA2)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variables	**B**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.66	0.45, 0.87	**<.001**	0.75	0.53, 0.98	**<.001**	0.63	0.38, 0.89	**<.001**	0.71	0.43, 0.99	**<.001**
Baseline DRSE	-4.15	-11.29, 2.99	.252	-3.65	-10.91, 3.61	.321	-6.67	-15.58, 2.25	.140	-5.73	-15.35, 3.89	.238
Baseline Motivation	-4.12	-11.62, 3.37	.278	-6.91	-14.54, 0.72	.076	-6.56	-15.42, 2.30	.144	-9.69	-19.30, -0.08	**.048**
Baseline ASC	-2.02	-7.05, 3.02	.429	-0.83	-5.92, 4.25	.746	-1.33	-7.24, 4.58	.655	0.09	-6.13, 6.32	.976
Age				0.18	-0.36, 0.72	.503				-0.07	-0.78, 0.64	.844
Gender - Man				-2.66	-15.68, 10.36	.686				-9.89	-26.96, 7.18	.251
Ethnicity - non-white				-45.38	-74.04, -16.71	**.002**				-35.76	-71.97, 0.45	.053
Income				-1.39	-5.77, 2.98	.528				-1.17	-6.74, 4.40	.676
Post-18 education				5.89	-9.63, 21.40	.453				6.18	-14.20, 26.55	.547

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(4, 100) = 14.38$, $p < .001$, $R^2 = 0.37$

SA1 Model 2: $F(9, 95) = 8.07$, $p < .001$, $R^2 = 0.43$

SA2 Model 1: $F(4, 65) = 11.38$, $p < .001$, $R^2 = 0.41$

SA2 Model 2: $F(9, 60) = 5.57$, $p < .001$, $R^2 = 0.46$

Supplementary Table 5.17: Model significance and measures of model fit for sensitivity analyses of structural models 1 and 2.

		χ^2	df	*p*	CFI	RMSEA	90% CI	TLI	SRMR	AIC	BIC
Model 1	Excluding data from participants with 2+ changes in group (n=497)	0.06	1	.813	1.00	0.00	0.00, 0.07	1.03	0.002	9287.04	9388.05
	Excluding data from participants with any changes in group (n=372)	0.13	1	.716	1.00	0.00	0.00, 0.10	1.03	0.003	6947.43	7041.49
Model 2	Excluding data from participants with 2+ changes in group (n=497)	5301.83	26	<.001	0.03	0.64	0.63, 0.65	-0.30	0.325	8873.78	8953.74
	Excluding data from participants with any changes in group (n=372)	4349.15	26	<.001	0.03	0.67	0.65, 0.69	−0.31	0.332	6730.22	6804.67

Supplementary Table 5.18: Sensitivity analyses for structural model 1 (RQ3) excluding data from participants reporting 2+ changes in group and any change in group.

Effects (Pathways to AUDIT-C at 6-months)	Excluding data from participants reporting 2 + group changes (n =497)					Excluding data from participants reporting any group changes (n=372)				
	β	**95% CI**	**SE**	**z**	***p***	**β**	**95% CI**	**SE**	**z**	***p***
Direct Effect										
Dry January participation (controlling for baseline AUDIT-C) → AUDIT-C at 6-months (H1, H2)	−0.112	−0.197, −0.026	0.044	−2.554	**.011**	−0.049	−0.158, 0.059	0.055	−0.895	.371
Indirect Effects										
Dry January participation (controlling for baseline AUDIT-C) → Change in DRSE →AUDIT-C at 6-months (H5)	−0.041	−0.075, −0.007	0.017	−2.339	**.019**	−0.039	−0.074, −0.005	0.018	−2.220	**.026**
Dry January participation (controlling for baseline AUDIT-C) → Abstinence →AUDIT-C at 6-months (H6)	−0.015	−0.069, 0.039	0.028	−0.552	.581	−0.053	−0.131, 0.026	0.040	−1.316	.188
Dry January participation (controlling for baseline AUDIT-C) → Change in drinker identity →AUDIT-C at 6-months (H7)	−0.003	−0.010, 0.005	0.004	−0.750	.453	−0.001	−0.012, 0.009	0.005	−0.256	.798
Dry January participation (controlling for baseline AUDIT-C) → Change in motivation →AUDIT-C at 6-months (H4)	0.007	−0.007, 0.021	0.007	0.954	.340	0.008	−0.007, 0.023	0.008	1.079	.281
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in DRSE → AUDIT-C at 6-months (H5, H6)	−0.018	−0.034, −0.002	0.008	−2.187	**.029**	−0.023	−0.044, 0.001	0.011	−2.085	**.037**
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in motivation → AUDIT-C at 6-months (H4, H6)	−0.006	−0.014, 0.003	0.004	−1.307	.191	−0.008	−0.019, 0.003	0.006	−1.404	.160
Dry January participation (controlling for baseline AUDIT-C) → Abstinence→ Change in ASC → AUDIT-C at 6-months (H6, H7)	0.001	−0.003, 0.005	0.002	0.324	.746	−0.001	−0.008, 0.007	0.004	−0.141	.887
Total Effect	−0.186	−0.253, −0.120	0.034	−5.497	**<.001**	−0.166	−0.234, −0.097	0.035	−4.720	**<.001**

Supplementary Table 5.19: Sensitivity analyses for structural model 2 (RQ4) excluding data from participants reporting 2+ changes in group and any change in group.

	Excluding data from participants reporting 2 + group changes (n =497)					**Excluding data from participants reporting any group changes (n=372)**				
Predictors*	**β**	**95% CI**	**SE**	**z**	***p***	**β**	**95% CI**	**SE**	**z**	***p***
Baseline ASC	−0.105	−0.170, −0.040	0.033	−3.164	**.002**	−0.087	−0.161, −0.014	0.037	−2.331	**.020**
Baseline AUDIT-C	0.542	0.469, 0.615	0.037	14.615	**.000**	0.422	0.343, 0.500	0.040	10.465	**<.001**
Dry January participation	−0.136	−0.206, −0.066	0.035	−3.832	**<.001**	−0.114	−0.182, −0.046	0.035	−3.275	**.001**
Baseline DRSE	−0.099	−0.172, −0.026	0.037	−2.664	**.008**	−0.274	−0.359, −0.189	0.043	−6.336	**<.001**
Baseline Motivation	0.064	−0.007, 0.135	0.036	1.762	.078	0.061	−0.014, 0.137	0.039	1.586	.113
Moderation effects										
Dry January participation X Baseline ASC	0.159	0.076, 0.243	0.043	3.733	**<.001**	0.148	0.054, 0.242	0.048	3.090	**.002**
Dry January participation X Baseline AUDIT-C	−0.040	−0.126, 0.047	0.044	−0.891	.373	0.044	−0.051, 0.140	0.049	0.916	.359
Dry January participation X Baseline DRSE	0.119	0.025, 0.214	0.048	2.472	**.013**	0.290	0.191, 0.390	0.051	5.702	**<.001**
Dry January participation X Baseline Motivation	−0.155	−0.237, −0.072	0.042	−3.686	**<.001**	−0.181	−0.269, −0.093	0.045	−4.045	**<.001**

Supplementary Table 5.20: Sensitivity analysis for linear regression models (Table 5.14) examining association between changes in psychological factors and use of online supports after Dry January on AUDIT-C at 6-months 'Official' Dry January participants excluding data from participants reporting 2 or more group changes (N=289) or any changes (N=258).

	AUDIT-C at 6-months*											
	Excluding data from 2+ changes						**Excluding data from participants with any changes**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Characteristic	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.63	0.53, 0.73	**<.001**	0.63	0.53, 0.73	**<.001**	0.62	0.51, 0.73	**<.001**	0.62	0.51, 0.73	**<.001**
Change in DRSE after Jan	-7.30	-11.27, -3.33	**<.001**	-7.68	-11.73, -3.62	**<.001**	-6.94	-11.24, -2.64	**.002**	-7.47	-11.86, -3.09	**<.001**
Change in Motivation after Jan	-0.24	-5.19, 4.71	.925	-0.52	-5.52, 4.48	.837	0.87	-4.59, 6.33	.754	0.72	-4.78, 6.22	.797
Change in ASC after Jan	8.06	4.13, 11.99	**<.001**	8.02	4.07, 11.97	**<.001**	8.54	4.30, 12.78	**<.001**	8.34	4.07, 12.61	**<.001**
Freq use Try Dry after Jan	-2.06	-3.55, -0.57	**.007**	-2.11	-3.64, -0.57	**.007**	-2.01	-3.62, -0.41	**.014**	-2.15	-3.79, -0.50	**.011**
Freq use Facebook group after Jan	-3.05	-7.32, 1.23	.162	-2.67	-7.04, 1.71	.231	-3.30	-7.88, 1.28	.158	-2.71	-7.40, 1.99	.257
Age				-0.21	-0.53, 0.11	.191				-0.25	-0.60, 0.10	.155
Gender – Man				-1.81	-10.65, 7.03	.687				-1.98	-12.12, 8.16	.701
Ethnicity - non-white				-0.38	-18.76, 18.00	.968				1.52	-18.29, 21.33	.880
Income				-0.63	-3.02, 1.77	.608				-0.04	-2.66, 2.57	.974
Post-18 education				4.60	-4.21, 13.41	.305				6.23	-3.47, 15.93	.207

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

Supplementary Table 5.21: Sensitivity analysis for linear regression models (Table 5.14) examining association between changes in psychological factors and use of online supports after Dry January on AUDIT-C at 6-months among 'Unofficial' Dry January participants excluding data from participants reporting 2 or more group changes (n=105) or any changes (n=70).

	AUDIT-C at 6-months*											
	Excluding data from 2+ group changes (SA1)						**Excluding data from participants with any group changes (SA2)**					
	Model 1			**Model 2**			**Model 1**			**Model 2**		
Variable	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Baseline AUDIT-C*	0.63	0.45, 0.82	**<.001**	0.72	0.52, 0.92	**<.001**	0.61	0.40, 0.83	**<.001**	0.68	0.43, 0.93	**<.001**
Change in DRSE after Jan	-4.34	-10.57, 1.89	.170	-3.69	-9.88, 2.51	.240	-4.18	-11.14, 2.78	.235	-4.14	-11.49, 3.21	.265
Change in Motivation after Jan	-6.33	-14.27, 1.61	.117	-3.25	-11.39, 4.90	.431	-4.93	-14.73, 4.86	.318	-3.69	-14.33, 6.96	.491
Change in ASC after Jan	6.16	-0.56, 12.87	.072	7.60	0.67, 14.54	**.032**	11.21	2.87, 19.56	**.009**	11.05	2.12, 19.98	**.016**
Age				0.28	-0.24, 0.81	.285				0.13	-0.57, 0.82	.720
Gender – Man				1.57	-10.52, 13.65	.798				-3.65	-19.43, 12.12	.645
Ethnicity - non-white				-32.92	-60.44, -5.41	**.020**				-14.97	-49.93, 19.99	.395
Income				-1.07	-5.35, 3.20	.620				-1.58	-6.89, 3.74	.555
Post-18 education				7.35	-7.71, 22.41	.335				8.86	-10.45, 28.18	.362

* Models used transformed AUDIT-C at 6-months (6-months AUDIT-C^2) and baseline (Baseline AUDIT-C^2).

SA1 Model 1: $F(4, 100) = 18.21$, $p < .001$, $R^2 = 0.42$

SA1 Model 2: $F(9, 95) = 9.3$, $p < .001$, $R^2 = 0.47$

SA2 Model 1: $F(4, 65) = 14.87$, $p < .001$, $R^2 = 0.48$

SA2 Model 2: $F(9, 60) = 6.51$, $p < .001$, $R^2 = 0.49$

Supplementary Table 5.22: Sensitivity analyses for logistic regression models looking at predictors of use of Try Dry app in January, Facebook groups in January or signing up for ACUK emails among 'Official' Dry January participants. Data excluded from participants reporting two or more group changes.

	Use of Try Dry App			Use of Facebook Groups			Signing up to ACUK emails		
Variable	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Baseline AUDIT-C	0.97	0.78, 1.21	.821	0.82	0.68, 0.97	**.024**	0.96	0.80, 1.16	.682
Baseline DRSE	0.93	0.59, 1.47	.750	1.23	0.88, 1.73	.232	0.99	0.68, 1.45	.967
Baseline Motivation	1.11	0.61, 1.94	.733	1.05	0.68, 1.60	.829	1.28	0.79, 2.13	.334
Baseline ASC	1.02	0.73, 1.42	.896	0.98	0.77, 1.25	.864	0.81	0.62, 1.06	.133
Age	0.96	0.93, 1.00	**.039**	0.96	0.93, 0.99	**.003**	0.97	0.94, 1.0	**.022**
Gender – Man	1.56	0.58, 5.01	.412	1.67	0.79, 3.79	.197	1.10	0.47, 2.40	.824
Ethnicity - non-white	0.95	0.16, 18.3	.963	1.46	0.34, 10.1	.649	0.75	0.11, 3.22	.724
Post-18 education	1.39	0.54, 3.31	.467	1.12	0.54, 2.22	.751	1.64	0.74, 3.95	.243
Income	1.09	0.85, 1.39	.499	1.04	0.86, 1.26	.695	0.87	0.70, 1.08	.210
AIC		218.99			324.28			289.22	
BIC		255.66			360.95			325.89	
Pseudo R2		0.04			0.10			0.07	

Try Dry model: $\chi^2(9) = 6.30$, $p = .710$
Facebook group model: $\chi^2(9) = 20.20$, $p = .017$
Email use model: $\chi^2(9) = 12.07$, $p = .209$

Supplementary Table 5.23: Sensitivity analyses for logistic regression models looking at predictors of use of Try Dry app in January, Facebook groups in January or signing up for ACUK emails among 'Official' Dry January participants. Data excluded from participants reporting any group changes.

	Use of Try Dry App			Use of Facebook Groups			Signing up to ACUK emails		
Variable	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Baseline AUDIT-C	0.96	0.74, 1.24	.773	0.84	0.70, 1.01	.062	1.05	0.86, 1.29	.656
Baseline DRSE	0.67	0.39, 1.16	.152	1.23	0.87, 1.75	.237	1.16	0.77, 1.76	.471
Baseline Motivation	0.89	0.41, 1.81	.765	1.06	0.67, 1.66	.798	1.27	0.74, 2.23	.400
Baseline ASC	1.11	0.76, 1.62	.599	0.94	0.73, 1.21	.646	0.90	0.67, 1.20	.459
Age	0.95	0.90, 0.99	**.022**	0.96	0.93, 0.99	**.009**	0.97	0.94, 1.00	.084
Gender – Man	2.05	0.59, 9.93	.304	1.30	0.59, 3.03	.524	0.78	0.27, 1.96	.616
Ethnicity - non-white	0.45	0.06, 9.12	.488	1.49	0.33, 10.5	.633	1.10	0.16, 4.94	.910
Post-18 education	1.55	0.51, 4.23	.406	1.37	0.65, 2.79	.396	1.91	0.77, 5.51	.189
Income	1.03	0.77, 1.37	.856	1.03	0.85, 1.26	.749	0.91	0.71, 1.15	.415
AIC		166.72			301.40			245.74	
BIC		202.25			336.93			281.27	
Pseudo R^2		0.11			0.09			0.04	

Try Dry model: $\chi^2(9) = 12.97$, $p = .164$
Facebook group model: $\chi^2(9) = 16.21$, $p = .063$
Email use model: $\chi^2(9) = 6.75$, $p = .663$

Appendix 6: Additional results from Chapter VI

Supplementary Table 6.1: Alcohol consumption at baseline and February, March, July (6-months) and October for Try Dry users who set a goal to do Dry January 2023.

	February N= 9422 (Consumption = 9242)					**March N = 6357 (Consumption = 6213)**					**July N = 3301 (Consumption = 3206)**					**October N=3191 (Consumption = 3097)**				
Variable	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**
Drinking days December	14.8	7.21	11	12		14.7	7.26	11	12		14.6	7.31	13	12		14.7	7.3	13	12	
Drinking days follow-up	6.21	5.55	5	8	z = 72.4, ***p*<.001,** r = .75	6.89	6.5	5	10	z = 54.3, ***p*<.001**, r =.69	7.25	7.29	6	12	z = 34.8, ***p*<.001**, r = .61	6.28	6.99	4	11	z=38.3, ***p*<.001**, r=.69
Dry days December	15.3	7.18	12	12		15.30	7.21	13	12		15.10	7.25	13	12		14.9	7.18	12	12	
Dry days follow-up	15.5	8.23	15	14	z =-.80, *p*= .422, r= .01	17.9	8.96	18	16	z = -19.2, ***p*<.001,** r = .24	17.4	8.85	17	14	z = -11.4, ***p*<.001**, r=.20	18.8	9.02	19	16	z= -20.3, ***p*<001**, r =.36
Weekly consumption December	22.6	14.8	18.1	14.9		22.5	15.1	18.1	14.9		22.6	15.6	18.1	15.7		23	15.8	18.1	15.8	
Weekly consumption follow-up	10.1	12.1	6.14	13.2	z = 62.9, ***p*<.001**, r=.65	10.1	12.9	5.19	14.7	z = 50.2, ***p*<.001**, r =.64	10.4	14.5	3.86	16.3	z = 33.7, ***p*<.001**, r = .60	8.73	13.1	2.84	12.5	z = 37.6, ***p*<.001**, r= .68
Heavy drinking days December	7.98	9.36	4	7		7.89	9.28	4	8		7.88	9.13	4	9		8.09	9.25	4	10	
Heavy drinking days follow-up	2.74	3.81	1	4	z = 49.5, ***p*<.001,** r = .51	3.1	4.57	1	4	z = 36.4 , ***p*<.001**, r=.46	3.19	5.11	1	5	z = 25.8, ***p*<.001**, r=.46	2.69	4.81	0	3	z = 30, ***p*<.001,** r= .54
Age	43.3	10.4	43	14		43.9	10.5	44	15		44.3	10.6	44	16		44.2	10.6	44	15	
	No.		**%**			**No.**		**%**			**No.**		**%**			**No.**		**%**		
Gender																				
Female	6438		68.30%			4352		68.50%			2248		68.10%			2153		67.50%		
Male	2227		23.60%			1501		23.60%			803		24.30%			800		25.10%		
Other	8		0.10%			5		0.10%			1		0.00%			4		0.10%		
Rather not say	749		7.90%			499		7.80%			249		7.50%			234		7.30%		
Dry January 2021 goal	1153		12.20%			811		13%			497		15.10%			507		15.90%		
Dry January 2022 goal	1354		14.40%			1005		15.80%			652		19.80%			650		20.40%		
Dry January 2023 goal	9422		100%			6357		100.00%			3301		100%			3191		100%		

Supplementary Table 6.2: Alcohol consumption (AUDIT-C items) at baseline and February, March, July (6-months) and October for Try Dry users who completed AUDIT-C at baseline and in the relevant month.

	February N= 147					**March N = 859**					**July N= 276**					**October N = 289**				
Variable	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**
Baseline AUDIT-1	3.5	0.66	4	1		3.3	0.84 3	3	1		3.26	0.84	3	1		3.37	0.86	4	1	
Follow-up AUDIT-1	2.8	0.96	3	1	z = 7.56, ***p*<.001**,r =.62	1.99	1.28	2	2	z=20.8, ***p*<.001**, r=.71	2.36	1.44	3	3	z=8.87, ***p*<.001,** r=.53	2.51	1.38	3	2	z=8.85**, *p*<.001**, r=.52
Baseline AUDIT 2	2.73	1.11	3	2		2.5	1.19	2	2		2.37	1.23	2	2		2.41	1.27	2	3	
Follow-up AUDIT 2	2.13	1.26	2	2	z= 5.38, ***p*<.001**, r=.44	1.69	1.4	2	3	z=14.1, ***p*<.001**, r=.48	1.82	1.47	2	3	z=5.76, ***p*<.001**, r=.35	1.89	1.42	2	2	z=5.64, ***p*<.001**, r=.33
Baseline AUDIT 3	3.09	0.91	3	1		2.73	1.09	3	2		2.67	1.08	3	1		2.74	1.13	3	2	
Follow-up AUDIT 3	2.29	1.18	3	2	z=7.04, ***p*<.001**, r=.58	1.56	1.3	1	3	z=18.9, ***p*<.001,** r=.64	1.89	1.46	2	3	z=7.95, ***p*<.001**, r=.48	2	1.36	2	2	z=7.79, ***p* <.001,** r=.46
Baseline AUDIT-C	9.32	2.01	9	3		8.53	2.47	9	3		8.3	2.52	9	3		8.52	2.61	9	4	
Follow-Up AUDIT-C	7.22	2.83	8	4	z=7.76, ***p*<.001**, r=.64	5.23	3.51	5	6	z=20.7, ***p*<.001**, r=.71	6.07	3.98	7	7	z=8.24, ***p*<.001**, r =.50	6.39	3.71	7	5	z=8.39, ***p*<.001**, r=.49
Age	43.8	10.5	44	12		44.6	10.3	44	14		45.6	10.6	46	14		45.9	10.7	46	14	
	No.		**%**			**No.**		**%**			**No.**		**%**			**No.**		**%**		
Gender																				
Female	103		70.10%			588		68.50%			196		71.00%			216		74.70%		
Male	30		20.40%			203		23.60%			56		20.30%			51		17.60%		
Other	0		0.00%			0		0%			0		0%			1		0.30%		
Rather not say	14		9.50%			68		7.90%			24		8.70%			21		7.30%		
Dry January 2021	14		9.50%			111		12.90%			34		12.30%			52		18%		
Dry January 2022	16		10.90%			118		13.70%			46		16.70%			50		17.30%		
Dry January 2023	138		93.90%			778		90.60%			243		88%			249		86.20%		

Supplementary Table 6.3: Alcohol consumption at baseline and February, March, July (6-months) and October for Try Dry users who recorded 15+ days per month in December and in the relevant follow-up month.

	February N=1965 (Consumption = 1904)					**March N=1829 (Consumption=1778)**					**July N=1459 (Consumption=1424)**					**October N=1392 (Consumption=1360)**				
Variable	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Differences**	**Mean**	**SD**	**Med**	**IQR**	**Difference**
Drinking days December	12.6	7.06	12	11		12.8	7.03	12	11		13.1	7.02	13	10		13.1	6.94	13.00	10	
Drinking days follow-up	7.85	6.21	7	10	z=28, ***p*<.001,** r=.64	8.82	6.81	9	10	z=23.6, ***p*<.001**, r=.56	9.78	7.28	10	12	z=17.9, ***p*<.001**, r=.47	8.22	7.07	7	12	z=23.3, ***p*<.001**, r=.63
Non-drinking days December	16.7	7.16	17	11		16.7	7.12	16	11		16.6	7.06	16	10		16.6	6.92	16	9	
Non-drinking days follow-up	19.7	6.4	20	10	z=-18.8, ***p*<.001**, r=.42	21.6	7.1	22	11	z=-26.9, ***p*<.001**, r=.63	20.4	7.41	20	12	z=-18.6, ***p*<.001**, r=.49	21.9	7.23	22	12	z=-23.9, ***p*<.001**, r=.64
Weekly consumption December	19.8	17.9	15.5	22.5		19.9	17.8	15.7	22.7		20	18	15.9	23		20.4	18.2	16.3	24.1	
Weekly consumption follow-up	12.9	14.5	8.56	17.1	z=24, ***p*<.001,** r=.55	13	14.2	9.08	17.7	z=23.9, ***p*<.001,** r=.57	14.1	16	9.19	19.5	z=18.8, ***p*<.001**, r=.50	11.8	14.4	6.52	16.9	z=23.7**, *p*<.001**, r=.64
Heavy drinking days December	5.93	6.07	4	8		5.95	6.03	4	8		6	6.1	4	9		6.09	6.14	5	9	
Heavy drinking days follow-up	3.45	4.46	2	5	z=23.4, ***p*<.001,** r=.54	3.88	4.9	2	6	z=19.7, ***p*<.001**, r=.47	4.17	5.49	2	7	z=15.5, ***p*<.001**, r=.41	3.51	5.02	1	5	z=19.3, ***p*<.001**, r=.52
Age	44.3	11.1	44	15		44.5	11.1	44	16		44.8	11.2	45	15		44.9	11.1	45	15	
	No.		**%**			**No.**		**%**			**No.**		**%**			**No.**		**%**		
Gender																				
Female	1288		65.50%			1207		66%			945		64.80%			911		65.40%		
Male	554		28.20%			515		28.20%			438		30%			414		29.70%		
Other	1		0.10%			1		0.10%			0		0%			0		0%		
Rather not say	122		6.20%			106		5.80%			76		5.20%			67		4.80%		
Dry January 2021	504		25.60%			480		26.20%			413		28.30%			396		28.40%		
Dry January 2022	689		35.10%			666		36.40%			567		38.90%			541		38.90%		
Dry January 2023	975		49.60%			891		48.70%			693		47.50%			664		47.70%		

Supplementary Table 6.4: Percentage of users with 10% or greater increase, 10% or greater decrease or unchanged/less than 10% change in alcohol consumption in February, March, July and October

		February N =11428 (consumption = 11106)		March N=8070 (Consumption = 7789)		July N=4545 (Consumption = 4351)		October N=4410 (Consumption = 4220)	
Alcohol Consumption DV		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Drinking days	Decrease 10%+	9090	81.85%	5882	75.52%	3071	70.58%	3225	76.42%
	Increase 10%+	1385	12.47%	1305	16.75%	863	19.83%	667	15.81%
	Unchanged/ Less than 10% change	631	5.68%	602	7.73%	417	9.58%	328	7.77%
Non-drinking days	Decrease 10%+	4828	42.25%	2506	31.05%	1536	33.8%	1176	26.67%
	Increase 10%+	4984	43.61%	4345	53.84%	2268	49.9%	2573	58.34%
	Unchanged/ Less than 10% change	1616	14.14%	1219	15.11%	741	16.3%	661	14.99%
Average weekly consumption	Decrease 10%+	8512	76.64%	5884	75.54%	3194	73.41%	3350	79.38%
	Increase 10%+	1936	17.43%	1364	17.51%	853	19.6%	623	14.76%
	Unchanged/ Less than 10% change	658	5.92%	541	6.95%	304	6.99%	247	5.85%
Heavy drinking days	Decrease 10%+	7148	64.36%	4768	61.21%	2662	61.18%	2744	65.02%
	Increase 10%+	2298	20.69%	1720	22.08%	878	20.18%	717	16.99%
	Unchanged/ Less than 10% change	1660	14.95%	1301	16.7%	811	18.64%	759	17.99%

Supplementary Table 6.5: Percentage of users who set a goal to complete Dry January 2023 with increased, decreased or unchanged alcohol consumption in February, March, July and October

		February N= 9422 (Consumption = 9242)		**March N = 6357 (Consumption = 6213)**		**July N = 3301 (Consumption = 3206)**		**October N=3191 (Consumption = 3097)**	
Alcohol consumption DV		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Drinking days	Decrease	7742	83.77%	4858	78.19%	2372	73.99%	2447	79.01%
	Increase	1147	12.41%	1072	17.25%	663	20.68%	514	16.6%
	Unchanged	353	3.82%	283	4.55%	171	5.33%	136	4.39%
Non-drinking days	Decrease	4632	49.16%	2463	38.74%	1331	40.32%	1066	33.41%
	Increase	4296	45.6%	3568	56.13%	1753	53.11%	1951	61.14%
	Unchanged	494	5.24%	326	5.13%	217	6.57%	174	5.45%
Average weekly consumption	Decrease	7451	80.62%	4936	79.45%	2489	77.64%	2560	82.66%
	Increase	1791	19.38%	1241	19.97%	693	21.62%	517	16.69%
	Unchanged	0	0%	36	0.58%	24	0.75%	20	0.65%
Heavy drinking days	Decrease	6061	65.58%	3909	62.92%	2051	63.97%	2090	67.48%
	Increase	1938	20.97%	1407	22.65%	677	21.12%	548	17.69%
	Unchanged	1243	13.45%	897	14.44%	478	14.91%	459	14.82%

Supplementary Table 6.6: Percentage of users who completed AUDIT-C in months of interest with increased, decreased or unchanged alcohol consumption in February, March, July and October according to AUDIT 1 (frequency of consumption), AUDIT 2 (amount consumed) and AUDIT 3 (frequency of heavy drinking).

		February N= 147		March N=857		July N=275		October N=293	
Alcohol consumption DV		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Frequency of consumption (AUDIT 1)	Decrease	84	57.14%	593	69.03%	124	44.93%	139	48.10%
	Increase	7	4.76%	30	3.49%	24	8.70%	28	9.69%
	Unchanged	56	38.10%	236	27.47%	128	46.38%	122	42.21%
Consumption per drinking occasion (AUDIT 2)	Decrease	75	51.02%	445	51.80%	117	42.39%	117	40.48%
	Increase	21	14.29%	132	15.37%	48	17.39%	57	19.72%
	Unchanged	51	34.69%	282	32.83%	111	40.22%	115	39.79%
Heavy drinking days (AUDIT 3)	Decrease	82	55.78%	546	63.56%	123	44.57%	132	45.67%
	Increase	11	7.48%	64	7.45%	39	14.13%	39	13.49%
	Unchanged	54	36..73%	249	28.99%	114	41.30%	118	40.83%

Supplementary Table 6.7: Percentage of users who recorded consumption 15+ times at baseline and in the month in relevant follow-up month with increased, decreased or unchanged alcohol consumption in February, March, July and October

		February N=1965 (Consumption = 1904)		March N=1829 (Consumption=1778)		July N=1459 (Consumption=1424)		October N=1392 (Consumption=1360)	
Alcohol consumption DV		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Drinking days	Decrease	1499	78.73%	1322	74.35%	980	68.82%	1042	76.62%
	Increase	302	15.86%	350	19.69%	341	23.95%	240	17.65%
	Unchanged	103	5.41%	106	5.96%	103	7.23%	78	5.74%
Non-drinking days	Decrease	582	29.62%	305	16.68%	342	23.44%	246	17.67%
	Increase	1247	63.46%	1432	78.29%	1016	69.64%	1068	76.72%
	Unchanged	136	6.92%	92	5.03%	101	6.92%	78	5.6%
Average weekly consumption	Decrease	1458	76.58%	1398	78.63%	1073	75.35%	1127	82.87%
	Increase	446	23.42%	374	21.03%	338	23.74%	224	16.47%
	Unchanged	0	0%	6	0.34%	13	0.91%	9	0.66%
Heavy drinking days	Decrease	1188	62.39%	1047	58.89%	799	56.11%	828	60.88%
	Increase	296	15.55%	319	17.94%	262	18.4%	206	15.15%
	Unchanged	420	22.06%	412	23.17%	363	25.49%	326	23.97%

Supplementary Table 6.8: Multiple regression models examining association between frequency of recording drinking and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and 6-months including only users who set a goal to complete Dry January 2023

	Dependent variables: Changes from baseline to 6-months											
	Change in drinking days			**Change in non-drinking days**			**Change in average weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Frequency of recording	0.44	0.40, 0.48	**<.001**	0.34	0.31, 0.38	**<.001**	0.68	0.60, 0.77	**<.001**	0.29	0.25, 0.34	**<.001**
Age	-0.11	-0.13, -0.08	**<.001**	0.08	0.04, 0.11	**<.001**	-0.08	-0.14, -0.02	**.006**	-0.03	-0.06, 0.00	**.021**
Gender -Male	0.70	-0.02, 1.42	.057	-0.76	-1.53, 0.01	.053	0.39	-1.21, 1.98	.635	-0.05	-0.82, 0.73	.906
-Other or rather not say	0.04	-1.08, 1.16	.942	-0.17	-1.36, 1.02	.781	-0.60	-2.77, 1.58	.591	0.27	-0.91, 1.46	.652
R^2	0.15			0.09			0.09			0.06		
	F(4, 3201) = 128.6, *p* <.001			F(4, 3296) =90.94, *p*<.001			F(4, 3201) = 70.09, *p*<.001			F(4, 3201)= 40.54, *p* <.001)		

Supplementary Table 6.9 Multiple regression models examining association between depth of use of drinking metrics and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and 6-months including only users who set a goal to complete Dry January 2023

	Dependent variables: Changes from baseline to 6-months											
	Change in drinking days			**Change in non-drinking days**			**Change in average weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Depth of use of drinking metrics	0.21	0.19, 0.22	**<.001**	0.12	0.10, 0.13	**<.001**	0.31	0.28, 0.34	**<.001**	0.13	0.11, 0.15	**<.001**
Age	-0.09	-0.12, -0.07	**<.001**	0.08	0.05, 0.12	**<.001**	-0.06	-0.12, 0.00	**.044**	-0.02	-0.05, 0.01	.153
Gender -Male	1.03	0.28, 1.79	**.008**	-1.09	-1.91, -0.27	**.009**	0.98	-0.72, 2.67	.259	0.08	-0.72, 0.88	.848
-Other or rather not say	0.44	-0.74, 1.63	.461	-0.21	-1.54, 1.12	.755	-0.01	-2.32, 2.31	.994	0.10	-1.11, 1.31	.872
R^2	0.21			0.07			0.12			0.08		
	F(4, 2663) = 248.5, *p*<.001			F(4, 2747) = 67.32, *p*<.001			F(4, 2663) = 106.3, *p*<.001			F(4, 2663) =45.54, *p*<.001		

Supplementary Table 6.10: Multiple regression models examining association between frequency of recording drinking and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and 9-months including only users who set a goal to complete Dry January 2023

	Dependent variables: Changes from baseline to 9-months											
	Change in drinking days			**Change in non-drinking days**			**Change in average weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***P***
Freq of recording	0.36	0.32, 0.39	**<.001**	0.27	0.23, 0.30	**<.001**	0.55	0.49, 0.62	**<.001**	0.25	0.22, 0.29	**<.001**
Age	-0.09	-0.12, -0.06	**<.001**	0.05	0.02, 0.08	**.001**	-0.08	-0.14, -0.02	**.006**	-0.05	-0.08, -0.02	**<.001**
Gender -Male	0.71	0.00, 1.41	**.049**	-1.10	-1.88, -0.31	**.006**	-0.51	-2.03, 1.00	.508	-0.24	-1.02, 0.54	.546
-Other or rather not say	1.04	-0.13, 2.20	.081	-1.51	-2.76, -0.26	**.018**	0.21	-1.95, 2.36	.851	0.20	-1.02, 1.41	.752
R^2	0.14			0.07			0.08			0.06		
	F(4, 3092) = 113.9, *p*<.001			F(4, 3186) = 57.56, *p*<.001			F(4, 3092) = 66.63, *p*<.001			F(4, 3092) = 43.25, *p*<.001		

Supplementary Table 6.11: Multiple regression models examining association between depth of use of drinking metrics and change in alcohol consumption (drinking days, non-drinking days, weekly consumption, heavy drinking occasions) between baseline and 9-months including only users who set a goal to complete Dry January 2023

	Dependent variables: Changes from baseline to 9-months											
	Change in drinking days			**Change in non-drinking days**			**Change in average weekly consumption**			**Change in heavy drinking occasions**		
Variables	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***	**β**	**95% CI**	***p***
Depth of use of drinking metrics	0.19	0.17, 0.20	**<.001**	0.09	0.08, 0.11	**<.001**	0.27	0.24, 0.30	**<.001**	0.12	0.10, 0.14	**<.001**
Age	-0.07	-0.10, -0.03	**<.001**	0.05	0.02, 0.09	**.005**	-0.02	-0.09, 0.04	.489	-0.02	-0.05, 0.02	.317
Gender -Male	1.27	0.46, 2.08	**.002**	-1.70	-2.56, -0.85	**<.001**	0.34	-1.44, 2.11	.711	0.20	-0.67, 1.07	.653
-Other or rather not say	1.10	-0.20, 2.39	.096	-1.07	-2.54, 0.41	.156	0.17	-2.23, 2.57	.887	0.14	-1.20, 1.47	.842
R^2	0.19			0.05			0.10			0.08		
	F(4,2158) = 200.8, *p*<.001			F(4, 2227) = 41.6, *p* <.001			F(4, 2158) = 75.38, *p*<.001			F(4, 2158) = 33.41, *p*<.001		